

**MINISTRY OF SCIENCE AND TECHNOLOGY**

**DEPARTMENT OF**

**TECHNICAL AND VOCATIONAL EDUCATION**

**E - 4201**

**LECTURE NOTE**

**ON**

**ENGINEERING ENGLISH**

**SEMESTER VIII**

**(ALL COURSES)**

**B. Tech. (Second Year)**

**CONTENTS**

<b>UNIT</b>	<b>TITLE</b>	<b>PAGE</b>
1.	Science and Technology	3
2.	How Electricity is Made	13
3.	Spanners in the Robot's Work	22
4.	Computer Hacking	33
5.	Equal at Work	47
6.	The Computer	60
7.	Climatic Effects of Nuclear War	76
8.	Environment in Danger – I	85
9.	Environment in Danger – II	97
10.	Global Warming – the Greenhouse Effect	111

## UNIT 1

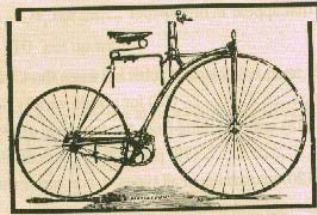
### SCIENCE AND TECHNOLOGY

Lecture note by Daw Win Pa Pa Htoon of YTU

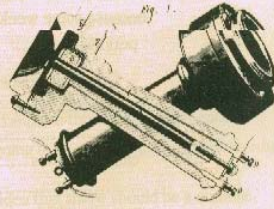
*First, I want you to think not only about the importance of each invention in modern day life but also about the significance each had at the time when it first appeared, and about later developments which each led to.*

*I want you to work with a partner to discuss the inventions below and decide:*

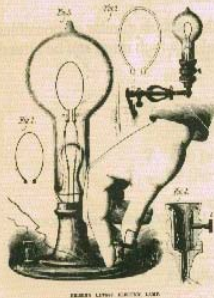
- a. which two you think were the most important;*
- b. which one is the least important.*



1 Rover safety bicycle, 1885



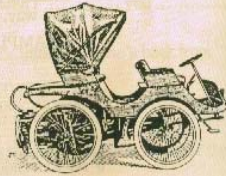
2 Bell's telephone, 1877



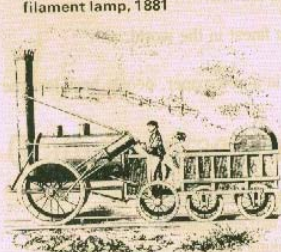
3 Edison's carbon-filament lamp, 1881



4 Daguerreotype outfit, 1847



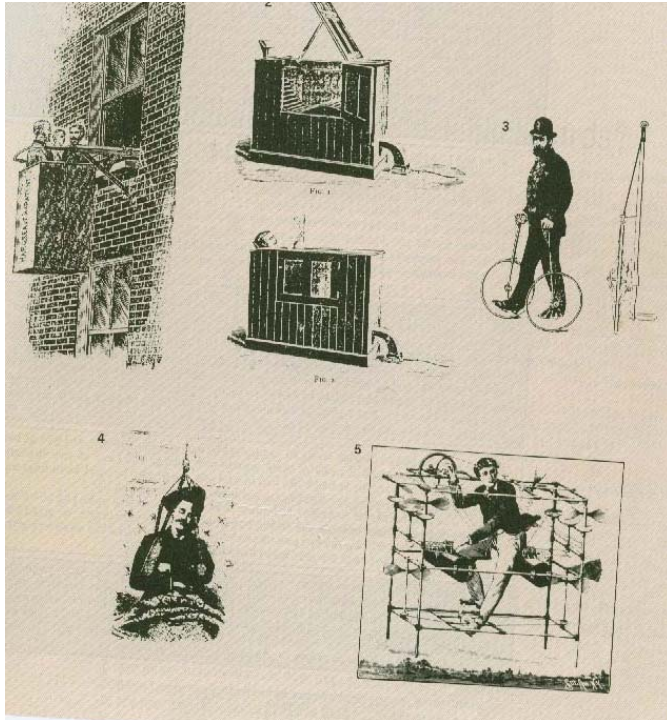
5 First Lanchester car (converted to wheel-steering), 1896



6 Stephenson's Rocket, 1829



7 Bleriot landing at Dover after the first crossing of the English Channel, 1909



On the following page are headlines and extracts from the articles which originally announced the new inventions above.

*By reading the following passage, you'll come to know about the appearance of the new inventions which originally announced.*

1. The action of propelling is that of skating on ice, and any forward figure that can be done on ice can be accomplished with ease by these machines. Each wheel is independent of the other, and backward travel is prevented by a mechanical action. An idea how to learn to ride them is given in the engraving. The balance is the first movement to be learnt. By pressing the thumbs on the brakes the wheels become fixed, by which means the learner can walk on them the same as on stilts. When the balance of walking is acquired, the learner may gradually let go the brake on one side for the wheel to move a little forward, then fix the brake on the wheel advanced, let go the brake on the opposite side, and advance that wheel a little in front of the other, always, however, taking care to brake the front wheel before advancing the hind one. By this means the action of the wheels moving under you

is acquired, but it is advisable to go slowly to work at first. When the balance is lost it is best to jump off the machines and commence again, as the rider is not fixed in any way on the machine.

*The first paragraph mentions that it is the new method of locomotion. This means that the action of the wheels moving under you is acquired. However, it is advisable, to go slowly to work firstly.*

2. As will be seen from our engraving Fig. 1, which shows the bath open, it consists of a rectangular cabinet, very stylishly got up, about 5ft long by 2ft wide, with a door in front, and a hinged lid at the top. The inside has a very comfortably shaped couch made of hardwood laths, with spaces between so as to allow of the free circulation of the air; underneath the couch is a hot-air chamber. When the bather has seated himself upon the couch he can then close the door and lower the lid, as shown in Fig. 2, which is shaped to fit the neck, and has also two circular apertures with sliding doors for regulating the heat, and also for passing the arms through, so as to read or smoke, etc., while enjoying the pleasures of the Turkish bath.

*The second paragraph explains that it is the 'Sultan ' Domestic Turkish Bath. In Fig. 2, which is shaped to fit the neck, and has also two circular apertures with sliding doors for the regulating the heat, and then it is for passing the rains through, so as to read or smoke, etc. while you are enjoying the pleasures of the Turkish bath.*

3. A very ingenious invention comes from Germany, which enables the user to rest as comfortably and safely as if lying on a bed, as it provides a rest for head, neck back, and elbow at the same time? The invention will be readily understood from our illustration, and it is claimed for it that the appliance is especially useful in the case of travelling for long distances by rail. It is also easily packed away in a small parcel, which can be carried in the pocket. It is claimed that by using the invention the traveller will hardly feel the shaking of the railway carriage while he can at any time by means of a single turn

change his position as he likes by leaning to the right or left, or sitting straight, but in any case there is a firm support for his head.

*The third paragraph mentions that at is sitting while asleep. This means that by using the invention the traveller will hardly feel the shaking of the railway carriage while you can at any time by means of a single turn change your position whereas you like by learning to the right or left, or sitting straight. There is a firm support for your head. So you can look at Fig. 4.*

4                    A construction measuring 4ft by 3 ft, supported by four legs 4 ft in height, will give us the required space, and if made of steel quarter-inch tubing, will have all the strength needed. The rider sits in a seat like that of a bicycle, suspended by steel wires from the top frame, with which his shoulders are roughly about on a level. The four horizontal propellers have their bearing on the vertical posts just below the upper frame, thus bringing the lifting power as far above the centre of gravity as possible. The vertically moving propeller revolves on a shaft behind the shoulders of the rider, midway between the side bars of the top frame.

*The fourth paragraph mentions that it is a new aerial machine. You can look at Fig. 5 .The rider can sit in a seat like that of a bicycle. It is suspended by steel wires from the top frame and then with which his shoulders are roughly about on a level.*

<p>5                    Fixed under the window on the top floor, or on a lower floor if preferred, the apparatus is covered by a dressing table top which entirely hides it from view. It is thus always ready for use. On an alarm of fire the table top is removed and the apparatus thrown out of the window ready for action. That operation is exceedingly simple, and if done with alacrity takes about eight seconds. If using a large size apparatus two adults or three children can be lowered at one time.</p>
---

*The fifth paragraph mentions that it is Hargrove's Patent Window Fire. You can look at Fig. 1. This invention is always ready for use. There is on an alarm of fire the table top is removed and the apparatus thrown out of the window ready for action.*

**Exercise I**

*This exercise tests your understanding about the passage. You must match the pictures to the appropriate headline and text..*

Match the pictures to the appropriate headline and text.

- A. A New Aerial Machine.
- B. Hargreaves' Patent Window Fire Escape Apparatus.
- C. Sitting while Asleep
- D. The ' Sultan ' Domestic Turkish Bath.
- E. New Method of Locomotion.

Picture	Headline	Text
1		
2		
3		
4		
5		

*You can check answers and, in particular, the part of the text which matched the headline and drawing.*

**Check!**

**Key to Exercise I**

<i>Picture</i>	<i>Headline</i>	<i>Text</i>
<i>1</i>	<i>B</i>	<i>5</i>
<i>2</i>	<i>D</i>	<i>2</i>
<i>3</i>	<i>E</i>	<i>1</i>
<i>4</i>	<i>C</i>	<i>3</i>
<i>5</i>	<i>A</i>	<i>4</i>

**Exercise II.**

*In this exercise, six questions are given for further discussion. I suggest you to discuss among your group and compare your answers with those of other group. You can refer to the reading passage.*

Now answer these questions in your own words:

1. What design feature of the Turkish bath allows the bather to read a book?
2. How is the fire escape apparatus stored when not in use?
3. What means is used to raise the 'aerial machine'?
4. What is the German invention intended to prevent?
5. Why is it necessary to learn to balance when using the 'new method of locomotion'?
6. Why is it important to apply the brake on the front wheel before bringing the rear one forward?

***Check!***

***Key to exercise II***

1. *Two circular apertures (? = holes) in the lid.*
2. *It's covered by a dressing table top so that it looks like a piece of furniture.*
3. *The lifting power created by the four propellers.*
4. *The discomfort caused by the shaking of the train.*
5. *Because the "rider's" feet are off the ground. It's like walking on stilts.*
6. *Because unless the brake on the front wheel is applied, it would continue to move forwards and the rider's legs would shoot apart, causing him to land on the ground most uncomfortably!*

**GRAMMAR**

**Subordinate Clause**

**A. FINITE AND NON-FINITE CLAUSES**

We use conjunctions to join clauses together. The clauses are usually *finite*:

- He stood on the edge of the pool **as if he was going to jump in.**

A few conjunctions (AS IF, IN ORDER TO) can also be followed by *non-finite* clauses:

- He stood on the edge of the pool **as if to jump in.**

We can also use many conjunctions of time with non-finite clauses (... while talking to him,... when waiting for a train,... before going to see the film, etc.).

**B. AS**

This is a tricky little word; we use in a lot of different ways! We use it as a preposition:

- He was a great success **as an actor**.

We use it as a linker, meaning *because*:

- I can't stay, **as my sister is coming round**. (As = because)

### C. APPEARANCES: AS IF and THOUGH

We use these two expressions in similar ways:

- You look **as if/as though** you've had some bad news.

### D. AS FAR AS

Here are two examples of AS FAR AS:

- **As far as I know**, he's leaving tonight. (=that's what I understand up to now.)
- I think we have travelled **as far as we can** today. (This is about physical distance.)

### E. WHEREAS

This is a conjunction with a similar meaning to the adverb *however*.

- I would like to go by car, **whereas** Sam would rather walk.
- I would like to go by car. **However**, Sam would rather walk.

### Exercise I

First you have to complete these sentences with the words or phrases in the box. In each paragraph, you will use all the items once.

As, as far as, whereas, as if

#### Paragraph 1

I first started learning Spanish in 1992, 1).....I was planning to live in Spain. I thought that Spanish sounded 2)..... it was quite similar to French, 3) .....English was quite different. 4)..... I know at the time, French and Spanish were essentially sister languages.

#### Paragraph 2

1).....I was very interested in genetics, 2) .....physics bored me, I decided to study the subject. When I first began, it looked to me 3).....the differences between apes and men were relatively small, 4) .....the differences between tigers and men were much greater.

**Paragraph 3**

Dennis left home early that day, 1) ..... he had an early appointment at the CAB. He wandered into the office looking 2).....he was still half asleep (which he was), 3).....Anne, his boss, looked as fresh as a daisy.4) .....Dennis could see, she had been up for hours.

**Paragraph 4**

I took a warm coat with me 1).....it was autumn, and 2)..... wouldn't be home until late in the evening. But I was wrong about the coat 3) ..... the previous evening had been quite chilly, the weather this evening turned out so warm, it was 4)..... summer had come back.

**Paragraph 5**

Victoria was anxious to leave early in the morning, 1) .....she started work at 8 am, 2).....Dennis did not start until 10. 3).....she knew, he didn't have to leave the house until 9.45. When Victoria left, Dennis looked 4)..... he wouldn't get up for some time.

***Check!******Key to exercise I***

**Paragraph (1)** 1. *as*      2. *as if*      3. *whereas*      4. *As far as*

**Paragraph (2)** 1. *As*      2. *whereas*      3. *as if*      4. *whereas*

**Paragraph (3)** 1. *as*      2. *as if*      3. *whereas*      4. *As far as*

**Paragraph (4)** 1. *as*      2. *as far as*      3. *whereas*      4. *as if*

**Paragraph (5)** 1. *as*      2. *whereas*      3. *As far as*      4. *as if*

*Now let's study the use of these conjunctions:*

**However, Otherwise, and Nevertheless ( Adverbs of concession ).**

**However** and **Nevertheless** are similar to each other in meaning:

- She hadn't come the day before; **however/nevertheless**, he waited for her again today.

**Otherwise** ( as we use it here) means ' apart from that "':

- It was fortunate that he waited; **otherwise** he wouldn't have seen her.

**Exercise II**

Complete each one of these items with **However** and **Otherwise**

1. We found two spelling mistakes in the first paragraph; .....,the text seems to be fine ....., we feel that it still needs a final check before going to the printers.
2. The coach trip was successful on the whole ;....., we do feel that the lunch stop should have been longer....., we believe most people enjoyed the trip.
3. You worked well on your first day, Miss Jones ....., I must ask you not to wear jeans to the office; ..... your conduct has been excellent.

***Check!***

***Key to Exercise II***

1. *otherwise, However*
2. *however, Otherwise*
3. *However, otherwise*

## UNIT 2

### HOW ELECTRICITY IS MADE

Lecture note by Daw Aye Aye Mon of YTU

*The topic of the passage we're going to study is **How electricity is made**. First, I want you to read the whole passage. Then underline the words which are not familiar with you. The meanings of some difficult words are given in "Glossary". You can look up your dictionary for other words which are not found in the "Glossary".*

*Now, I'll explain the first three paragraphs.*

If you had never seen a power plant, you might find it hard to imagine how enormously complex the equipment is or how much heat is generated by the boilers or how much coal it takes to fuel the furnaces for just one day.

Morgantown, for example, can turn 24 million gallons of water into steam. That generating plant alone uses 9,900 tons of coal in its furnaces in just one day. PEPCO uses so much coal that we have purchased two 80-car unit trains to facilitate the delivery process. And Morgantown alone can produce over 25 million kilowatt-hours of electricity in a single day's operation.

The story of how PEPCO produces electricity for you actually begins with the arrival of a shipment of coal or oil to be used as fuel in one of our power plants. Many people think that electricity is a fuel, but it is not. Rather, it is a secondary source of energy. The power plant turns primary fuels like coal or oil into clean, convenient power which is always available at the flick of a switch.

*The first paragraph introduces the power plant. You might find it hard to imagine how enormously complex the equipment is or how much heat is generated by the boilers or how much coal it takes fuel to the furnaces for just one day. Moreover, during the course of a day, the boilers at one of our power plants, Morgantown, For example, can turn 24 million gallons of water into steam. That generating plant alone*

*uses 9,900 tons of coal in its furnaces in just one day. So, the story of how PEPCO produces electricity for you actually begins with the arrival of a shipment of coal or oil to be used as fuel in one of our power plants. The power plant turns primary fuels like coal or oil into clean, convenient power which is always available at the flick of a switch.*

*Well, let's go on to the next two paragraphs.*

Once a shipment of coal has been delivered to a PEPCO power plant, the coal is ground into a fine powder which is about the consistency of baby powder. It is then delivered to the boiler, where it is burned to produce heat. Water circulating through the boiler absorbs the heat and changes to steam. This steam is directed against the blades of a turbine. The pressure of the steam against the turbine blades turns a shaft which turns a rotor in the electrical generator. It is the generator which produces electricity.

Electricity is produced by spinning large magnets inside a coil of wire within the generator. The faster we spin the magnets (up to the physical limits of the equipment) the higher will be the voltage of the electricity produced; Electricity leaves a PEPCO generator at between 13,800 volts and 24,000 volts.

*A shipment of coal has been delivered to a PEPCO power plant which is ground into a fine powder. It is about the consistency of baby powder. Then it is delivered to the boiler, where it is burned to produce heat. Moreover, electricity is produced by spinning large magnets inside a coil of wire within the generator.*

*OK, let's continue the rest six paragraphs.*

The next step in the process of getting electricity to you occurs when it passes through a transformer where the voltage is "stepped up" to continue on its journey, PEPCO transmission lines carry the current at its increased voltage-from 69,000 to 500,000 volts. "Stepping up" the voltage reduces current loss, which is why we do it.

The process may be easier to understand if you think of the increased voltage, or "electrical pressure", in terms of water pressure. A transmission wire is like a small diameter pipe. Stepping up the voltage is

like increasing water pressure, thus speeding the flow of energy through the system. You can recognize transmission lines as large wires suspended on steel poles or towers.

Before electricity reaches your home, it must be "stepped down" through a series of transformers and substations. Many commercial and industrial customers receive electricity at 13,800 volts. A residential customer receives electricity at 120/240 volts. The final "step down" for that is done by a transformer near your home.

You can recognize distribution poles as the familiar wooden ones near your home, and the transformers as the tank-like equipment beneath the cross-bracing. In some cases, PEPCO uses underground distribution and transformers.

The electricity then enters your home through your electric meter. The electric meter is basically a small electric motor connected into the circuit so that the number of turns on the dials is directly proportional to the amount of electricity flowing through the meter. Electric meters are very accurate, and standards for their accuracy are set by the public service commission which supervises PEPCO's meters.

From your meter, electricity passes, through your fuse box or circuit breaker box and into your home wiring system. Each time you turn on a light or appliance, electricity is there for you. The story of how PEPCO produces electricity is the story of many people working together. It is the story of complex equipment and continuous planning and a \$ 2 billion investment at your service- at the flick of a switch.

*The main idea of the last paragraph is that electricity is produced by means of coal, water and steam and it can make turbine blades turn a shaft and a rotor in the electrical generator.*

*Now, after the whole passage has been explained, do Exercise I and II.*

### **Exercise I**

What do the underline words in the passage refer to?

1. it ( line 1 )
2. It ( line 15 )

3. It ( line 19 )
4. it ( line 33 )
5. It ( line 48 )

**Check!**

**Key to Exercise I**

1. *the introductory word*
2. *The fine powder of coal*
3. *The introductory word*
4. *electricity*
5. *The introductory word*

**Exercise II**

Answer the following questions in complete sentences.

1. How much electricity can Morgantown produce in daily operation?
2. Why is electricity said to be convenient power?
3. What causes a shaft to turn?
4. How is electricity produced in a generator?
5. What will happen, when we spin the magnets faster?
6. What is done when the electricity passes through a transformer?
7. What does stepping up the voltage reduce?
8. How much electricity does a residential customer receive?
9. What is an electric meter?
10. Which kinds of electric meter are set by the public service commission?

**Check!**

**Key to Exercise II**

1. *Morgantown can produce 25 million kilowatt-hours of electricity in daily operation.*
2. *Electricity is said to be convenient power because it is always available at the flick of a switch.*
3. *The pressure of the steam causes a shaft to turn.*
4. *Electricity is produced by spinning large magnets inside a coil of wire within*

*the generator.*

5. *When we spin the magnets faster, the higher voltage of electricity will be produced.*
6. *When the electricity passes through a transformer, stepping up the voltage is done.*
7. *Stepping up the voltage reduces current loss.*
8. *A residential customer receives electricity at 120/240 volts.*
9. *An electric meter is basically a small electric motor connected into the circuit so that the number of turns on the dials is directly proportional to the amount of electricity flowing through the meter.*
10. *Very accurate electric meters are set by the public service commission.*

## **Structure**

### **Unreal Past Conditionals**

If Clause	Main Clause
1. If the weather had been fine yesterday,	I would have gone to the beach.
2. If I had studied hard,	I would have passed the Exam:
3. If you had missed your bus,	you would have been late for school.
4. If I hadn't helped you,	what would you have done?
If + past perfect,	would have + past participle

This structure is often called the "third conditional". The contraction of both "had" and "would" is " d ". This structure is used to talk about unreal past situations.

- If the weather had been fine yesterday, I would have gone to the beach. (But the weather was not fine.)
- If I had studied hard, I would have passed the exam. (But I did not study hard.)
- If you had done your work, nothing would have happened.

- If the men had not lost their money, everything would have been all right.
- If I had been told about it, all this trouble would have been avoided.
- If I had fallen in love with her, I would have married her.
- If my car had not broken down, I should have caught the train.
- I shouldn't have thought it possible unless I had seen it.
- We would have enjoyed the play better if it had not been so long.

An **if** clause can go at the beginning or the end of a sentence.

- If it rains, I'll stay at home.
- I'll stay at home if it rains.

A comma is often written after the if-clause when we begin with this clause.

Conditional clauses without "if" can be used as follow.

- Unless you hurry, you'll be late.
- Suppose you won a lot of money, what would you do?
- Unless they hurry, they will miss the train.
- Unless you do not have a passport, you cannot go abroad.
- Unless I find your name on the list, I won't phone you tonight.
- Unless I get any help, I cannot hope to finish this work by evening.

*Let's do Exercise I.*

**Exercise I**

Now you have to fill in an appropriate form of the verb given in brackets.

1. If he..... (not, ignore) the traffic light, the accident wouldn't have happened.
2. If you give me a ring tomorrow, I..... (tell) you what my plans are.
3. If the World Cup..... (cancel), there would be an international outcry.
4. I..... (tell) you if I had seen your ring anywhere.
5. If the weather..... (improve) in August, we'll go into the country for a week.
6. If Susan hadn't run down the stairs, she..... (not, slip) and twisted her ankle.
7. I'm full up. If I eat any more, I..... (collapse)!
8. If we..... (buy) the tickets in advance, we wouldn't have to queue.
9. If the illness hadn't been treated, he..... probably..... (die).
10. If the president..... (walk) through the door, I should be extremely surprised.

**Check!**

**Key to Exercise I**

- |                           |                                  |
|---------------------------|----------------------------------|
| 1. <i>had not ignored</i> | 6. <i>would not have slipped</i> |
| 2. <i>will tell</i>       | 7. <i>will collapse</i>          |
| 3. <i>were cancelled</i>  | 8. <i>bought</i>                 |
| 4. <i>Would have told</i> | 9. <i>Would.....have died</i>    |
| 5. <i>improves</i>        | 10. <i>walked</i>                |

*Let's move to exercise II.*

Now you have to match the two halves of these sentences.

- |                                  |                                   |
|----------------------------------|-----------------------------------|
| (A) 1. If we had had a map,..... | A. they will paralise the capital |
| 2. If we were the manager,.....  | B. she wouldn't lost her handbag. |

3. If the drivers go on strike,..... C. I would want to modify the office.  
 4. If it didn't rain for months,..... D. we wouldn't have got lost.  
 5. If Susan hadn't been so careless,..... E. the garden would be ruined.

- (B) 1. If I had seen the book,..... A. we can go out.  
 2. If I got a job abroad,..... B. return it to me within 28 days.  
 3. If the weather improves,..... C. I'd told you where it was.  
 4. If you don't find this book helpful,..... D. I wouldn't make so many mistakes.  
 5. If I knew what I was doing in this job,..... E. we wouldn't see each other much.

**Check!**

**Key to Exercise II.**

- |      |      |
|------|------|
| 1. D | 1. C |
| 2. C | 2. E |
| 3. A | 3. A |
| 4. E | 4. B |
| 5. B | 5. D |

OK. Let's stop here.

**Glossary**

- enormously = extremely large in size (or) in amount.
- furnaces = a large container in which a very hot fire is made.
- PEPCO = Potomac Electric Power Company, Operation.
- absorbs = soaked up.
- shipment = a load of goods sent by sea.
- blades = the flat wide part of an object that pushes against air.
- spin = to make something continue for longer than is necessary
- step up = to increase the amount of an activity.
- pipe = a tube through which a liquid (or) gas flows, oft

- under the ground.
10. diameter = a straight line going from one side of a circle to the other side.
  11. suspend = to officially stop something from continuing, especially for a short time.
  12. substations = a place where electricity is passed on from the place that produces it into the main system.
  13. rotor = a part of a machine that turns around on a fixed.
  14. residential = living at a place while you are doing something.
  15. investment = something that you buy (or) do b/c d will be useful later.

### UNIT 3

## SPANNER IN THE ROBOT'S WORKS

Lecture note by Daw Nyein Nyein Htun of YTU.

*The text titled **Spanner in the robot's works** is about industrial robots. The title is an idiomatic expression. A spanner in the works means ruin or sabotage of a plan, scheme, etc. So, the title is defined that something can obstruct the robot's works. The text consists of seven paragraphs.*

The contemporary industrial robot, in the eyes of politicians and others, may wear the halo of high technology, but it came into being to meet a rather mundane need. In the booming labour market of the early 1960s it became increasingly difficult to find people willing to do boring, repetitive and unpleasant jobs. What was needed was not a machine which could master elaborate human skills, but one which could provide the mindless manpower demanded by mass production.

*Three main ideas are discussed in the first paragraph. The first one is that the modern industrial robot is designed to meet the mundane need. The second is that unwillingness of human labourers to do repetitive and boring jobs. The third one is that robots are taking into place of human workers due to the great demand of mass production.*

What had to be learnt, and proved well within the robot's capacity, were sequences of precise movement of the arm and hand. Such sequences were relatively easily programmed into a computer memory, especially after the advent of the microprocessor freed robots from their dependence on the giant mainframe computers of the 1960s. But however impressive, even uncanny, a robot may appear to the layman as it repeats a series of movements with flawless precision, it is in fact operating blindly and by rote.

*Although a robot seems to be impressive and mysterious, it is not compared to skilful personnel. It looks like a layman lacking creative power. And they have fairly limited skills. But, we look at it from the bright side, the capacity of robot*

*is wonderful. With the use of the arm and hand, a robot can work the sequences of precise movement. These sequences are programmed into a computer memory. A robot can carry out the repetitive jobs without making any faults.*

Repetitive manipulation is, of course, a skill common to many machines: what differentiates the robot is that it makes use of an articulated arm analogous to the human limb and that it can be reprogrammed to perform a whole variety of tasks without the need to redesign or adjust its mechanical components. There are, however, a limited range of applications in which a manipulator arm, operating blindly and without intelligence, is useful.

*Although it is a kind of automated machines, a robot has two advantages over machines. The first advantage is that it makes use of the articulated arm, consisting of two or more parts which bend where they are joined, as human beings have. Another one is that it can be reprogrammed to perform a whole variety of tasks without the need to redesign or adjust its mechanical components.*

Whatever its task, a robot is dependent for its effectiveness upon a whole supporting cast of automated machines. Everything must be presented to it in consistent positions and orientations; it can only operate in a world of guaranteed predictability. The need to provide an automated environment has so far restricted robot use to large scale industry; businesses such as specialist machine shops, producing small batches of many different items, have little incentive to set up the paraphernalia of conveyors, jigs and electronic communication which a robot requires.

*A robot is dependent on the automated machines at any task. With the help of these machines, everything must be presented to it consistently. A robot's necessary equipments such as conveyors, jigs and electronic communication cost so much that a robot can only be used in large scale industry. Therefore, robots are not suitable for use in specialist machine shops because they involve a substantial investment in equipment.*

Those who leap to the conclusion (that the provision of more and more robots is a guaranteed elixir of industrial health should also be aware that there is a substantial) body of opinion which argues that, rather than being the universal worker of the future, the robot is no more than a stop-gap

expedient forced upon us by the limitations of insufficient and inadequate automation. Automation, the argument goes, achieves its really spectacular successes when it abandons the attempt to do things in ways based on human skills and finds solutions that are quite novel and intrinsically mechanical. Replacing wire circuits, which are fiddly for human beings and virtually impossible for machines to assemble, with printed circuits which machines can manufacture with ease is an obvious example. The need for robots arises, it is suggested, only because imperfect automation has left a number of gaps in the industrial scheme of things which require the particular skills of the human or robot-hand. But this is a temporary state of affairs which will be remedied when a new generation of automated equipment dispenses totally with anthropomorphic methods.

*But some people argue that the provision of more and more robots is only for the industrial progress, but not suitable in every situation. And the robot is used for a short time as there are the limitations of insufficient and inadequate automation. But automation really gets its impressive success when it does not use the attempt of human skills. Printed circuits are an example of a development which does not follow traditional production methods.*

Against this view are those who argue that the robot has the potential to climb the ladder of skills and intelligence so rapidly that it will outpace any conceivable advances in automation. Moreover, it is claimed, the arguments in favour of 'hard' automation ignore economic realities. Industry will not be able to afford the kind of investment that is required to install complex, special-purpose machines, with all the attendant risks of premature obsolescence if products or methods suddenly change.

*Those who defend robots argue that they are a more practical solution than automation. As robots have the potential to climb the ladder of skills and intelligence so rapidly that they will outpace any believable advances in automation. They also claim that the difficult automation take no notice of economic realities. Installing advanced machines is beyond what the industries afford. Even if they can, it is very risky for them since the machines are likely to be obsolete in no time.*

The robot offers a sensible half-way house; it provides an economic (and relatively reliable) substitute for human labour while also having a degree of flexibility that is attractive. What has yet to be established is that robots have it in them to advance from the status of blind, preprogrammed serfs to that of a skilled and adaptive labour force, capable of learning new tricks and acting on their own initiative without the need for human tutelage at every stage.

*The help of robots is remarkable. It serves as a half-way house; it provides a combination between an economic substitute for human labour and its attractive flexibility. And robots have advanced from the status of blind, preprogrammed serfs to that of a skilled and adaptive labour force. And they can learn new tricks and act on their own initiative without being taught at every stage.*

### Exercise I

Look at paragraphs 1-4 and find words or phrases which mean the same as:

- a. was designed (1) .....
- b. ordinary (1) .....
- c. flourishing (1) .....
- d. arrival/appearance (2) .....
- e. mysterious (2) .....
- f. non-expert (noun) (2) .....
- g. faultless (2) .....
- h. from memory (2) .....
- i. connected by joints (3) .....
- j. similar (3) .....
- k. parts (3) .....
- l. quantities (4) .....
- m. encouragement (4) .....
- n. complicated arrangement (4) .....

**Check!**

**Key to Exercise I**

- a. *came into being*
- b. *mundane*
- c. *booming*
- d. *advent*
- e. *uncanny*
- f. *layman*
- g. *flawless*
- h. *by rote*
- i. *articulated*
- j. *analogous*
- k. *components*
- l. *batches*
- m. *incentive*
- n. *paraphernalia*

**Exercise II**

Now complete these statements by choosing the answer which you think fits best.

1. This article makes it clear that, contrary to popular opinion, robots
  - a. were designed to replace human labour.
  - b. have been in use for many years.
  - c. have fairly limited skills.
  - d. cannot be classed as high technology.
2. After the 1960s, robots became more
  - a. convenient to use.
  - b. accurate in operation.
  - c. widely used.
  - d. consistently reliable.
3. Robots differ from other machines in that
  - a. they react like human beings.
  - b. they need little maintenance.
  - c. they have a limited number of applications.

- d. they are easy to switch from task to task.
4. Robots are not suitable for use in specialist machine shops because they
- a. involve a substantial investment in equipment.
  - b. are not designed to produce small items.
  - c. take up too much floor space.
  - d. take too long to install.
5. Those who doubt the robot's future see it as merely
- a. a money-saving measure.
  - b. a short-term necessity.
  - c. an amusing curiosity.
  - d. a passing fashion.
6. Printed circuits are an example of a development which
- a. will soon be replaced by more advanced processes.
  - b. is especially suited to robot production.
  - c. does not follow traditional production methods.
  - d. still has several areas for improvement.
7. Those who defend robots argue that
- a. they will develop at the same rate as automation.
  - b. they will reduce the level of unemployment.
  - c. they are a more practical solution than automation.
  - d. they have more intelligence than we realise.

***Check!***

***Key to Exercise II***

- 1. C
- 2. A
- 3. D
- 4. A
- 5. B
- 6. C
- 7. C

## Modal verbs

### Ability

Look at these examples

e.g. The bath plug *could not have been* invented before the bath.

.....it *can* only operate in a world of guaranteed predictability

..... industry *will not be able* to afford. . .

*Can, could* and *be able to* express mental or physical ability.

Present - *can* is more commonly used than *be able to*. The latter tends to suggest particular difficulty:

e.g. How many languages can you speak?

Are you able to concentrate on your work when the children are at home?

How often are you able to get home on leave?

Past - in affirmative sentences, there is a distinction between the use of *could* and *was/were able to*. *Could* is only used to express general ability:

e.g. Whenever you passed their house you *could* hear them arguing!

I *could* never find a taxi when I wanted one.

For specific instances of ability, *was/were able* is used:

e.g. *Were* you able to find a taxi?

(Note: *did you manage to* would also be possible.)

In negative sentences, *couldn't* & *can* be used in both general and specific cases of ability. *Wasn't/weren't able to* is also possible and again, often suggests an element of difficulty.

PRESENT, PERFECT and FUTURE—since *can* has no infinitive, these tenses are formed with *be able to*.

### COULD + PERFECT INFINITIVE

e.g. I *could have been* famous once.

In this case, ability existed but wasn't realized. There may be a conditional element:

e.g. I *could have been* famous, if only I'd been given a chance.

Remember also the possibility of a reproach with this form:

e.g. You *could have opened* the door! You saw that I had my hands full.

## Obligation

Look at these examples:

- e.g. What *had to* be learnt. . . were sequences of precise movements.  
 Everything *must* be presented to it in consistent positions. . .  
 Those who leap to the conclusion that. . . *should* also be aware. . .

### 1. MUST

#### (A) MUST VS. HAVE TO

*Must* expresses an 'internal' obligation, one which comes from the speaker. *Have to* expresses an 'external' obligation, one which is more remote and impersonal.

Compare the following sentences:

- I *must* get to the bank today. (I'm short of money)
- I *have to* see the bank manager this afternoon. (He asked me to call in.)
- You *must* pay your rent a week in advance. (Landlady speaking)
- You *have to* pay a deposit against breakages. (Accommodation agency explaining particular conditions)

#### (B) MUSTN'T & DON'T HAVE TO

*Mustn't* expresses negative obligation:

- e.g. You really *mustn't* talk to your father like that!

*Don't have to* expresses an absence of obligation. Compare the use of *needn't* below:

- e.g. You *don't have to* have a comprehensive insurance policy for your car (by law) but it's a good idea.

#### (C) OTHER TENSES

In the *past*, obligation is expressed by *had to*. Absence of obligation is expressed by *didn't have to* or *didn't need to*. In the future, *must* can be used when the obligation already exists:

- e.g. I *must* do well in my exams next month.

*Will have to* is used when the obligation will only occur in the future (usually as result of a condition):

- e.g. If I fail my driving test first time, I'll *have to* take it again.

## 2. NEED

NEED TO expresses a weaker obligation than *must* or *have to*. It exists both as a modal auxiliary and as an ordinary verb but its use as modal auxiliary is mainly limited to:

- a. Questions in the present tense:  
e.g. Need you be quite so untidy?
- b. Negative sentences in the present tense expressing lack of necessity:  
e.g. You needn't bother to go to the Post Office. I've got some stamps.
- c. Needn't have done (see below).

### DIDN'T NEED TO VS. NEEDN'T HAVE

There is a difference in meaning between these two forms. Compare the following sentences:

- I *didn't need to* hurry because I was in plenty of time.
- I *needn't have* hurried because the meeting started much later than scheduled.

In the first sentence, it wasn't necessary to hurry and the speaker *didn't hurry*. In the second sentence, the speaker *did* hurry although he later discovered that it hadn't been necessary.

## 3. SHOULD / OUGHT TO

*should* and *ought to* express obligation, duty or advice. Though they are very similar in meaning and can sometimes be interchangeable, *ought to* tends to carry more weight, suggesting moral obligation rather than mere advisability.

e.g. You *should* always wear protective glasses when you use a sun-ray lamp.

You really *ought to* apologise, you know. You were in the wrong.

As with other modal verbs, the past is formed with the perfect infinitive:

e.g. I suppose I *should* have let you know I was coming.

You *oughtn't to* have lost your temper like that. It was inexcusable.

**Exercise I**

Rewrite the following sentences by replacing the words in *italic* with the correct form of one of the modal or ordinary verbs in the sections on *Ability* and *Obligation* in this Unit. Make any other changes necessary.

- a. I *was supposed to* finish the report by today but now they *will have no choice but to* wait for it.
- b. Luckily enough, I *managed to* get hold of some tickets which had been returned to the box office.
- c. *We weren't obliged to* wait a long time in the doctor's surgery. The receptionist told us to go straight in.
- d. *It was in your power to* do a lot more to help people than you did.
- e. *It's important for me to* come to a decision soon. Otherwise I might lose the chance.
- f. I miss having a view. In my last house *it was possible to* see for miles on a clear day.
- g. If you want to apply for a council improvement grant, *it is compulsory to* fill in Form RYC 44.
- h. When *will it be possible for you to* deliver the new computer?
- i. *It wasn't necessary to* buy all those provisions. We're only going for a weekend, not a month!
- j. *It was thoughtless of you not to* give me a hand with the washing up. After all, it was your friends we had to dinner, not mine!
- k. *Is it really necessary for you to* ask my advice about every little matter?
- l. *Don't bother to* make out a receipt. I only throw them away.
- m. Do you think *it would be advisable for me to* book a seat in advance?
- n. Perhaps *it would have been wise to* think of the consequences before you told the boss to drop dead.

***Check!***

**Key to Exercise I**

- a. *I should have finished; they will have to wait*
- b. *I was able to get hold of*

- c. *We didn't have to wait*
- d. *You could have done*
- e. *I must come to a decision*
- f. *I could see*
- g. *you have to fill in*
- h. *will you be able to deliver*
- i. *You (we) needn't have bought*
- j. *You could have given me a hand*
- k. *Need you / Do you really have to / Must you ask my advice*
- l. *You needn't make out*
- m. *I should / ought to book*
- n. *you should / ought to have thought*

## UNIT 4

### COMPUTER HACKING – HIGH-TECH CRIME

Lecture note by Daw Sandar Soe of YTU

*In this unit, you are given an article about computer hacking. Based on this article, you are asked to find out some specific information and to do two exercises so that the following reading skills will be developed:*

- *reading for specific information and*
- *guessing meaning from context.*

*With regard to grammar, you are going to study "infinitives and gerunds."*

*Read the following article to find out:*

1. *What computer hacking is.*
2. *Why the hackers do what they do.*
3. *How seriously companies are taking the problem.*

*When you read the given article, I'll give you a **detailed explanation** of it so that you can understand it clearly and will be able to decide which parts of the text, i.e. the article, are worth reading in more detail later in order to find out the above information.*

*You are also given a **glossary** at the end of this unit. When you read the text, you can come across some unfamiliar words whose meanings you can't ignore as they help with your reading purpose. In that case, first you have to guess their meanings from the context, i.e. the words and sentences surrounding them. Then check your guess against the words' definitions given in the glossary.*

*Now, read Paragraph 1, 2 and 3. I'll explain you about these three paragraphs together.*

Para

You can rob a bank without leaving the house these days. Who needs stocking masks, guns and getaway cars? If you're a computer whizz-kid, you could grab your first million armed with nothing more

1

dangerous than a personal computer (PC), a telephone and a modem  
5 to connect them.

All you have to do is dial into the networks that link the  
computers in large organizations together, type in a couple of  
passwords and you can rummage about in the information that's  
stored there to your heart's content. 2

10 Fortunately it isn't always quite as easy as it sounds. But, as 3  
more and more information is processed and stored on computer,  
whether it's details of your bank account or the number of tins of  
baked beans in the stockroom at the supermarket, computer crime  
seems set to grow.

*If you are a young computer expert having a computer, a telephone and  
a modem, you can rob a bank and get million dollars without leaving your house or  
without using stocking masks, guns and cars that can be used to run away. You can  
just use the networks that connect the computers in large organizations together and  
type in a few secret words so that you can search for the information stored there as  
much as you want. Luckily, committing such crime is not as easy as what people think.  
But the more information, which is either details of your bank account or the number  
of things kept in the storeroom of the supermarket, is typed and stored on computer,  
the more computer crimes grow.*

*Now, lets move on to paragraph 4, and then paragraph 5.*

Para

15 A couple of months ago a newspaper reported that five British 4  
banks were being held to ransom by a gang of hackers who had  
managed to break into their computer. The hackers were demanding  
money in return for revealing exactly how they did it. In cases like  
this, banks may consider paying just so they can protect themselves  
20 better in the future.

*A few months ago, a newspaper reported that five British banks were being  
asked for money by a group of computer experts who had succeeded in secretly*

*entering their computers. The hackers were asking for money because they had to explain how they did it. In cases like this, banks are likely to pay the amount of money they are asked for in order to protect themselves better in the future.*

Para

No one knows exactly how much money is stolen by keyboard  
 criminals - banks and other companies tend to be very secretive if it  
 happens to them. It doesn't exactly fill customers with confidence if  
 they think their bank account can be accessed by anyone with a PC!  
 25 Some experts believe that only around a tenth of all computer crimes  
 are actually reported. Insurance company Hogg Robinson estimate  
 that computer frauds cost British companies an incredible £ 400  
 million a year.

5

*As banks and other companies do not want to announce the amount of money stolen by hackers, no one knows the exact amount of it. They don't want to do so because their customers will no longer trust them if they think their bank account can be searched on a computer screen by anyone with a personal computer. Experts believe that only about one tenth of computer crimes are reported. Insurance company Hogg Robinson estimate that computer crimes cost British companies an unbelievable £400 million every year.*

*Again, read paragraphs 6, 7, 8, and 9.*

Para

Most computer crimes are 'inside jobs', where staff with access to  
 30 the company's computers fiddle with the records. A comparatively  
 small amount are committed by the more glamorous - and headline-  
 grabbing - hackers.

6

The true hacker, it seems, doesn't do it for financial gain. The  
 thrill appears to be, not in getting rich, but in beating the system. Two  
 35 of Britain's most notorious hackers are Nicholas 'Mad Hacker'  
 Whiteley and Edward Singh. The renegade pair have been the

7

scourge of organisations with insecure computers for years, seemingly competing for the title of Britain's best hacker.

Whiteley's hacking days came to an abrupt halt in June, when 8  
40 the 21-year-old was sent to prison for four months for damaging computer discs. Edward Singh first came to public attention after claiming that he had hacked into American and British government and military computers.

'It has never been my intention to steal anything,' said 9  
45 Singh. 'I really see myself as a highly skilled software engineer.' His mission seems to be to prove just how insecure their systems are.

*Most computer crimes are 'inside jobs.' It means that these crimes are committed by staffs who are working in the same organization. They who are working on the computers make small changes to the recorded data. However, a small amount of crimes are committed by the more interesting and exciting people who want to be famous in the media. The true hacker may do that not for getting money, but for winning the computer system of the organisation. Two of Britain's most unfavourably well-known hackers are Nicholas 'Mad Hacker' Whiteley, who is 21 years old, and Edward Singh. They, who live separately in society, have caused a lot of trouble to organisations with insecure computers for years. They may have done this because they want to become Britain's best hackers. But Whiteley's hacking days suddenly stopped in June when he was sent to prison for four months for damaging computer discs. People first noticed Edward Singh for his declaration that he had broken into American and British government and military computers. He said he had no intention to steal anything, and he sees himself as a software expert. He seems to do this in order to prove that their computer systems are very insecure.*

*Now, I'd like you to read paragraphs 10, 11, and 12.*

Para

As with everything else, hackers start young in the States. A 10  
12-year-old boy in Detroit was accused of entering a company's credit rating computer and distributing the numbers he found there.  
50 His mother told reporters that he spent up to 14 hours on his

computer during the weekend. 'He didn't bother me,' she said. 'I figured, computers that are the thing of the day.'

Last month, two New York teenagers, one aged 14 and one aged 17, were charged with breaking into a computer system owned by a company that publishes computer magazines. They are alleged to have changed polite recorded greetings to rude messages, added bomb threats and wiped advertisers' orders.

Customers linked into the system only to be told that 'Daffy Duck is not available!' The company estimates that the tampering has cost \$2.4 million.

*In the United States, hackers happen to be young people. A 12-year-old boy in Detroit, the city in Michigan State, was told that he had broken into a company's credit rating computers and distributed the numbers he found there. But his mother told reporters that her son's interest in his computers didn't upset her. Again, last month, two New York teenagers were accused of entering a computer system of a company that publishes computer magazines. People think that they have changed polite recorded greetings to rude messages, added bomb warnings and removed the orders of advertisers. So, customers connected the system in order to know whether it has actually been entered by the hackers. The company estimates that making up for interference cost \$2.4 million.*

*Let's go to the last two paragraphs now.*

- Prevention is probably easier than detection, and many companies now spend lots of time and money devising programmes using passwords and codes. Of course, all this is no use at all if computer users tell each other their password, stick it on their screen so they don't forget it or use passwords like 'password'. It all happens.

There are plenty of software companies who specialise in writing software that make computers hacker-proof. One company in the States set out to prove that its system can defeat hackers by

asking over 2,000 of them to try to hack in. The hackers were given  
 70 two weeks to discover the secret message stored on two PCs in  
 offices in New York and San Francisco. The message reads: 'The  
 persistent hunter who wins his prize sooner or later becomes the  
 hunted.' You'll be relieved - or perhaps disappointed - to learn that  
 not one hacker managed it.

*These two paragraphs will tell you how companies are trying to prevent from being hacked. As prevention is easier than detection, many companies now spend a lot of money and time in creating programmes that use passwords and codes. But, if computer users tell each other their passwords and codes, their creation will become useless. Now, there are many software companies who write software that make computers not to be hacked. In order to prove that its system is effective, one company in the United States challenged over 2,000 of hackers to hack in it. The hackers were asked to discover the secret message which had been stored on two PCs in offices in New York and San Francisco within two weeks. The message is 'The persistent hunter who wins his prize sooner or later becomes the hunted.' But it was found that no hacker was able to find it.*

*Now, it's time for you to answer the above questions. You can check your answers with my suggested ones.*

1. *Breaking into the computer system of an organisation in order to use or change confidential information, or to steal money.*
2. *They may do it for fun, for financial gain or for the challenge involved in proving how insecure the computer systems of organisations are.*
3. *Many companies are spending a lot of time and money creating special programmes to make their computer systems secure against hackers.*

*Now, do the following exercises. In **Exercise I**, you'll have to find words or phrases in the text whose meanings are closely the same as the given ones. By doing this exercise, your **skill of guessing the meaning of unfamiliar words from context** will be developed. Then, **Exercise II** is a **multiple choice** exercise in which you are asked to choose the best answer for each of the given unfinished sentences. You can **check your understanding of the text** with the help of this exercise.*

**Exercise I**

Find words or phrases in the text which mean the same as:

Paras 1- 6

- a. expert (especially at a young age) .....
- b. search through .....
- c. as much as you want .....
- d. be called up on a computer screen .....
- e. make small changes to/interfere with .....

Paras 7-11

- f. rebellious/lawless .....
- g. caused a lot of trouble to .....
- h. aim in life .....
- i. removed completely .....
- j. interfering with (without permission) .....

**Check!**

<b>Key to Exercise I</b>	line
a. <i>whizz-kid</i>	3
b. <i>rummage</i>	8
c. <i>to your heart's content</i>	9
d. <i>be accessed</i>	24
e. <i>fiddle</i>	30
f. <i>renegade</i>	36
g. <i>been the scourge of</i>	36-37
h. <i>mission</i>	45
i. <i>wiped</i>	57
j. <i>tampering</i>	59

**Exercise II**

Now complete these statements by choosing the answer which you think fits best.

1. Banks may pay computer criminals
  - a. to give back information they have stolen.
  - b. to explain what their technique is.
  - c. not to commit the same crime again.
  - d. not to pass on information they have stolen.
2. Companies don't always report computer crime because they
  - a. think it would create bad publicity.
  - b. don't expect the criminals to be caught.
  - c. don't want the police to investigate.
  - d. think criminals members of their staff.
3. The computer hackers' motive seems to be
  - a. to win a competition.
  - b. to take a lot of money.
  - c. to overcome a challenge.
  - d. to appear in the newspaper.
4. The mother of the 12-year-old hacker in Detroit
  - a. had been worried about the time her soon spent at his computer.
  - b. thought her son's interest in his computer was normal.
  - c. had been involved in her son's criminal activity.
  - d. had tried to prevent her son's criminal activity.
5. What was the result of one software company's attempt to prove that its security systems were effective?
  - a. It was a complete success.
  - b. It was a partial success.
  - c. It was a failure.
  - d. The results were inconclusive.

***Check!***

***Key to exercise II***

1. B
2. A

3. C
4. B
5. A

### Focus on Grammar: Infinitive and Gerund

The base form of a verb (e.g. go) often functions as an infinitive. It is called the bare **infinitive** or **plain infinitive** because it is used without "to". But, when "to" is used in front of the base form of the verb (e.g. to go), we call this verb as the **to-infinitive** or the **full infinitive**. Now, study the following notes about infinitives.

**1 The full** The full infinitive is used:

#### **infinitive**

*a* to express purpose:

e.g. The hackers were given two weeks *to discover* (para 14)  
the secret message...

It has never been my intention *to steal* anything... (para 9)

*b* after certain verbs (e.g. hope, expect, want, manage, tend etc):

e.g. Banks and other companies tend *to be* very (para 5)  
secretive...

*c* after the objects of certain verbs (e.g. want, ask, tell, advise etc):

e.g. I advise you *to pay* the greatest attention to  
what I'm going to say.

*d* after certain auxiliary and defective verbs (e.g. be, have, ought, used, need etc):

e.g. Do you really need *to be met* at the station?

*e* after adjectives:

e.g. You'll be relieved- or perhaps disappointed to (Para 14)  
learn ...

*f* as grammatical subject:

e.g. *To travel* hopefully is better than *to arrive*.

*g* after too/enough:

e.g. This plate is far too hot *to touch*.

He wasn't experienced enough *to handle* the job.

## 2 The plain infinitive

The plain infinitive is used:

*a* after certain modal auxiliaries and modal 'dare' and 'need':

e.g. How dare you *speak* to me like that?

... their bank account can *be accessed* by anyone with a PC!

(para 5)

*b* after the objects of certain verbs (e.g. make, let):

e.g. He let me *persuade* him to join us.

*c* after the following expressions: would

rather/sooner...(than); had better; Why not ...

e.g. You'd better *be telling* the truth!

I'd rather *leave* now, if that's all right.

Why not *take* a few days' holiday?

*The-ing form of a verb (e.g. going) sometimes functions as a gerund (i.e. a kind of noun). In other words, gerunds are formed from verbs and always end in -ing, and they behave like a noun. The gerund can be the subject or the object of a verb; for example,*

▪ *Swimming is a good form of exercise.*

*In this sentence, the gerund 'swimming' is used as the subject.*

▪ *I enjoy swimming.*

*In this sentence, the gerund 'swimming' is the object of the verb.*

*Now, study the following notes about gerunds. Then do the exercises.*

### 3 The gerund

The gerund is used:

- a* after prepositions (e.g. in, of, to, without, at. etc)  
e.g. He succeeded in *passing* his driving test.  
You cannot live without *making* mistakes.
- b* after these verbs: avoid, dislike, enjoy, finish, give up, go on ,  
can't, help, keep (on), mind, practise.  
e.g. You should practise *saying* 'six Swiss wrist watches.'  
I can't help *laughing*.
- c* in the common expressions such as: It is no good/ no use/ not  
worth + - ing  
e.g. It's no good *asking* me about algebra - I never did maths  
at school.  
It's no use *crying* over spilt milk. (proverb)

#### Exercise I

Complete the following article by putting the verbs in brackets into the correct form: gerund, plain infinitive or full infinitive (active or passive).

#### Offenders sent to island in the sun

Thirteen young offenders from London are being sent (spend) a year on a Caribbean island in an experiment aimed at (combat) crime and broken families.

The young people - aged 15-17 -are (train) in Denmark for six years before(go) to the West Indian island of St Vincent (live) in a small communal farm at the foot of a volcano.

The school is run by a Danish co-operative which specialises in (provide) challenges for difficult young people (build) up their confidence with adults.

The two London boroughs whose social services departments are responsible for (introduce) the scheme say they are sending the young people so they can (learn)(face) up to challenges which they have no opportunity of (meet) on the streets of the capital.

All the young people have been in the care of the authority for some time and need (receive) their parents' permission before (allow) to leave. They are (accompany) and (supervise) by social workers.

Other London boroughs are showing an interest in (adopt) the scheme, particularly as it works out cheaper than (keep) young offenders in homes in London.

**Check!**

**Key to Exercise I**

*to spend; combating; to be trained/being trained; going; to live;  
providing; to build; introducing; learn; to face; meeting;  
to receive; being allowed; to be accompanied/being accompanied;  
supervised; adopting; keeping.*

**Exercise II**

Finish each of the following sentences so that it means the same as the sentence above it. In each case, use a gerund, plain infinitive or full infinitive.

- 1 It's high time we were leaving!  
We'd better \_\_\_\_\_
- 2 I never expected such congestion on the roads.  
I never expected the roads \_\_\_\_\_
- 3 She concealed her nervousness from us.  
She didn't let us \_\_\_\_\_
- 4 I'm on duty from 6 pm till midnight.  
My job involves \_\_\_\_\_
- 5 You've got a nerve, implying that it was all my fault.  
How dare you \_\_\_\_\_
- 6 Is it really necessary for me to type the application?  
Does the application \_\_\_\_\_
- 7 It was good of you to vote for me. I really appreciated it.  
I really appreciated \_\_\_\_\_
- 8 You seem to do nothing but complain. I've had enough of it.  
I'm fed up \_\_\_\_\_

**Check!**

**Key to Exercise II**

1. *leave*
2. *to be so congested*
3. *know/see how nervous she was*
4. *working from 6pm till midnight*
5. *imply that it was my entire fault*
6. *really need to be typed*
7. *your voting for me*
8. *with (all) your complaining/your continual complaining*

**Glossary**

- hack** (v) : to secretly find a way of changing information on somebody else's computer system without permission.
- hacker** (n) : person who uses the information in a company's computer system without permission.
- stocking mask** (n) : a kind of mask usually used by robbers.
- getaway car** (n) : a car used by robbers when they try to escape after committing a crime.
- whizz-kid** (n) : a person who is very good and successful at something, especially at a young age.
- grab** (v) : to hold or take sb/sth with your hand suddenly, firmly or roughly; seize.
- armed with** (adj) : knowing something or carrying something that you need in order to help you to perform a task.
- rummage** (v) : to move things around carelessly while searching for something.
- process** (v) : to perform a series of operations on data in a computer.
- modem** (n) : a device that connects one computer system to another using a telephone line so that data can be sent.
- stockroom** (n) : a room for storing things in a shop/store, an office, etc.
- fraud** (n) : the crime of deceiving somebody in order to get money or goods illegally.

- access** (v) : to open a computer file in order to get or add information.
- around** (adv) : approximately
- fiddle with** (v) : make small changes to something because you are not satisfied with it.
- glamorous** (adj) : attractive and exciting.
- commit** (v) : to do something wrong or illegal.
- notorious** (adj) : well known for being bad
- renegade** (n) : a person who opposes and lives outside a group or society that he used to belong to.
- scourge** (n) : a person or thing that causes trouble.
- abrupt** (adj) : sudden and unexpected.
- figure** (v) : to think or decide that something will happen or is true.
- allege** (v) : to state something as a fact but without giving proof.
- inside job** (n) : the work known or done by somebody in a group or an organisation.
- wipe** (v) : to remove something that was recorded on a tape, etc.
- credit rating** (n) : a judgment of how likely you are to pay money back if you borrow it or buy things on credit.
- persistent** (adj) : determined to do something even though it is difficult or other people are against it.
- charge sb (with sth/doing sth)** (v) : to accuse somebody of something, especially formally in a court of law.
- tamper** (v) : to make changes to something without permission, especially in order to damage it.
- to your heart's content** ( idm) : as much as you want.
- hold sb to ransom** ( idm) : to keep somebody as a prisoner and demand that other people pay you an amount of money before you set him free.

## UNIT 5

### EQUAL AT WORK?

Lecture note by Daw Htay Thidar Oo of YTU

*Before you read the passage, please read the following pre-questions first.*

1. *What are the advantages of equality at work?*
2. *Pick out the jobs*
  - (a) *which are intrinsically suitable for men.*
  - (b) *which are intrinsically suitable for women.*

*Pilot in airliners, firemen, fork-lift truck drivers, military officers, receptionists, shop assistants, sales managers, apprentices, machinists, plumbers, dockers, hand-maids, smiths, skilled joiners, crane drivers, navigating and radio officers, mechanics, carpenters, seamstresses, detective superintendents, nightclub hostesses, secretaries, foremen, managers, nurses.*

*After answering these two questions, look at the questions that come after the passage. If you look at the questions before you read the passage, you can have an idea of what is important. Questions tell you what to expect from the passage. When you read with knowledge of the questions, you can know beforehand what kind of information to look for.*

*Now answer the following questions.*

1. What do you understand by the phrase 'the ring-fence of special women's employment' (lines 3)?
2. In what way is it suggested that women themselves have contributed to their inequality at work?
3. What does the expression 'blazed trails' (line 10) suggest about the achievements of the women mentioned?
4. What was unusual about the choice of crane driving as a job for the three women?
5. Why do you think there was pressure from schools for girls to take certain jobs?

6. Explain the phrase 'in paper terms' (line 4).
7. Why was equal pay legislation ineffective?
8. Explain in your own words what Maureen Marshall has gained, apart from equal pay.
9. What fear do women often have when addressing senior staff, according to Cristina Stuart?
10. What masculine characteristics does she suggest that women should cultivate in order to fight inequality at work?
11. What does it (line 58) refer to?
12. Explain 'it is second nature' (line 62).
13. What factors make equality at work hard to achieve?
14. What are feminine characteristics which bring about inequality at work?

*Let's have a look at paragraph 1.*

### **Paragraph 1**

In the early seventies, when the Department of Employment and EEC alike said the answer to women's low pay-and perhaps to poverty in general-was for women 'to break through the ring-fence of special women's employment', it seemed improbable this social transformation would ever be achieved.

*Let's break down this paragraph into manageable segments.*

1. *What was the problem?*

*The problem was that women did not get equality of opportunity, especially pay.*

2. *What was the solution to this problem?*

*Women had to break through the ring-fence of special women's employment.*

3. *Who initiated this social reform and when?*

*The Department of Employment and EEC alike in the early seventies.*

4. *What was the outlook on this solution?*

*It was believed to be an unattainable goal.*

*Let's move on to paragraph 2.*

**Paragraph 2**

Hedged about by our own self-images, as much as by the opposition of employers, unions and husbands, it looked as if it would be impossible for us to grasp that the roles of Pamela the Great Man's Handmaiden and Dora the tea-lady *were* roles, imposed from outside and not the limits of our capacities.

1. *What was the author's attitude on the roles that women had to take?*

*It was too much of an imposition on the women.*

2. *Who restricted/ limited the roles of women in work?*

*Employers, unions, husbands and above all, their own self-images.*

3. *What was not taken into consideration in deciding the roles?*

*The capacity of individual worker was not taken into consideration.*

*Let's move on to paragraph 3.*

**Paragraph 3**

Events since have demonstrated the untruth of these impressions. Women of all types have blazed trails in new areas, so that in a matter of a few years the impossible has happened. There are women piloting British airliners, women as navigating and radio officers on ships, women detective superintendents leading murder enquiries, women military officers performing strenuous training exercises—all on equal terms.

1. *What has brought into being?*

*The perception / idea which was thought to be impossible in the past has now brought into being incredibly. The women themselves could create new paths in difficult territory, like pioneers, and let the ways for others to follow.*

2. *What does the author imply?*

*There is nothing which is impossible. The professions or jobs which were regarded as male professions were taken upon by women.*

*Please read paragraph 4.*

#### Paragraph 4

The change has not been one of revolutionary speed but it has spread through a wide range of jobs. It is no longer only university graduates and the like who are breaking the boundaries of tradition. The late seventies was the time when June Wilson, a cleaning lady, Alison Crompton, a nightclub hostess, and Rosalba Turi, a clothing factory presser, left their 'traditional' jobs and became crane drivers. It was the time when Colette Clark and Margaret Chairman resisted all their schools' pressure for them to become shopgirls, clerks and seamstresses, to take up electrical trades apprenticeships. When Maureen Marshall gave up assembly work for skilled joinery. When Cristina Stuart who abandoned her secretarial work to travel the roads of Europe as a rep, became Sales Manager of her Publishing House.

1. *How fast is the change?*

*The change does not take place by leaps and bounds but unobtrusively.*

2. *How did they change their lives?*

*They left their traditional jobs for taking up challenging, well-paid and promising jobs which they had never dreamt of in their lives.*

#### Paragraph 5

Even without high-flying ambitions, work of a more masculine cast has strong advantages. At Maureen Marshall's factory in Doncaster, work had been traditionally segregated-even though, ironically, all the work involved was of a 'masculine' character in a joinery factory making doors, window-frames and even house fronts. The bulk of the labour, however, was female and it was the women who supplied the joinery work which was frequently very heavy. Meanwhile the men minded cutting machines and drove forklift trucks at higher rates of pay.

1. *Did the factories use to have sex discrimination in employment?*

*Yes. Heavy tasks were set for men.*

2. *Who were employed contrary to this policy?*

*Women in bulks were employed.*

3. *What was the reason of employing women in the place of men?*

*The women didn't mind different pay scales although they and men who did equal work under similar conditions.*

*Please read paragraph 6.*

### **Paragraph 6**

The men were allowed day-release to become skilled apprentices; the women remained, in paper terms, uneducated even after 28 years in the same factory, and even when they were privately skilled in advanced cabinet-making. The men, as qualified machinists, had the option of moving elsewhere if better jobs presented themselves. And they progressed up the firm to become foremen and managers. The women, technically unqualified, were considered good only for the exact job they were in, however skilled they might individually be. When equal pay legislation came into force, the pre-war past had been done by recognized qualified joiners, was downgraded by the employer to unskilled, and continued at an unequal rate to the men's. Maureen, whose foreman had encouraged her to move into the male area, was one of the few who got equal pay, and has a foot on the ladder towards supervisory work, or work options elsewhere.

1. *Did woman employees receive proper on-the-job training?*  
*They lacked opportunities to undergo proper on-the-job training.*
2. *How about the prospects of promotion?*  
*Since they didn't have formal qualifications, the prospects of promotion remained bleak for woman employees.*
3. *Did woman employees have freedom of choice if they felt it was time for a fresh challenge in another firm?*  
*No. They lack opportunity to move to other jobs.*
4. *Did the employer acknowledge the (real) capacity of individual?/ Was the individual's capacity acknowledged?*  
*No, but the women were considered good only for the exact job they were in.*
5. *What does the author imply?*  
*Women were considered to be lack of creativity.*
6. *What was the effect when equal pay legislation was enforced?*

*Sex discrimination was eliminated most of all from the workplace but their performance was still downgraded by employers.*

7. *What Maureen has gained through her attempt?*

*In addition to equal pay, she now has the potential for promotion and for moving to another job.*

**Paragraph 7**

Another problem for women, according to an industrial psychologist, is that 'they consistently undervalue themselves', taking a humble viewpoint. Cristina Stuart, in fact, has learned the male technique of making her own chances. 'There really are things you have to grow out of once you're moving, that sort of feeling you have at first of just being grateful for having a place on the bench alongside the big boys, that initial wondering when you're talking to directors and managers in other companies of whether it will come over as what you intend, or whether they'll take what you say as female chatter. You have to train yourself out of that female lack of assertiveness. At least, I don't think it is specifically female-you see it in men too-they have to make an effort when they move into management from another job, to get the style-though I think it's harder for women because it goes against a lifetime's training. And you've also got to counter that female tendency to be overhelpful, insufficiently competitive and wary.

1. *What were the feminine weak characteristics?*

- (a) downheartedness*
- (b) submissiveness*
- (c) over helpfulness*
- (d) lack of assertiveness*
- (e) lack of self-confidence*
- (f) conservativeness.*
- (g) lack of competitive spirit*
- (h) lack of self-esteem*

**Paragraph 8**

'And it is possible. Bit by bit, when you find things work, that you are effective, that you are indubitably really *there* as far as work results are concerned, any feeling that you are wearing a disguise gradually melts away. Suddenly you wake up one morning and you are a manager in the whole way you react and act and think, and it is second nature. There are an awful lot of girls in jobs below their capacities simply because of the way they think about themselves. In the end it all boils down to a matter of attitude'.

1. *What is the most important thing which the woman employees are lacking?*  
*Self-encouragement.*
2. *What does the author blame for inequality at work or for being downgraded at work?*  
*The author blames on their attitude which is the second nature.*

**Paragraph 9**

It is evident that women can, and are, adapting themselves to male professions. But for true equality, why can there not be further stage-unmentioned as yet-valuing women's jobs properly. Why should not a nurse or a home help be considered as valuable and paid as well as a carpenter or plumber? When this equation is solved, equality will be here.

1. *What is the problem with careers?*  
*Some of the careers taken on by women are not considered as valuable as those by men.*

*Please answer the questions that follow the passage.*

***Check!***

**Key to Text**

1. *The barrier separating those jobs traditionally associated with women from the rest of employment; a barrier which it was extremely difficult for women to pass.*
2. *They had accepted their menial roles and believed themselves incapable of coping with more challenging work.*

3. *They have created new paths in difficult territory, like pioneers, and led the way for others to follow.*
4. *It was a job traditionally thought of as unsuitable for women.*
5. *Because schools tend to reflect the established views of society.*
6. *In terms of recognized qualifications/certificates etc.*
7. *Because women's work was then downgraded by employers and they continued to earn less than men.*
8. *She now has the potential for promotion or for moving to another job.*
9. *That what they say won't make a good impression.*
10. *Assertiveness; self-confidence; competitiveness.*
11. *Overcoming negative feminine attitudes/Adopting more masculine attitudes.*
12. *It is natural /instinctive.*
13. *Women's own poor self-images and their lack of assertiveness; the employers' trick of downgrading women's work so that unequal rates of pay persist.*
14. (a) *downhearted ness*  
 (b) *submissiveness*  
 (c) *over helpfulness*  
 (d) *conservativeness*  
 (e) *lack of assertiveness*  
 (f) *lack of self-confidence*  
 (g) *lack of competitive spirit*  
 (h) *lack of self-esteem*

*Let's move on to structure parts. The present perfect tense is the predominant structure in the passage.*

Look at these examples from the Text:

- *Events since have demonstrated the untruth of these impressions.*
- *Women of all types have blazed trails in new areas so that in a matter of years the impossible has happened.*
- *The change has not been one of revolutionary speed but it has spread through a wide range of jobs.*

- Cristina...*has learned* the male technique of making her own chances.

The present perfect tense has a strong connection with present time. When we refer to an event in the present perfect, we are usually concerned with the result or effect of that event as it applies to us now:

- I'm afraid he's left the office. (= he's not available to see you)
- You've ruined the carpet. (= we'll have to replace it)
- I've been to Mexico City. (= I have some experience of it)

Suggest what the following examples mean as far as the present is concerned:

- You've just missed the bus!
- The meeting has been cancelled.
- We've run out of petrol.
- She's been sacked.
- Have you tasted Portuguese 'caldeirada'?

There are two main uses of the present perfect:

1. a. to express an action which started in the past and has continued until the present:

e.g. *I've been off work with 'flu* since Monday.

b. to express a number of individual actions which have happened until the present:

e.g. He's *won* several medals for diving in the last few years.

Time expressions often used: *for, since, lately, so far, up to now, etc.*

2. to express an action which was completed in the past but where the time is not given:

e.g. *You've seen* the film. Would you recommend me to go and see it?

In this case, it is the present result of the action or event which is important.

Indefinite time expressions commonly used with this type of present perfect are:

***already, yet, never, before***

### **The present perfect continuous**

The present perfect continuous can often be used as an alternative to the present perfect simple to express an action which began in the past and has continued to the present. There may be a slight difference of emphasis:

1. The present perfect continuous emphasizes the process of the action rather than the action as a whole. Compare:

e.g. I've been waiting for an hour.

I've waited long enough!

It therefore tends to be used with verbs of continuous action (*stay, lie, work, read, study* etc) and in situations where an action has been repeated:

e.g.: I've been trying to get hold of you all day.

2. The present perfect continuous suggests that a situation is temporary rather than permanent. Compare:

e.g. He's been working for the Post Office for the last six months.

He's worked for the Post Office since he was 16.

3. The present perfect continuous is also used when the action in the recent past, which was continuous, is now complete but the results are still apparent:

e.g. 'Your hands are dirty. 'Yes, I've been cleaning the car'.

### Further points:

- a. The present perfect continuous is not usually used with those verbs which rarely occur in the present continuous. When it does, there is a special emphasis or a change of meaning.  
(See STUDY BOX and Exercise 1 below.)
- b. The present perfect continuous cannot be used to express a completed action, or where a quantity is expressed. Compare:
  - I've been collecting stamps all my life.
  - I've collected literally thousands of stamps!
  - I've been smoking all morning. I've smoked 30 cigarettes!

### Exercise I

Look at the following verbs and study two separate meanings. And complete the sentences using each of the verbs twice, with 2 different meanings.

see - view/watch (as e.g.)

- visit/meet (as e.g.)

hold - contain

- keep

depend - rely on

	- be influenced by
apply	- make an application
	- be relevant
fit	- be the right size
	- install
look	- appear
	- search

- a. Up to now, the discount.....only to children under 10. From next month, we're planning to extend it to children under 16.
- b. What do you mean, you're past it? In my opinion you (never) .....fitter in your life!
- c. She .....a lot of Mark lately. Do you think there's anything between them?
- d. Since I broke my leg, I.....on my daughter to see to the shopping and housework.
- e. He .....for jobs without success for months now.
- f. The hall .....300 people on some occasion, though you'd hardly believe it.
- g. As you ..... the film already, can you tell me if it would be likely to appeal to my young nephew?
- h. Sorry about the mess! The workmen.....a new boiler in the bathroom all morning.
- i. The success of the agricultural show .....very much on the weather in recent years.
- j. Oh there's *The Times*! I .....for it everywhere.
- k. They .....him as a political prisoner since 1984.
- l. All the shirts you've sent your father .....him perfectly so far.

## Exercise II

Complete the following passage with the correct form of the verb in brackets. Use the present, present perfect or past, simple or continuous, active or passive:

### Case notes of a nurse

Ward Sister Sarah Browne is responsible for the welfare of 28 patients on two wards at the London hospital where she (work 1) for the last 6 years.

She (direct 2) a staff of 12 working in three shifts. There are also as many as 15 student nurses who (assign 3) to the ward at any one time. It (calculate 4), she says, that 200 people - doctors, nurses, visitors, students - (move 5) through her general and acute medical ward in a day.

Sister Browne, who is 39, (qualify 6) as a nurse 20 years ago. She (work 7) as a clinical teacher and (do 8) research into psychotherapy for former smokers. Her working week easily (exceed 9) the 37 ½ hours she is supposed to work.

**08.45** The morning report (just/end 10) and Sister Browne (listen 11) as a qualified nurse (explain 12) the insulin injection she is about to give to a diabetic patient.

**09.38** Sister Browne (chat 13) by the bedside of an 85- year old woman who (wait 14) for a place in a home for two and a half years.

**11.33** Sister Browne (just/interrupt 15) by a telephone call. Whatever she (do 16), she finds herself being summoned to deal with queries and occasional emergencies. Whenever she (enter 17) a room, she (switch 18) on a light by the door to show staff and patients that she (arrive 19).

All the nurses (wear 20) flat white shoes which are essential to lessen the strain of being on their feet virtually all day. The floors are hard but Sister Browne says she (get used to 21) them and hardly (notice 22) her aching feet any more.

**12.18** Sister Browne (have 23) a kind word with an elderly patient who (recently/admit 24) and is very concerned about her dog and four cats. Pets are a particular problem for elderly patients who (live 25) alone for some time.

**15.01** Sister Browne (joke 26) with a patient who is, about to (take 27) to another part of the hospital for an X-ray. The ward (specialize 28) in chest diseases and Sister Browne (ban 29) smoking.

**15.55** Now that her shift (finish 30), Sister Browne (snatch 31) a moment's rest before driving home. She will be up again at six tomorrow to do the same shift.

***Check!***

**Key to Exercise I**

<i>a</i>	<i>has only applied</i>	<i>g</i>	<i>have seen</i>
<i>b</i>	<i>have never looked</i>	<i>h</i>	<i>have been fitting</i>
<i>c</i>	<i>has been seeing</i>	<i>i</i>	<i>has depended</i>
<i>d</i>	<i>have been depending</i>	<i>j</i>	<i>have been looking</i>
<i>e</i>	<i>has been applying</i>	<i>k</i>	<i>have been holding</i>
<i>f</i>	<i>has held</i>	<i>l</i>	<i>have fitted</i>

**Key to Exercise II**

*Note: The original text used the Present Simple to recount Sister Browne's various activities during the day. The Present Continuous could also be used and both possibilities are given in the answers below. The use of one or the other should, however, be consistent.*

<i>1</i>	<i>has been working/has worked</i>	<i>16</i>	<i>is doing</i>
<i>2</i>	<i>directs</i>	<i>17</i>	<i>enters</i>
<i>3</i>	<i>have been assigned/are assigned</i>	<i>18</i>	<i>switches</i>
<i>4</i>	<i>has been calculated</i>	<i>19</i>	<i>has arrived</i>
<i>5</i>	<i>move</i>	<i>20</i>	<i>wear</i>
<i>6</i>	<i>qualified</i>	<i>21</i>	<i>has got used to</i>
<i>7</i>	<i>has worked</i>	<i>22</i>	<i>notices</i>
<i>8</i>	<i>done</i>	<i>23</i>	<i>has/is having</i>
<i>9</i>	<i>exceeds</i>	<i>24</i>	<i>has recently been admitted</i>
<i>10</i>	<i>has just ended</i>	<i>25</i>	<i>have lived/have been living</i>
<i>11</i>	<i>listens/ is listening</i>	<i>26</i>	<i>jokes/is joking</i>
<i>12</i>	<i>explains/is explaining</i>	<i>27</i>	<i>be taken</i>
<i>13</i>	<i>chats/is chatting</i>	<i>28</i>	<i>specializes</i>
<i>14</i>	<i>has been waiting</i>	<i>29</i>	<i>has banned</i>
<i>15</i>	<i>has just been interrupted</i>	<i>30</i>	<i>has finished</i>
		<i>31</i>	<i>snatches/is snatching</i>

## UNIT 6

### THE COMPUTER

Lecture note by Daw Htay Thidar Oo of YTU

*The title of the passage is **The computer**. The topic is quite familiar to you. According to one famous author " To be productive and to participate fully in the Information Age, individuals must be computer literate.*

*In order for you to get important advance information, read paragraph one, first. This paragraph will tell you what the text will be about.*

*The automatic electronic digital **computer** is a machine that utilizes electronic to manipulate data expressed in a symbolic form according to special instructions in a predetermined but self-directed way. This complete definition is somewhat hard to absorb as a whole. Let's look at its individual parts.*

*It is the sentence which gives a vivid description of computer in terms of a category it belongs to and its function in a most compact way. Although it is a long sentence, it contains only one key idea. In order to find out the key idea in the sentence, you should ask two questions.*

1. *What is the sentence about?*
2. *What does it do?*

*The answers to those questions are*

1. *About a computer*
2. *Manipulates data.*

*So, the key idea is: **A computer manipulates data.***

*The rest of the sentence gives more information about that key idea.*

*The next step is to preview the text, which prepares you for the materials and helps you get your mind ready to receive new facts and ideas. In order to do this, look at the first sentences of each paragraph. The following sentences are the first sentence of each paragraph.*

- *First of all, the computer is a machine.*
- *Second, it is automatic.*
- *Third, it is electronic.*

- *Fourth, the computer is a symbol manipulator.*
- *Electronic devices are largely two- state devices.*
- *Fifth, the computer must follow specific rules in manipulating data.*
- *Sixth, the computer can follow the predetermined sequence in a self-directed way.*

*Just by looking at these sentences you can notice that the passage is organized by listing the detailed terms of the definition. Reading these sentences gives you a quick idea of what each paragraph will be about. So far, you've got a general idea of the text before you actually read it.*

*Then, take a few minutes to study the words or expressions in italics in the passage.*

*The next step is to look at the questions that are given after the passage. The purpose of doing this is for you to have a clear idea of what is important. Questions tell you what to expect from the text.*

*When you know the questions in advance, you know what kind of information to look for, which paragraph discusses which point.*

*Let's go into detail of each paragraph.*

## **Paragraph 2**

First of all, the computer is a *machine*. This means that it is inanimate and requires an outside power source. This also means it can perform only those activities for which the basic capabilities have been specifically designed into the machine. In other words, it is limited to its designed capabilities and such outside direction as can be given it. If separated from its outside power source, it ceases to function.

*The computer is a machine. It has no originality; it works according to the instructions given them. The computer needs electronic circuits and a set of instructions to perform desired operations. It also needs human being to input data or provide outside direction. Without electricity, it cannot be used.*

**Paragraph 3**

Second, it is *automatic*. This means that once started, it continues to run without outside interference.

*It will carry on the operation if there are any further outside instructions.*

**Paragraph 4**

Third, it is electronic; that is, it is made up of electronic circuits and runs on electrical energy.

*Since it utilizes electronic circuits, it can be called an electronic device. It needs to be supplied with electrical energy.*

**Paragraph 5**

Fourth, the computer is a symbol manipulator. It manipulates data, not physical entities. These data are represented as electronic impulses within the machine. The electronic impulses are combined to form number (digital) representations of data. Electronic circuits are used to manipulate these symbols.

*Once the computer is started and certain instructions are given, the electronic circuits in it make electronic impulse. When the impulses are combined number representations of data are formed. The computer manipulates these data.*

**Paragraph 6**

Electronic devices are largely two-state devices. For example, a switch is either on or off, a spot on the surface of a magnetic tape is either magnetized, or not magnetized a particular location on a punched card or punched paper tape is either a hole or it is not, and a particular point on a wire at a particular instant either contains an electrical impulse or it does not. It therefore seems natural and reasonable to use the base 2 or binary number system as the basic data-representation method in the computer. Only two digits exist in the binary number system, 0 (zero) and 1 (One). They can easily

be matched to the two states of the electronic devices. Combinations of 0s and 1s can be used to represent nonnumeric data as well as numeric data.

*This paragraph explains the binary number system which is used in the computer.*

### **Paragraph 7**

Fifth, the computer must follow specific rules in manipulating data. These rules are in the main, the rules of Boolean algebra. That is the computer can perform only the processes of addition, subtraction, multiplication, division, and comparison ( $a = b$ ,  $a < b$ ,  $a > b$ ), in addition to data transfer between components.

*The computer can perform the functions of comparison and data transfer between components, besides arithmetic functions. It accepts information, perform mathematical or logical operations with the information and then supply the results of these operations as new operation. But in order to allow it to manipulate data, there must be input of specific rules.*

### **Paragraph 8**

Sixth, the computer must follow a predetermined sequence of its allowable processes. That is, someone (the programmer) must prepare a finite sequence of the allowable individual operations, a program, for the computer to follow.

*A computer program is indispensable for the computer to perform predetermined sequence of its allowable processes.*

### **Paragraph 9**

Finally, the computer can follow the predetermined sequence in self-directed way. It can store the program within its own memory and then follow it through under its own direction, without further outside guidance. This stored-program characteristic is what differentiates the computer from other data processing machines. That is, the computer can be made, in effect, to learn a process, store the instructions in its memory, and follow them

through unaided by further supervision and direction. Since the instructions are stored in the memory and the memory is accessible to a user, the instructions can be changed. The computer can thus be given the ability to handle many different jobs. It is much more flexible than the "programmable" accounting machines because its programs are a sequence of logic and arithmetic operations. The availability of logic (decision-making) powers allow the machine to modify its operations while working on a job, making it more versatile and giving it great power to duplicate human cognitive mental processes.

*Computer can work through a series of problems and make thousands of logical decisions. In order for the computer to perform actions in sequence under its own direction, the program has been stored in its memory in advance. The computer is versatile because it can be used for performing many kinds of jobs.*

### **Paragraph 10**

In summary, then we find that the electronic digital computer is a symbol-manipulating machine that can be "instructed" to perform any sequence of logical or arithmetical operations on data. Further, these instructions are easily modified, either by being totally replaced or by being modified by the machine in accordance with results it obtains during an operation.

*This paragraph is a long factual piece. It is the summary of the main points in the text.*

*Let's look at the following exercise. Exercise I is a back reference.*

### **Exercise I**

What do the underlined words in the passage refer to?

1. its (line 4 ) =
2. This (line 6 ) =
3. Which (line 7 ) =
4. it's ( line 9 ) =
5. They (line 25 ) =
6. These rules (line 27 ) =

7. its ( line 46 ) =

**Check!**

**Key to Exercise I**

1. its ( line 4 ) = of the definition
2. This ( line 6 ) = That the computer is a machine
3. Which ( line 7 ) = the activities
4. its ( line 9 ) = of the computer
5. They ( line 25 ) = Two digits
6. These ruler ( line 7 ) = The specific rules used / applied in manipulating data
7. its ( line 46 ) = of the machine

Look at exercise II.

**Exercise II**

**Understanding what you have read:**

1. Which of the following sentences contains the main idea of the passage?
  - a. Electronic devices are largely two- state devices.
  - b. That is, the computer can be made, in effect, to learn a process, store the instructions in its memory, and follow them through unaided by further supervision and direction.
  - c. The electronic digital computer is a machine that utilizes electronic circuits to manipulate data expressed in a symbolic form according to specific rules in a predetermined but self-directed way.
  - d. The availability of logic ( decision-making ) powers allows the machine to modify its operations while working on a job, making it more versatile and giving it great power to duplicate human cognitive mental processes.
2. Decide whether the following statements are true or false.
  - a. Computers can start and run by themselves.
  - b. Computers can direct their own activities.
  - c. The binary number system uses only two digits.
  - d. Computer uses atomic circuits to manipulate electronic data.
  - e. The computer can follow an infinitely variable sequence of operations.

- f. Once started, computers do not need an outside power source.
3. Answer the questions in complete sentences.
- What will happen if the computer is disconnected?
  - Why is it called binary number system?
  - Where does the computer store the program?
  - What is the advantage of the computer over programmable accounting machines ?
  - What can the computer do when it is instructed?

*In Exercise II, No (1), you have to pick out the sentence which contains main idea of the passage. The sentences are taken from various paragraphs in the passage. Apart from sentence "c", the other sentences make too narrow a point to be the main idea of the passage.*

*The next ones are the true-false quiz and questions. To do this exercise, you have to read rapidly. You have to find specific facts in the passage, look for sentences that offer the needed information. Make sure that you know what information you are looking for. Read quickly. When you find what you are looking for, read slowly the part of the line that tells you what you want to know.*

**Check!**

**Key to Exercise II**

- c
- a. False b. False c. True d. True
- If the computer is disconnected, it ceases to function.
  - It is called binary number system because only two digits exist in the system.
  - The computer stores the program within its own memory.
  - The computer is much more flexible than programmable accounting machines.
  - When the computer is instructed, it can perform any sequence of logical or arithmetical operations on data.

### III. Interpreting and Evaluating

1. On the basis of this definition, we can safely conclude that
  - a. computer do not need human beings.
  - b. computer needs human beings to check on how a program is running.
  - c. computer needs human beings both to set the instructions and to modify them.
  - d. computer needs human beings to set the instructions.
2. Under which of the following conditions can we safely predict a computer will work?
  - a. The computer is given no program.
  - b. The instructions are too complicated for a human to follow.
  - c. The computer is not supplied with an energy source.
  - d. The computer is cut off from its memory.
3. Basically the sentence is repeated at the beginning and near the end of this selection because
  - a. at the beginning the sentence introduces the concepts to be discussed.
  - b. at the end the sentence summarizes the concepts.
  - c. at the end the reader should understand the sentence better than at the beginning.
  - d. all of the above.

*In this exercise, you have to try to explain yourself and understand ideas brought out by your reading .In other words, you have to draw conclusions from what a writer tells you. In order to do this you must look carefully at the facts and details in the reading. Then you must add your own knowledge and experience to those details. Then you can judge what other things are likely to be true, even though they are not said directly.*

**Check!**

#### **Key to Exercise III**

1. d 2. b 3.d

Look at exercise IV. This is vocabulary exercise.

#### **Exercise IV.**

#### **Vocabulary**



8. — — —  —

**Check!**

**Key to exercise IV**

- |            |                   |               |
|------------|-------------------|---------------|
| 1. logic   | 4. pre-determined | 7. electronic |
| 2. program | 5. automatic      | 8. store      |
| 3. symbol  | 6. two-state      |               |

*After doing the exercises, study the following list of word.*

**Word Highlights**

<b>allowable</b>	permitted according to the rules, instructions, or program
<b>Boolean</b>	algebra a kind of mathematical reasoning
<b>cognitive</b>	related to learning and thinking
<b>finite</b>	limited in number
<b>impulse</b>	sudden pushes of energy
<b>inanimate</b>	not living
<b>magnetized</b>	having a magnetic charge
<b>modify</b>	change
<b>versatile</b>	able to be used in many different ways
<b>a = b</b>	<b>a</b> equals <b>b</b>
<b>a &lt; b</b>	<b>a</b> is less than <b>b</b>
<b>a &gt; b</b>	<b>a</b> is greater than <b>b</b>

*The next part is the structure study. The linkers and conjunctions are frequently used in the passage. One method of achieving coherence is to use linkers and conjunctions. They are like bridges in that they help connect ideas in one sentence to ideas in other sentences. By using them effectively, we establish and maintain paragraph coherence. In this section, not only the meaning of each linker and conjunction but also its usages are presented. After reading the notes and examples of each linker, I hope, you'll be able to do the exercise.*

### Linkers and conjunctions

Linkers are important in every situation where students have to organize and present their ideas. Indeed, work on linkers may well have a spin-off effect—improving students' overall ability to express their thoughts precisely. Students also need to use linkers in everyday conversation. Moreover, it is in writing that linkers take on their most useful function.

e.g. " This also means it can perform only those activities for which the basic capabilities have been specifically designed into the machine. **In other words** .....

In this example, the second sentence explains the meaning of the first, using simpler language. We use **in other words** when we explain a point, often in simpler language.

e.g. It is electronic ; **that is**, it is made up of electronic circuits and runs on electrical energy.

In this example, the word **that is** comes after the exact word "electronic" and before a descriptive phrase.

e.g. Electronic devices are largely two - state devices. **For example**, a switch is either on or off .....

**For example** comes before examples.

e.g. It **therefore** seems natural and reasonable to use the base 2 or binary number system .....

In the example, the word **therefore** is used to state a result.

e.g. " Combinations of 0s and 1s can be used to represent nonnumeric data **as well as** numeric data.

**As well as** expresses addition in a very general way. **As well as** can also come before adjectives and prepositions:

e.g. She was kind **as well as** sensible.

The snow fell in low ground **as well as** on the mountains.

e.g. The computer can perform only the processes of addition, subtraction, multiplication, division and comparison, **in addition to** data transfer between component

**In addition to** sounds rather formal, technical or scientific; it suggests an exact total.

It therefore comes before an – ing form.

e.g. **In addition to** giving an introduction to computers, the course also provides practical experience.

Compare **in addition** and **in addition to**

e.g. **In addition to** a profitable hotel business he owns several restaurants.

He has a profitable hotel business. **In addition**, he owns several restaurants

**In addition to** goes with phrases and –ing forms. **In addition** goes with complete sentences.

e.g. **Since** the instructions are stored in the memory and the memory is accessible to a user, the instructions can be changed.

**Since** brings out the reason . **Since** suggests that the reason is obvious or can be taken for granted.

e.g. The computer can **thus** be given the ability to handle many different job

In this example, **thus** means " for this reason". The preceding sentence " **Since** the instructions are stored in the memory and the memory is accessible to a user, the instruction can be changed. "explains the second sentence.

e.g. It is much more flexible than the programmable accounting machines **because** its programs are a sequence of logic and arithmetic operations.

In this example, **because** brings out the importance of the reason.

### **Exercise. I.**

Make sentences with a similar meaning using the appropriate words/expressions given in the bracket.

1. Ben has put nets on the window. The mosquitoes can't come in. ( but/because)
2. As Diana's manager, I have to say that she is not at all reliable. She arrived two hours late yesterday. ( for example/so)
3. There are courses in computing. A business course is also on offer. ( in addition to/ because)
4. We shall provide hotel accommodation. We shall also cover travel expenses.

(in addition to/therefore)

5. We are close to Heathrow Airport. Aircraft noise is a particular problem here.  
(since/in other words)
6. She negotiates the licences. She orders the equipment.( therefore/as well as)
7. James has a cold. He needs to rest and drink plenty of fluids. He should go to bed and drink water, fruit juice and soda pop. He needs to sleep a lot; he shouldn't drink fluids with caffeine such as tea and coffee.  
(but/because/therefore/therefore)
8. He's allergic to work. He's a lazy good-for-nothing. ( in addition to /in other words)
9. She dedicated her last book to "Dear Bill, who made it all possible", the cousin who had helped her when she was a young writer. ( that is /in other words)
10. The government has announced a programme of reform. It will improve social benefits for the poor. ( thus/because)

## Exercise II

Choose the correct form.

1. .... there are no more questions to discuss, we can finish the meeting.  
A. Since    B. But    C. So that    D. Unless
2. Gold is a metal with certain extremely desirable characteristics. ...., it can easily be hammered into different shapes owing to its extreme softness.  
A. Therefore    B. Since    C. For example    D. Because
3. The attractiveness of gold to jewellers and metal workers is due to its qualities, the fact that gold is remarkably resistant to corrosion.  
A. In addition to    B. therefore    C. because    D. as well as
4. Several States in the USA already use wind power .....California , where huge wind farms have been constructed ..... Power stations consisting of many windmills linked together in series.  
A. such as    B. in other words    C. for example  
A. that is    B. for example    C. because

5. They also tested his eyesight and found that he was driving with defective vision . . . . .,he should have been wearing glasses.  
A. Therefore      B.In other words      C. Since      D. In addition to
6. There are various steps you could take to improve your English . . . . ., you could learn ten new words every day.  
A. For instance      B. In addition to      C. Therefore
7. We shall save £ 5 billion by cutting government expenditure, ..... the £ 7.5 billion which we raise through increases in taxation.  
( A. in addition      B. in addition to      C. since)
8. We ought to be forgiving to our enemies ..... helpful to our friends.  
(A. as well as      B. in addition      C.but      D.in other words)
9. The government intends to reduce taxes and ..... increases its popularity.  
( A. since      B. because      C.therefore      D. that is)
10. The books you borrowed are overdue. You should .....return them immediately.  
(A. But      B.as well as      C. therefore      D. that is)

### Exercise III.

Complete the sentences in an appropriate way.

1. I decided to leave company because of .....
2. There may be other planets in the universe like Earth, that is ,..... .
3. As well as checking the students grammar, .....
4. She is efficient as well as .....
5. The police fired tear gas and thus .....
6. Since the three sides of the triangle are equal in length,..... .
7. It's time his association with my daughter ended . In other words, ..... .
8. We have received many complaints , therefore .....
9. You may take one more course in addition to .....
10. We shall provide hotel accommodation. In addition .....

**Check!**

### **Key to Exercise I, II, & III**

#### **Exercise I**

1. The mosquitoes can't come in **because** Ben has put nets on the window.
2. As Diana's manager, I have to say that she is not at all reliable, **for example**, she arrived two hours late yesterday.
3. **In addition** to courses in computing, a business course is on offer.
4. We shall provide hotel accommodation. **In addition**, we shall cover travel expenses.
5. Aircraft noise is a particular problem here **since** we are close to Heathrow Airport.
6. She negotiates the licences **as well as** ordering the equipment.
7. James has a cold. He needs to rest and drink plenty of fluids; **therefore**, he should go to bed and drink water, fruit juice and soda pop. He needs to sleep a lot; **therefore**, he shouldn't drink fluids with caffeine such as tea and coffee.
8. He's allergic to work. **In other words**, he's a lazy good-for-nothing.
9. She dedicated her last book to "Dear Bill, who made it all possible ", **in other words**, the cousin who had helped her when she was a young writer.
10. The government has announced a programme of reform. **Thus**, it will improve social benefits for the poor.

#### **Exercise II**

- |                      |                      |
|----------------------|----------------------|
| 1. A. Since          | 6. A. For instance   |
| 2. C. For example    | 7. B. in addition to |
| 3. D. as well as     | 8. A. as well as     |
| 4. C. for example    | 9. C. thus           |
| A. That is           | 10. C. therefore     |
| 5. B. In other words |                      |

**Exercise III: Possible answers**

1. *I decided to leave the company because of **new management policies which I totally disagreed with.***
2. *There may be other planets in the universe like Earth, that is, **planets with oxygen and water.***
3. *As well as checking the students' grammar, **you should listen to their pronunciation.***
4. *She is efficient as well as **extremely clever.***
5. *The police fired tear gas and thus **managed to disperse the protesters.***
6. *Since the three sides of the triangle are equal in length, **each of the angles must also be equal.***
7. *It's time his association with my daughter ended. In other words, **it's time she got rid of him.***
8. *We have **received many complaints; therefore, we must ask you to reduce the noise level.***
9. *You may take one more course in addition to **the courses you have already enrolled for.***
10. *We shall provide hotel accommodation. **In addition,** we shall cover travel expenses.*

## UNIT 7

### THE CLIMATIC EFFECTS OF NUCLEAR WAR

Lecture note by U Thein Win of YTU

*Today, I'm going to teach you a passage. Its title is 'The Climatic Effects of Nuclear War'. Well, everybody, there are two sides in everything in the world. So, technology is no exception. It can provide the welfare of mankind. At the same time, it can also do the work of destruction. One of the most destructive inventions is the nuclear weapon. Let's consider the negative effects of nuclear weapons. Here is the first paragraph of the passage.*

Since the beginning of the nuclear arms race four decades ago, it has been generally assumed that the most devastating consequence of a major nuclear war between the U.S. and the U.S.S.R. would be a gigantic number of human casualties in the principal target zones of the Northern Hemisphere.

Although in the wake of such a war, the social and economic structure of the combatant nations would presumably collapse, it has been argued that most of the noncombatant nations—and hence the majority of the human population – would not be endangered, either directly or indirectly. Over the years, questions have been raised about the possible global extent of various indirect, long-term effects of nuclear war, such as delayed radioactive fallout, depletion of the protective ozone layer in the upper atmosphere, and adverse changes in the climate. Until recently, however, the few authoritative studies available on these added threats have tended to play down their significance, in some cases emphasizing the uncertainty inherent in any attempt to predict the combined effects of multiple nuclear explosions.

*In the event of nuclear war between the US and the USSR, the other nations would be affected. After a nuclear explosion, there would be climatic changes*

*in the world. In the long run, it can affect the survivors indirectly.*

This comparative optimistic view of the potential global impact of nuclear war may now have to be revised. Recent findings by our group, confirmed by workers in Europe, the U.S., and the U.S.S.R., suggest that the long-term climatic effects of a major nuclear war likely to be much severer and farther-reaching than had been supposed. In the aftermath of such a war, vast areas of the earth could be subjected to prolonged darkness, abnormally low temperature, violent windstorms, toxic smog, and persistent radioactive fallout - in short, the combination of conditions that has come to be known as "nuclear winter." The Physical effects of nuclear war would be compounded by the widespread breakdown of transportation systems, power grids, agricultural production, food processing, medical care, sanitation, civil services, and central government. Even in regions far from the conflict, the survivors would be imperiled by starvation, hypothermia, radiation sickness, weakening of the human immune system, epidemics, and other dire consequences. Under some circumstances, a number of biologists and ecologists contend, the extinction of many species of organisms – including the human species – is a real possibility.

*In the second paragraph, the writer tells us that various physical effects of nuclear war may lead to the extinction of human species in the future.*

Of particular interest here are the prompt and the intermediate radioactive fallout. The former is associated with short-lived radioactive isotopes that condense onto large soil particles, which in turn fall to the ground within hours after an explosion. Intermediate fallout is associated with longer-lived radioactive isotopes carried by smaller particles that drift in the wind and are removed by settling and precipitation in the interval from days to months. Prompt fallout is generated by ground bursts, and intermediate fallout is generated by ground bursts and air bursts in the yield range from 10 to 500 kilotons, which deposit their radioactivity in the middle and upper troposphere.

*In the third paragraph, the writer mentions that there are two kinds of fallout, prompt fallout and intermediate fallout. The writer also explains each kind of*

*fallout. When there is a fallout, ground bursts and air bursts deposit their radioactivity in the middle of troposphere.*

The danger from radioactive fallout is measured in terms of the total dose in rads (a unit of radiation exposure equivalent to 100 ergs of ionizing energy deposited in one gram of tissue), the dose rate in rads per hour and the type of radiation. The most deadly effects are caused by the intense, penetrating gamma radiation from prompt fallout. The widespread intermediate fallout delivers a less potent long-term gamma-ray dose. A whole-body gamma ray exposure of 450 rads, received over several days, is lethal to half of the healthy adults exposed. Chronic doses of 100 rads or more from intermediate fallout could suppress the immune system even of healthy people and would cause long-term increments in the incidence of cancer, genetic defects, and other diseases.

*In the last paragraph, the writer expresses 'rad' which is the unit of radiation exposure. The doses for radiation that are dangerous for human are 450 rads. The most deadly effects are caused by the intense, penetrating gamma radiation from prompt fallout. So, It is assumed that prompt fallout is more dangerous than intermediate fallout.*

*After explaining the passage, I'll explain to you some vocabulary which you may find difficult. You can try to guess the meaning from their roots and from the context in which they appear in the text. These words are derived from Middle English and Latin words.*

1. lethal (adj) Latin : lethalis, from lethum, death.
2. devastating (v.) Latin : devastare, de ( intensive) + vastare, to lay waste.
3. casualty ( n.) Middle English: casuelte, casual
4. fallout (n.) Middle English fallen: fell, fallen
5. smog ( n,) blend of smoke and fog
6. explosion ( n,) Latin : explodere: to explode .
7. immune ( adj.) Latin immunis: in- negative prefix .exempt from public service.

8. suppress (v.) Latin: supprimere, to press down.
9. genetic (adj.) Latin Greek: gene, birth, origin: gen , to give birth
10. potent (adj.) Latin:, potens, to be able, have power .
11. increment (n.) Latin: incrementum, to increase.
12. depletion (n.) Latin: deptere, de- (recersal ) + plere, fill.
13. burst (n.) Middle English: bersten, to burst

*Now, I want you to check your dictionary for the actual definition of the words. These definitions are shown in Oxford Advanced Learner's Dictionary as follows.*

1. *lethal (adj) Causing or able to cause death.*
2. *devastating (adj) causing a lot of damage and destruction.*
3. *casualty (n) a person who is killed or injured in war or in an accident.*
4. *fallout (n) dangerous radioactive dust that is in the air after a nuclear explosion*
5. *smog (n) a form of air pollution that is or looks like a mixture of smoke and fog.*
6. *explosion (n) the sudden violent bursting and loud noise of something.*
7. *immune (adj) that cannot catch or be affected by a particular disease or illness.*
8. *suppress (v) to prevent yourself from having or expressing a feeling or on emotion.*
9. *genetic (adj) connected with genes.*
10. *potent (adj) having a strong effect on body or mind.*
11. *increment(n) an increase in number or amount.*
12. *depletion (n) state of being reduced by a large amount so that there is not enough left.*
13. *burst (n) an occasion when something bursts.*

### **Exercise I**

Choose the word that best completes each sentence.

Note that not all the words will be used.

- |           |             |
|-----------|-------------|
| burst     | immune      |
| casualty  | genetic     |
| explosion | devastating |
| depletion | smog        |

1. In case of a nuclear \_\_\_\_\_. Scientists predict that the entire human race will be wiped out.
2. Los Angeles is known for its \_\_\_\_\_ because there are many chemical industries in the areas.
3. Her \_\_\_\_\_ system is getting weaker and weaker each day due to the side effects of the medication.
4. Too much radiation is \_\_\_\_\_ for cancer patients.
5. In a nuclear war, birth defects increase and these are \_\_\_\_\_ in origin.

**Check!**

***Key to Exercise I***

- |                     |                       |
|---------------------|-----------------------|
| <i>1. explosion</i> | <i>4. devastating</i> |
| <i>2. smog</i>      | <i>5. genetic</i>     |
| <i>3. immune</i>    |                       |

**Exercise II**

Replace each underlined word or expression with words from Exercise A.

1. I heard a loud sharp noise accompanied by flying debris near the construction site.
2. The number of injured, killed, and captured in Vietnam is still not accounted for.
3. Prolonged illness of a family member can be extremely painful.
4. Chinese medicine is as powerful as Western drugs.
5. The psychiatrist told Ms. Jones to open up and not to subdue her feelings.
6. There is a controversy in the hospital as to whether the medication that Dr. Smith prescribed for her patients was fatal or not.
7. In case of a nuclear war, there will probably be a using up of all the oxygen in the atmosphere.
8. A nuclear arms race between superpowers would be detrimental to the whole world. Some of the effects would be an increase in diseases and birth defects.

**Check!**

**Key to Exercise II**

- |                       |                     |                     |
|-----------------------|---------------------|---------------------|
| 1. <i>explosion</i>   | 4. <i>potent</i>    | 7. <i>depletion</i> |
| 2. <i>casualty</i>    | 5. <i>surprises</i> | 8. <i>increment</i> |
| 3. <i>devastating</i> | 6. <i>lethal</i>    |                     |

**Exercise III****Answer these questions.**

1. In the event of a nuclear war between the U.S, and the U.S.S.R. would Other nations be affected?
2. What would happen to the earth a nuclear explosion?
3. What is the possibility of there being any survivors in the event of a nuclear war? Will the extinction of the human species be a possibility?
4. What are the most deadly effects of a nuclear war?
5. Which is more dangerous: the prompt fallout or the intermediate fallout? Why?
6. What are the doses of radiation that are dangerous for humans?
7. What happens to the atmosphere when there is a fallout?
8. Describe the conditions of a nuclear winter.
9. What are the indirect, long-term effects of nuclear war?

**Check!****Key to Exercise III**

1. *In the event of nuclear war between the US and the USSR, other nations would be affected.*
2. *After the nuclear explosion, there would be climatic changes on the earth.*
3. *The extinction of the human species will be a possibility. ( according to the passage)*
4. *The prompt fallout is more dangerous than intermediate fallout because the most deadly effects of nuclear war are caused by the intense, penetrating gamma radiation from prompt fallout.*
5. *The doses of radiation that are dangerous for humans are 450 rads.*
6. *When there is a fallout, ground bursts and air bursts deposit their radioactivity in the middle of troposphere.*
7. *The conditions of nuclear war are prolonged darkness, abnormally low*

*temperatures, violent windstorms, toxic smogs and persistent radioactive fallout.*

8. *The indirect long-term effects of nuclear war are depletion of protective ozone layer in the upper atmosphere and adverse changes in the climate.*

### **Definitions**

Some of the common ways to define a term are with the verb *to be*, punctuation clues, parallel structures, and expressions such as *is defined as is called*, *is known as* and so on.

### **Exercise I**

#### Locating Definitions

Read each of the following sentences carefully. Locate the term that is being defined. Then find the definition of the term. Note that the term and definition are not always clearly stated.

1. In the aftermath of such a war, vast areas of the earth could be subjected to prolonged darkness, abnormally low temperature, violent windstorms, toxic smog, and persistent radioactive fallout — in short. The combination of conditions that has come to be known as "nuclear winter."
2. Prompt fallout is associated with short-lived radioactive isotopes that condense onto large soil particles, which in turn fall to the ground within hours after an explosion.
3. Intermediate fallout is associated with longer-lived radioactive isotopes carried by smaller particles that drift in the wind and are removed by settling and precipitation in the interval from days to months.
4. The danger from radioactive fallout is measured in terms of the total dose in rads (a unit of radiation exposure equivalent to 100 ergs of ionizing energy deposited in one gram of tissue.) the dose rate in rads per hour and the type of radiation.

**Check!**

#### **Key to Exercise I**

1. *Term* - nuclear winter

*Definition* - combination of conditions such as vast area the earth could be subjected to prolonged darkness abnormally low

*temperatures, violent windstorms, toxic smog , and persistent radioactive fallout in the aftermath of nuclear war.*

2. *Term* - *prompt fallout*

*Definition* - *short- lived radioactive isotopes that condense onto larger soil particles , which in turn fall to the ground within hours after an explosion.*

3. *Term* - *intermediate fallout*

*Definition* - *longer-lived radioactive isotopes carried by smaller particles that drift in the wind are removed by settling and precipitation in the interval from days to months.*

4. *Term* - *rad*

*Definition* - *a unit of radiation exposure equivalent to 100 ergs of ionizing energy deposited in one gram of tissue.*

## **Ideas and Examples**

### **Exercise II**

Distinguish the ideas from the examples in the following short passages.

- Over the years, questions have been raised about the possible global extent of various indirect, long-term effects of nuclear war, such as delayed radioactive fallout, depletion of the protective ozone layer in the upper atmosphere, and adverse changes in the climate.

Idea : \_\_\_\_\_

Examples: \_\_\_\_\_

- The physical effects of nuclear war would be compounded by the widespread breakdown of transportation systems, power grids. agricultural production. food processing medical care, sanitation. civil services, and central government.

Idea: \_\_\_\_\_

Examples: \_\_\_\_\_

- Under some circumstances, number of biologists and ecologists contend, the extinction of many species of organisms — including the human species — is a real possibility

Idea: \_\_\_\_\_

Examples: \_\_\_\_\_

**Check!**

***Key to Exercise II***

1. *Idea* - indirect long – term effects of nuclear war  
*Example* - delayed radioactive fallout, depletion of protective ozone layer in the upper atmosphere, and adverse changes in the climate.
2. *Idea* - the physical effect of nuclear war  
*Example* - the widespread breakdown of transportation systems, power grids, agricultural production, food processing medical care, sanitation and central government
3. *Idea* - organisms  
*Example* - human species

## UNIT 8

### ENVIRONMENT IN DANGER – I

Lecture note by Daw Htay Thidar Oo of YTU

*Before you read the Text, I'd like you to read the follow-up exercise and make mental note of which points to be paid attention to when you read the text. Out of five questions which follow the text, two of them are multiple choices and three are true-false quiz. But you need to give line numbers in the text, to which you're referring for your answer.*

*Let's study the text. The text has two paragraphs.*

#### **Paragraph 1**

According to some scientists, one of the most serious problems for the environment is acid rain. Acid rain is caused mainly by power plants that burn coal to produce electricity. The smoke from these power plants contains acidic substances which later fall back to earth in rain or snow. As a result, the amount of acids increases in lakes and rivers, and fish die. Already many lakes in Canada, the northeastern U.S., and Norway are contaminated by pollution from power plants. Scientists are also warning that acid rain can damage plants and lead to the contamination of drinking water. It is therefore a danger to human health.

*The first paragraph states the cause, the effects and the countries which are victims of acid rain. The central ideas and detail or specific facts in the first paragraph are as follows:*

*I. Cause of acid rain.*

*(a) burning coal in power plants*

*II. Results.*

*(a) damaging plants and trees.*

*(b) Health hazards to people and animals who drink water contaminated by acid rain.*

### III. Victims of acid rain

(a) Canada

(b) Norway

Read the second paragraph.

#### Paragraph 2

Many governments are reluctant to pass laws that will reduce the pollution which causes acid rain. They say that the causes of acid rain are still not completely clear. However, it is clear to the majority of environmentalists that economics is the real reason for governmental reluctance. In most industrial countries the majority of power plants use coal. It will be extremely expensive to develop the special equipment that is needed to reduce the pollution from these power plants.

*The second paragraph describes the irresponsibility of many governments and reasons for governments' reluctance to enforce laws against using coal. The central idea and specific points are as follows:*

*( I ) Reason for government's reluctance*

*(a) costliness of replacing / substituting special equipment to reduce pollution.*

*Since you've studied the organization of the text, you don't need to spend much time to get the answers to the questions. Studying the organization of the text first saves your time.*

1. T F According to this passage, it is important to solve the problem of acid rain. Line(s)\_\_\_\_\_
2. What is the cause of acid rain?
  - a. Fish in rivers and lakes begin to die. Line (s)\_\_\_\_\_
  - b. The amount of acid in rivers and lakes begins to increase.
  - c. Power plants burn coal.
3. T F It is certain that governments will pass new laws to reduce acid rain. Line(s)\_\_\_\_\_
4. T F Acid rain is only a problem in the United States. Line(s)\_\_\_\_\_
5. What is the final explanation for the reluctance of governments Line (s)\_\_\_\_\_

to pass laws against acid rain pollution?

- a. It is not clear that acid rain causes problems.
- b. It will not be cheap to reduce pollution from power plants.
- c. It is not possible to produce electricity without coal.

*You can check your answers with those at the end of the unit. Now, let's move to part B. The text in part (B) blames the global pollution on chemicals. The text also has two paragraphs. As you do in part A, try to make yourself familiar with the questions which follow the text. The type of exercise in Part B is the same as that in part A. Then, read the text.*

### **Paragraph 1**

The Environmental Protection Agency (E.P.A.) is the U.S. government department that has the major responsibility for the environment. It conducts research into the effects of chemicals on people, plants, and animals, and it has the authority to forbid the production or use of chemical substances which are dangerous to health. The agency also enforces laws against pollution and is responsible for cleaning land which is contaminated by poisonous chemicals from waste dumps.

*The first paragraph discussed the effects of chemicals on living creatures and plants, and above all, the responsibilities of E. P. A. The central idea and specific / detailed idea of the first paragraph are as follows:*

*(I) The effects of chemicals*

*(a) pollution (water, air, land)*

*(b) damage / danger to health*

*(II) Responsibilities of E. P.A*

*(a) research*

*(b) forbidding the production and the use of chemicals*

*(c) enforcing law against pollution*

*(d) cleaning contaminated land.*

*Read the second paragraph.*

**Paragraph 2:**

Many environmentalists, however, are satisfied with the work of the E.P.A. The critics point out that the agency is controlled by the government. They claim that there are people in the government who once had close business connections with industries that cause a great deal of pollution. Therefore, according to these critics, it is clear that the E.P.A. cannot really do a good job.

*The second paragraph points out the reason for unsatisfactory performance of that agency. The central idea and the specific / detail points are as follows:*

*I. Reason of unsatisfactory performance of E.P.A*

*(a) irresistibility of E.P.A due to close business connections with industries.*

*Now, you're ready to do the exercise.*

1. T F The E.P.A. is the only U.S government department that protects the environment. Line(s) \_\_\_\_\_
2. According to the passage, what does the E.P.A. *not* do? Line(s) \_\_\_\_\_
  - a. It develops new chemicals.
  - b. It examines the effects of new chemicals.
  - c. It cleans contaminated land.
3. T F Everyone believes that the E.P.A. is doing its job well. Line(s) \_\_\_\_\_
4. T F According to many environmentalists, it is impossible for the E.P.A. to really protect the environment. Line(s) \_\_\_\_\_
5. According to the passage, why can't the E.P.A. protect the environment successfully? Line(s) \_\_\_\_\_
  - a. It does not have the authority to enforce the laws against pollution.
  - b. It does not satisfy environmentalists.
  - c. It is not independent enough.

*Check your answer. The answers are provided at the end of this unit. Having done the exercises, you should learn the vocabulary given. When you learn the expressions, it is a good idea to study not only the definition of each word but the usage of these words / expressions in contexts. This helps you to construct your own sentences, using them. It is given at the end of this unit.*

*Let's get back to exercise again. Here, you have to read pairs of sentences and decide whether the sentences in each pair express the same idea or different ideas. Look at number one as an example.*

1. (a) *Many governments do not want to pass laws against pollution.*

(b) *Many governments are reluctant to pass laws against pollution.*

*The first sentence is a negative sentence but the second one is a positive sentence. However, the word "reluctant" in sentence b means "do not want." So, sentence (a) and (b) express the same idea.*

### **Exercise III**

#### **Same or Different?**

Read the two sentences in each example. Do they express the same idea, or do they express different ideas? Write S for sentences with same ideas: write D for sentences with different ideas.

*Remember:* You can express the **same** idea with **different** words and **different** grammar!

1. a. Many governments do not want to pass laws against pollution.  
b. Many governments are reluctant to pass laws against pollution.
2. a. That waste dump contains a large number of very useful chemicals.  
b. There are many poisonous chemicals in that waste dump.
3. a. Some scientists claim that acid rain is caused mainly by power plants which use coal.  
b. It is claimed by some scientists that power plants which burn coal are the main cause of acid rain.
4. a. The chemical company is going to build a new plant near this town.  
b. The chemical company is going to build new waste facility near this town.
5. a. It is important to conduct research into the effects of new chemicals on the environment.  
b. Research which is being conducted shows that new chemicals are important for the environment.

6. a. This new law forbids the use of certain substances.  
b. This new law makes the use of certain chemicals are important for the environment.
7. a. The new laws that protect the environment from industrial pollution are not being enforced by the government.  
b. The government is not punishing industries that are breaking the laws against environmental pollution.
8. a. It is clear that small amounts of this chemical can contaminate large areas of land.  
b. It is clear that large areas of land can be treated with small amounts of this chemical.

*The next exercise is expectations. You have to read the first sentence and choose the sentence or sentences which are most likely to come after the given sentence. In some numbers, more than one sentence are likely to follow.*

### **Expectations**

Read the first sentence in each of these examples. Think about the ideas in it. Then choose the sentence or sentences that can follow it.

1. This new chemical is extremely poisonous.
  - a. Only small amount of it will contaminate a large area.
  - b. It is not a danger to the environment.
  - c. It can be used by humans without any risk.
2. The government is doing little to protect the environment.
  - a. It claims that pollution is not a serious problem in this country.
  - b. It is not enforcing any of the laws against pollution.
  - c. It is going to close some chemical waste dumps.
3. The water in this area of town is undrinkable.
  - a. People blame the chemical plant that was built here years ago.
  - b. It contains a number of extremely poisonous substances.
  - c. Tests which were conducted on it last month show that it is contaminated.
4. It is clear that the government is not enforcing the laws against pollution.
  - a. It is severely punishing companies which are causing pollution.

- b. Last month it arrested the manager of a company which illegally dumped chemicals into a lake.
  - c. It seems that it is extremely reluctant to punish large companies which are breaking environmental laws.
5. It is possible that this new chemical will be very beneficial to agriculture, but should not make it available yet.
- a. Not enough is known about its effects on the environment.
  - b. The research that is being conducted into its effects on the environment is not yet complete.
  - c. There is clear evidence that it is one of the most dangerous substances which the chemical industry produces.

*The last exercise is vocabulary quiz. You are given a list of words and fill the blank with the appropriate form of the words in the list. Some of the words need not be used.*

### **Exercise V**

#### **Vocabulary Quiz**

Choose the correct word for each empty space. Use each word only once.

claim	substance	plant	conduct
reluctant	forbid	environment	enforce
pollute	poisonous	dump	amount
waste	contaminate	pollution	acid

1. A large automobile company is opening a new \_\_\_\_\_ in this city. It will employ about 2,000 people.
2. "Be careful with that bottle. It contains \_\_\_\_\_. If you get it on your skin, it will burn you badly."
3. Ten years ago the \_\_\_\_\_ in this city was very bad. Then the city government passed a number of new laws. Now the city is much cleaner, and the air is much healthier.
4. This medicine is very strong. You can only take a small \_\_\_\_\_ of it every day. It is dangerous to take more.
5. Many people believe that it is important to reduce pollution. If we do not

- reduce it, we will cause a lot of damage to the \_\_\_\_\_.
6. “Don’t drive at more than 55 miles an hour in this state. There is a speed limit, and the police \_\_\_\_\_ it. They will stop you even if you drive at 60.”
  7. This chemical is extremely poisonous. The government should \_\_\_\_\_ its use.
  8. Yesterday I drove to the shopping mall at two o’clock. But I didn’t find the things I wanted to buy. At five o’clock I came home with nothing! I was a little angry. I don’t like to \_\_\_\_\_ whole afternoons like that!
  9. Scientists who work for the chemical company \_\_\_\_\_ that this chemical is 100% safe. But they are ignoring other research which suggests that it causes health problems.
  10. Scientists are \_\_\_\_\_ ing a lot of research into how to protect the environment from the dangerous substances that industry produces.

### Vocabulary Study

#### (1) to pollute (verb)

##### **pollution** (noun)

Definition to pollute something: to make something dirty and unhealthy

- Examples
1. The heavy industries in this town *pollute* our air with their smoke.
  2. *Pollution* is now a major problem for the world. Our air and water are becoming very dangerous for living things.

#### (2)reluctant (adjective)

Definition to be reluctant to do something: not to want to do something

- Examples
1. The government is *reluctant* to punish this company for the pollution that it causes. The company is extremely important for the economy.
  2. We had a very enjoyable vacation in the Caribbean last summer. We were very *reluctant* to go home at the end of our vacation.

#### (3) environment

**Definition**     the environment : all the conditions (social and natural) that can influence the life and development of a person or of a thing.

- Examples**
1. A lot of people today are worried about the *environment*. They want to protect our air, water, and land from pollution.
  2. Children need a good home *environment*. Without love and support, they will have problems as adults.

**(4) Substance(noun)**

**Definition**     a substance; a general word for any material

- Examples**
1. This bottle contains a very dangerous *substance*. Only a little of it can kill a person.
  2. Water, oil and rubber are all *substances*.

**(5) acid (noun)**

**Definition**     an acid: a substance which contains hydrogen (An acid often destroys the things it touches.)

- Examples**
1. Be careful with that bottle. It contains *acid* – H<sub>2</sub>SO<sub>4</sub>. It'll burn you if it touches your skin.
  2. Automobile batteries produce *acid*. So be careful with that battery you took out of your car!

**(6) amount (noun)**

**Definition**     an amount of X: some  
a large amount of X: a great deal of  
a small amount of X: not a lot of X, a little X

- Examples**
1. I spent a large *amount* of money for food last week. The bill came to more than \$70.
  2. This medicine is very strong. You only need to take a small amount of it.

**(7) plant (noun)**

**Definition**     a plant: a factory

- Examples**
1. The automobile *plant* here is closing. One thousand people are going to lose their jobs.
  2. This new power *plant* will produce enough electricity for 25% of

the state.

**(8) to contaminate** (verb)

**contaminated** (adjective)

Definition to contaminate: to make something dirty and unhealthy

- Examples
1. A large number of people who stayed at the hotel became sick. Scientists discovered that they ate some *contaminated* food.
  2. Some oil got into the town's water. It contaminated the drinking water.

**(9) to conduct** (verb)

Definition to conduct research: direct and do research (You can also *conduct* meetings and experiments, investigations, or inquiries.)

- Examples
1. The scientist is *conducting* research into the causes of heart diseases.
  2. Both the American and the British governments *conducted* inquiries into the causes of the *Titanic* disaster.

**(10) to enforce** (verb)

Definition to enforce a law: to make people obey the law and to punish them for breaking it

- Examples
1. There is a speed limit of 25 miles an hour in this town, and the police really *enforce* it. They'll stop you even if you're only driving at 30.
  2. The responsibility of the police is to *enforce* the law.

**(11) to forbid** (irregular verb) **forbade, forbidden**

Definition to forbid X: not allow X: not to allow X

- Examples
1. Smoking is *forbidden* in movie theaters in the U.S.; it can cause dangerous fires.
  2. Industries cannot build factories in this part of town. A local law *forbids* it. This part of town is only for homes and apartments.

**(12) chemical** (noun and adjective)

Definition a chemical: a general word for a substance that is used in chemistry.

- Examples
1. An acid is a *chemical*.
  2. I got some oil on my shirt. But I have a *chemical* which will take

the oil off the shirt.

**(13) poison** (noun)

**poisonous** (adjective)

Definition      poison: a substance that can harm or kill a living person or thing

- Examples        1. During World War I, the German, French, and British armies used  
*poison* gas. Many soldiers died.
2. Be careful with that chemical. It's very *poisonous*.

**(14) to waste** (verb)

**waste** (noun)

Definition      to waste something: to spend something but not get any benefit  
from it.

- Examples        1. I *wasted* a whole afternoon yesterday. I drove fifty miles to visit  
a friend. But he was not at home, and I didn't see him.
2. The chemical industry produces a lot of *waste*. Some of it is very  
poisonous.

**(15) dump** (noun)

Definition      a dump: a place where people leave useless material

- Examples        1. There is a *dump* for chemical waste near this town. People are  
worried about it. They think that it contains some dangerous  
substances.
2. Let's take this old furniture to the *dump*. We don't want it,  
and no one will use it.

**(16) to claim** (verb)

Definition      to claim: to say that something is true (usually without evidence)

- Examples        1. The police stopped a car. The driver *claimed* that the car  
belonged to him, but he had no papers; he didn't even  
know the license number of the car.
2. A student in my class *claims* to be a friend of the president.  
He likes to tell stories!

**KEY**  
**ENVIRONMENT IN DANGER I**

*Part (A)*

1. True 2. (c) 3. False 4. False 5. (b)

*Part (B)*

1. True 2. (a) 3. False 4. True (Lines 9-10)

*Exercises for Part A and Part B*

1.S 2.D 3.S 4. D 5. D 6. S 7. S 8.D

*Expectations*

1.a 2. b 3. b 4. c 5. b

*Vocabulary Quiz*

1. plant

2. acid

3. dump

4. amount

5. environment

6. enforce

7. forbid

8. waste

9. claim

10. conduct

## UNIT 9

### ENVIRONMENT IN DANGER – II

Lecture note by Daw Htay Thidar Oo of YTU

*This part is the continuation of previous one. You'll see the same type of exercise as the one you've found in the previous part.*

*To use the method of **selective reading**, please read the questions that follow the passage. The purpose of this is for you to have clear purpose in mind while you're reading the text. Read the questions and guess the answers. Let's read paragraph (1)*

#### **Paragraph 1:**

Every year in many developing countries large areas of land that once produced food become completely unproductive. The hungry residents of these areas have to move or die. The problem is not caused by pollution; it is not the result of poisonous chemicals which contaminate the land. Pollution is not the only way to destroy the environment. It can be destroyed by humans who disturb ecological balance of an area in other ways. In any area there is a balance in nature. Each part of the natural system depends on other parts. If one part is disturbed, then the balance of the system is disturbed and other parts begin to suffer. This is the problem that is now threatening the lives of many people in many countries, for example, in Nepal.

*The paragraph starts with the problem that many developing countries encounter. The real cause of this problem is in the fifth sentence in line 6 and 7.*

***It can be destroyed by humans who disturb the ecological balance of an area in other way.***

*When you read through the text, you'll find that sentence 1, 4, and 5 give the relevant ideas for questions 1,2 , 3 and 8. Instead of reading slowly word for word, you should focus your attention on these three sentence and skim over the rest.*

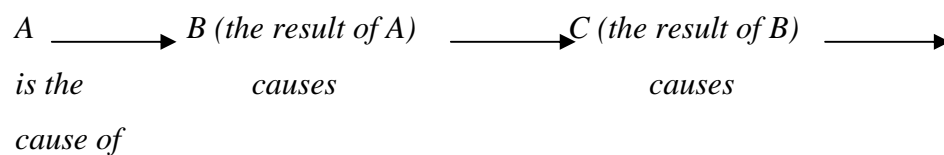
*The last sentence in the first paragraph gives you the clue as to what the second paragraph will be about.*

*Let's move on to paragraph 2.*

### **Paragraph 2**

Number of years ago, the population of Nepal began to increase, especially among the people who live in the small farms in the mountains. More food and fuel were necessary for the larger number of people, so the farmers in the mountains bought more animals. For fuel and animal food, they cut down more and more of the trees and plants which grew on the sides of the mountains. The farmers did not know that these plants and trees served a very important purpose. They protected the hills from the weather. They held the top soil in place and prevented it from being pushed down the mountain sides by wind and rain. Now without the protection of the trees and plants, the top soil is being washed away by heavy rain. The farmers are losing their land. More and more have to move to the lower areas of Nepal, which are already overpopulated and cannot support a large increase in population.

*In the second paragraph, Nepal is taken as an example to describe the causes of this problem. The most basic problem is the increase in population. In this paragraph, you can learn cause and effect relationship, which is called a chain reaction. It will be look something like this is diagrammed schematically.*



*In a chain reaction, each part is the result of what precedes it and the cause for what follows it.*

*The last sentence in this paragraph shows the short-term solutions to the problem, made by the inhabitants. For the question No.5, you can refer to this sentence. Let's move on to the last paragraph.*

**Paragraph 3:**

To solve problems like this one, it is important that people understand the consequences of their actions. It was not clear to the hill farmers of Nepal that they were to blame for the destruction of their own land. Today environmental scientists are teaching the farmers about ecology. They are also showing them ways to protect their land with new trees and plants. Problems which are similar to the problem in Nepal exist in many countries around the world, but they can be solved. Ecologists are proving to us that actions which give short-term solutions to problems can also have disastrous long-term consequences. If governments and others pay more attention to these scientists, then perhaps they will not make the same type of mistakes that were made in Nepal and in many other countries.

*Just by looking at the infinitive clause right at the beginning of this paragraph you can find out that the third paragraph is the solutions to the problem described in the text/passage is not the insoluble one. This paragraph suggests the ways to prevent similar problems in other parts of the world.*

- *Providing education to farmers about ecology.*
- *Prohibiting the destruction of trees.*
- *Encouraging growing trees and plants.*
- *Discouraging people to use short-term solutions to problems, which can have disastrous long-term consequences.*

*Now, you have enough relevant messages to do the exercise.*

1. T F This passage is about the damage that pollution cause Line(s) \_\_\_\_\_  
in the environment.
2. According to this passage, the environment will suffer Line(s) \_\_\_\_\_
  - a. if humans disturb the ecological balance of a certain area.
  - b. if there is a balance in nature in a certain areas.
  - c. if large areas of land become completely unproductive.
3. T F The amount of land in the world that can produce food Line(s) \_\_\_\_\_  
is becoming smaller.
4. What did the hill farmers of Nepal *not* realize? Line(s) \_\_\_\_\_

- a. They did not realize that their land was disappearing.
  - b. They did not realize that they needed food for their animals and fuel for their homes.
  - c. They did not realize that without the trees and plants, their land would be washed away by the rain.
5. T F The problems in Nepal will be solved if more farmers move to the lower parts of the country. Line(s) \_\_\_\_\_
6. The writer suggests that governments and people often ignore. Line(s) \_\_\_\_\_
- a. the short-term benefits of their actions.
  - b. the possible long-term consequences of their actions.
  - c. the need to grow enough food for people and their animals.
7. T F According to the writer, the world can learn something from the mistakes of the hill farmers of Nepal. Line(s) \_\_\_\_\_
8. What does the example of the hill farmers of Nepal show us? Line(s) \_\_\_\_\_
- a. It shows us that humans can destroy their own environment if they disturb the balance of nature.
  - b. It shows us that it is important to protect the environment from poisonous chemicals.
  - c. It shows us that pollution is threatening the lives of many people and the whole economy of Nepal.

*Now check your answer. The answers are provided at the end of this unit.*

*Let's move on to the next part.*

*Read the questions accompanying the passage to make yourself familiar with the questions. Since you've done three parts, I hope you are accustomed to the exercises. Then, read the passage. It has two paragraphs. Read the first paragraph.*

### **Paragraph 1**

It is clear that some chemicals can damage the health of animals and humans. However, this is not the only problem that can be caused by the careless use of chemicals. Chemicals can also disturb the ecological balance of the environment. If the ecological balance is disturbed, the consequences can be extremely serious.

*This is the introduction and the central idea of this paragraph is that the disturbance of ecological balance is due to chemical, especially DDT which is used to kill disease-carrying insects and pests. Read paragraph 2*

## **Paragraph 2**

The history of DDT illustrates the problem. DDT, a chemical which kills insects, at first seemed to be a perfect answer to many problems. It would control insects that caused dangerous diseases, as well as insects that caused billions of dollars of damage to crops every year. Governments permitted and even encouraged the use of DDT. Farmers in many countries began to spray it on their crops. The immediate results were good: Damage to crops went down, and profits went up. However, the chemical had effects which the scientists did not predict. First, it also killed insects which were the natural enemies of the harmful insects and which were therefore beneficial to farmers. Second, and perhaps worse, DDT did not kill every harmful insect. A few insects had natural resistance to the chemical. They survived and multiplied. In a few years there were large numbers of insects which were not affected by DDT, and there were fewer insects which could act as natural controls on these new “super-insects.” Finally, it became clear that DDT was not solving the insect problem. In fact, it was making the problem worse. It then became necessary to find a second cure the effects of the first!

*This paragraph has two parts: favourable effects of DDT and the destructive effects of it. In fact, destructiveness of DDT far surpasses the effectiveness.*

*What were the immediate results?*

- 1. Damage to crops went down.*
- 2. Profits went up.*

*The sentence which immediately follows the good results starts with the word “However”. It is a transitional word which is used to denote a relationship of contrast. The immediate results which gave satisfaction to the farmers were followed by the disadvantages of using this chemical.*

*What are the disadvantages of the chemical pesticides?*

1. *They kill not only harmful insects but those which feed on them,*

2. *Some insects are resistant to them and multiply.*

*The following exercises are the same type as you did in the previous one..*

*Now you have enough relevant messages/ideas to do the exercise.*

1. Why are chemicals dangerous? Line(s) \_\_\_\_\_
  - a. They cause health problems for animals and people.
  - b. They can disturb the ecological balance.
  - c. Both (a) and (b)
2. T. F At first, DDT seemed only to have benefits. Line(s) \_\_\_\_\_
3. T F The long-term effects of DDT were not the effects that Line(s) \_\_\_\_\_  
were expected.
4. According to the write, what was the problem with DDT? Line(s) \_\_\_\_\_  
(More than one answer may be correct.)
  - a. It did not kill all the harmful insects.
  - b. It caused an immediate decrease in damage to crops.
  - c. It killed other insects that helped farmers.
5. T F At first, governments were reluctant to permit the use Line(s) \_\_\_\_\_  
of DDT.
6. If farmer used DDT today, in five years Line(s) \_\_\_\_\_
  - a. he would have no problems with harmful insects.
  - b. insects would be an even greater problem for him.
  - c. his situation would not be different.

*You can check your answer. The answers are provided at the end of this unit.*

*Having done the exercises, you should learn the vocabulary given. When you learn the expressions, it is a good idea to study not only the definition of each word and expression but the usage of them in contexts. Vocabulary is given at the end of this unit. The following exercises check your understanding of the text and reinforce your vocabulary. After doing exercises, you can check your answer.*

**Vocabulary****(1) crops** (noun)

Definition a crop: 1. a plant which is grown for food or for other purposes.  
2. the amount of a certain plant which is produced in a year.

Examples 1. The *crops* are in the fields. The farmers need rain soon.  
2. This year's *crop* of oranges was quite poor. A number of weeks of really cold weather caused a lot of damage the trees.

**(2) to resist** (verb)**resistance** (noun)

Definition to resist something: to oppose something; not to be negatively affected by something

Examples 1. This material is very useful for aircraft. It can *resist* very high temperatures. It will not break or bend or become weak.  
2. Many people have natural *resistance* to certain illnesses. They do not suffer from these illnesses.

**(3) profit** (noun)

Definition a profit: The money you make in business; the opposite of *loss*  
(You buy X at a lower price and sell it at a higher price.)

Examples 1. John made a \$300 *profit* on his old car. He bought it for \$1,100 and then sold it for \$1,400.  
2. The company had a very successful year in 1982. Its *profits* were higher than in any year before.

**(4) insect** (noun)

Definition an insect : a type of small animal, usually with six legs (for example, a fly)

Examples 1. *Insects* usually need warm weather. They can't survive in cold temperatures, so in this part of the country, *insects* are only a problem during the summer.  
2. Some diseases are carried from one person to another by *insects* which bite them.

**(5) to harm** (verb)**harmful** (adjective)

Definition to harm people or things: to hurt them or damage them

- Examples
1. Some insects do not harm crops or people. In fact, they often control the *harmful* insects.
  2. The car was completely destroyed in the accident, but the driver was not *harmed*. He was able to walk away from the accident. He didn't need any hospital treatment.

**(6) to spray** (verb)

Definition to spray something: to throw out water, paint, etc., in very small amounts through the air (on to something)

- Examples
1. Farmers often *spray* their crops with chemicals that kill harmful insects.
  2. They often use aircraft to *spray* very large areas of crops.

**(7) to permit** (verb)

Definition to permit: to allow

- Examples
1. Smoking is *permitted* in the back part of this aircraft. Do not smoke in Seats 1-20 or in the rest rooms.
  2. We will go to the beach tomorrow, weather *permitting* (if the weather is suitable.)

**(8) to encourage** (verb)

Definition to encourage: 1. to show someone that it is good or possible to do something

2. to give someone hope and support

- Examples
1. Good teachers *encourage* their students. They try to give them confidence, to show them that they can learn.
  2. I was having problems in a math course. I thought that I was going to fail it. I wanted to drop the course. Then I took the first test and got a B+. That *encouraged* me.

**Same or Different?**

Read the two sentences in each example. Do they express the same ideas, or do they express different ideas? Write S for sentence with the same ideas; write D for sentences with different ideas.

Remember: You can express the same idea with different words and different grammar!

1. a. Many residents of the town were opposed to the plan for a new chemical plant there. \_\_\_\_\_
- b. The people who lived in the town supported the plan for a new chemical factory there.
2. a. We cannot permit the use of this chemical. \_\_\_\_\_
- b. The use of this chemical must be forbidden.
3. a. Insects which attack crops cause billions of dollars of damage every year. \_\_\_\_\_
- b. Every year the harm that insects do to crops costs billions of dollars.
4. a. If you use that chemical, you may suffer from some health problems later. \_\_\_\_\_
- b. If you are exposed to that chemical, you may have some health problems later.
5. a. Often scientists do not know the long-term effects of chemicals on the environment. \_\_\_\_\_
- b. The long-term ecological consequences of chemicals are often not known by scientists. \_\_\_\_\_
6. a. It is easy for man to disturb the natural balance that exists in nature. \_\_\_\_\_
- b. The natural balance that exists in nature cannot be disturbed by man.
7. a. No one understood the purpose of Mike's trip to London. \_\_\_\_\_
- b. Mike went to London, but no one knew why.
8. a. In this state, the police enforce the 55-MPH speed limit strictly. \_\_\_\_\_
- b. In this state, the police will stop you even if you are driving at 58 MPH.

9. a. Farmers often spray their crops with chemicals to kill harmful insects. \_\_\_\_\_
- b. Farmers often contaminate their crops with the chemicals which they use against harmful insects.
10. a. Without chemicals it would be impossible to protect crops from insects. \_\_\_\_\_
- b. If farmers didn't use chemicals, they would not be able to prevent insect damage to crops.
11. a. If laws against pollution were stricter, our environment would be in less danger. \_\_\_\_\_
- b. We would be able to reduce the threat to the environment if we had stricter laws against pollution.
12. a. People think that the economic situation will get worse unless the government encourages industrial growth. \_\_\_\_\_
- b. People believe that the economy will suffer if the government does not control industrial development.

### **Expectations**

Read the first sentence in each of these examples. Think about the ideas in it. Then choose the sentence or sentences that can follow it.

1. Often companies which produce chemicals seem to be only interested in the short-term question of profits.
  - a. They seem to ignore the possibility that the use of chemicals carries long-term health risks.
  - b. They conduct a great deal of research into the possible ecological effects of their products.
  - c. If they were really concerned about the environment, they would test their products better.
2. The economic situation in this area will improve next year.
  - a. A large local company is threatening to close its plant if the government introduces new pollution laws.
  - b. Many workers who now have jobs will suffer.

- c. This encouraging news came from an economist who is predicting that unemployment will fall.
3. There is a great deal of resistance to the government's strict new laws against pollution.
  - a. Everyone agrees that industries which pollute the environment should heavy fines.
  - b. The oil industry, especially, is claiming that the new laws are too severe.
  - c. A large number of people, especially doctors, believe that certain chemicals cause brain defects in unborn children.
4. This chemical is extremely dangerous.
  - a. Exposure to even a small amount of it can cause serious harm.
  - b. Last month the government wrote a report that encourages and supports its use.
  - c. Scientists agree that it is completely harmless.
5. There is evidence that certain chemicals which were widely used in agriculture are dangerous for humans.
  - a. In areas which were sprayed with 2,4,5-T, for example, there was an increase in birth defects.
  - b. They seem to be especially harmful for small children and unborn babies.
  - c. However, the government still permits the production and sale of these chemicals.
6. Environmentalists are extremely concerned about the new law which the government is going to introduce.
  - a. The government's purpose is to reduce the number of harmful chemicals that are now in use.
  - b. It will encourage the use of cleaner fuel in the nation's power plants.
  - c. They are especially worried about the part which permits more poisonous waste dumps.
7. Some chemicals that are used in agriculture serve very useful purposes.
  - a. They are sprayed on crops to protect them from harmful insects.
  - b. They cause a great deal of harm to agricultural crops.
  - c. If farmers could not use them, the economic consequences would be extremely bad.

8. Medical researchers have evidence that some birth defects are connected with poisonous chemicals in the environment.
- For example, there is more heart disease among people who live near chemical plants than there is in the general population.
  - For example, anencephaly, a very unusual type of brain damage, is more common in babies who are born near chemical plants.
  - They also believe that such defects will increase unless exposure to these chemicals is reduced.

### Vocabulary Quiz

Choose the correct word for each empty space. Use each word only once.

resist	crops	balance	consequence
situation	suffer	strict	lungs
resistance	ecology	exposed	fine
threatened	harmful	encouraged	purpose
permit	brain	defect	resident

- I parked my car illegally and got a ticket from the police. I had to pay a ----- of \$20.
- There is a serious ----- in the car that I bought last month. All cars of the same type have the same problem. So the producer will have to correct the problem free.
- This chemical is dangerous. Health problems are now appearing in people who are ----- to it every day, for example, the chemical workers who make it and the agricultural workers who use it.
- Without experience very young children do not understand the possible ----- of their actions. For example, they do not realize that if they touch a hot range, they will be burned.
- The air in this city is very dirty. A large number of people ----- from health problems which are clearly connected with the pollution.
- The economic ----- is getting worse. Prices are increasing very quickly. Last year 3 million people were out of work. This year  $4\frac{1}{2}$  million

are unemployed.

7. Mike had an extremely noisy party last night. There were twenty-five people in his apartment. They were laughing and shouting and dancing. At 1:30 A.M. his neighbors ----- to call the police if the noise didn't stop.
8. Last summer some friends and I went sailing in a small boat. I tried to stand up in the boat, but I lost my ----- and fell into the water.
9. Only the ----- of this apartment building can use the swimming pool. If you didn't live in the building, you can't use the pool.
10. Why did the U.S. government introduce the 55-MPH speed limit? The original ----- of the law was to reduce the amount of gasoline the country used.
11. It is clear that cigarette smoking is ----- . It can cause heart disease and other health problems.
12. Farmers are extremely worried. Their----- are being attacked by insects.
13. At first, I didn't want to study in the U.S., but my brother----- me. He said that I would enjoy life here and that my studies would help me a lot later. That's why I am here now!
14. In some countries, it is illegal to drive a car without insurance. The law does not ----- it.
15. Scientists are trying to develop new types of plants that have a ----- to disease. If they succeed, we will not have to use so many chemicals to protect agricultural plants.

**KEY****THE ENVIRONMENT IN DANGER II**

1.T Lines 5-6                      5.F Lines 25-26

2.a Lines 6-7                      6.b Lines 34-35

3.T Lines 1-2                      7.T Lines 33-34

4.c Lines 29-30                  8.a Lines 5-6

1.c Lines 3-5

2.T Lines 7

3.T Lines 16-21

4.a Lines 16

5.F Lines 10

6.b Lines 19-20

*Same or Different*

1. D, 2. S, 3. S, 4. S, 5. S, 6. D, 7. S, 8. S, 9. D, 10. S, 11. S, 12. D

*Expectations*

1. a, 2. e, 3. b, 4. a, 5. e, 6. c, 7. a, 8. b

*Vocabulary Quiz*

1. fine            4. consequences            7. threatened            10. purpose            13. encouraged

2. defect        5. suffer                      8. balance                11. harmful            14. permit

3. exposed     6. situation                9. resident                12. crops                15. resistance

## UNIT 10

### GLOBAL WARMING – THE GREENHOUSE EFFECT

Lecture note by Daw Htay Thidar Oo of YTU

Tuning – in

Read the following pieces of information about global warming and then answer the questions.

#### WORLDWIDE EFFECTS OF GLOBAL WARMING

The most dramatic result of higher temperatures would be the rise in sea level. Climate change would also have far-reaching consequences. Some parts of the world would receive more rain than before: others, including the productive croplands of the Northern Hemisphere, very much less.

- |   |   |  |  |
|---|---|--|--|
| <p><b>1. BRAZIL</b><br/>Coastal cities like Rio de Janeiro would experience severe flooding. The floods that swept through the slum district of Santa Teresa in 1988 were perhaps a foretaste of even greater destruction to come</p> | <p><b>2. USA</b><br/>Farmers in South Carolina explain the effect of the 1986 drought on their soybean crop, five times smaller than in a normal year. Agricultural land in the USA could suffer from greatly reduced rainfall.</p> | <p><b>3. MALDIVE ISLANDS</b><br/>Rising sea levels would have catastrophic consequences for low-lying islands. If the sea level rises by 3 meters(10 feet) coral atolls like the Maldives will disappear completely beneath the waves.</p> | <p><b>4. JAPAN</b><br/>Some parts of the world would benefit as a result of global warming. With changing pattern of rainfall, the area of land in Japan that could be used for rice growing would double.</p> |
| <p><b>5. SUDAN</b></p>  | <p><b>6. CARIBBEAN</b></p>  | <p><b>7. Build railways,</b></p>   | <p><b>8. Lands are</b></p>   |

In the Sahara and sub-Saharan regions of Africa, drought and famine like this would become even more common than they are today.	Tropical storms would become far more frequent, inflicting greater damage than ever on the islands' houses and vegetation.	not roads.	flooding.
<b>15.</b> People will starve.	<b>16.</b> Use the power of the wind.	<b>9.</b> Droughts are spreading.	<b>10.</b> Use less energy.
<b>19.</b> Use the sun's energy.	<b>20.</b> The poles are melting.	<b>11.</b> Governments don't care.	<b>12.</b> People are drowning
		<b>13.</b> Seas are rising.	<b>14.</b> Temperatures are rising
		<b>17.</b> Crops are dying.	<b>18.</b> Hurricanes are getting worse.
		<b>21.</b> Diseases will spread.	<b>22.</b> Forests are burning.

1. Does the greenhouse effect only bring about destructive effects?
2. Classify the pieces of information into results of the greenhouse effect and preventive measures.
3. Can the atmospheric changes have biological and economic effects?
4. In which parts of the world are likely to face more starvation and food shortages than ever before?
5. What would higher temperatures harm?

**Check!**

**Key**

1. *No ( look , information 4 )*
2.

<i>Result</i>	<i>Preventive measures</i>
<i>1, 2, 3, 4, 5, 6, 8, 9,11,</i>	<i>7, 10, 16, 19,</i>
<i>12, 13, 15, 17, 18, 20, 22</i>	
3. *Yes . (Look information 2, 5, 6, 15, 20)*
4. *U S A , Sudan , Caribbean .*
5. *plants & vegetables.*

*Let's have a look at Exercise I. The passage is not a complete one as some sentences are removed from it. But they are given in the exercise I. Before reading the text, read the sentence in exercise I first.*

**Exercise I.**

Read the sentences below. They are removed from the given passage. Choose from the sentences A – G below the one, which fits each gap 1-6. There is one extra sentence you don't need to use.

- A. Until recently all of this was absorbed by trees and plants, which converted it back into oxygen.
- B. So the amount of Carbon dioxide CO<sub>2</sub> in the atmosphere is increasing all the time.
- C. Some areas may actually benefit: the higher temperatures may allow a longer growing season, for example.
- D. At the time, his predictions were regarded as science fiction.
- E. But it certainly looks as if inhabitants of this planet will have to get used to living in a warmer world.
- F. Consequently, the temperature rises.
- G. Surprisingly, the amount of CO<sub>2</sub> in the atmosphere has continued to fall.

*In order to do this exercise, you have to study the preceding sentence and the following one. The most important characteristic that most paragraphs share is the coherence. Coherence is the logical arrangement of sentence in a paragraph; coherence means that all the sentences in the paragraph are logically related to each other and to the topic of a paragraph. For a paragraph to be coherent, each sentence must logically relate to the sentence that precedes it and to the sentence that follows it.*

*After you've done this exercise, check your answer.*

**Check!**

**Key to Exercise I.**

- |      |      |                          |
|------|------|--------------------------|
| 1. D | 4. F | (Sentence G is not used) |
| 2. A | 5. C |                          |
| 3. B | 6. E |                          |

Read paragraph 1.

### Paragraph 1

As long ago as the 1960s Professor Bert Bolin predicted that the “global warming”, caused by an increase in the amount of carbon dioxide (CO)<sub>2</sub> in the atmosphere, would lead to significant changes in the Earth’s climate. 1.....

But most experts now agree that the amount of carbon dioxide in the atmosphere will double from 0.03% to 0.06 % in the next 50 years and that temperatures worldwide will rise by 2° Celsius .

*The first sentence states the prediction of global warming.*

*What is the prediction?*

*Global warming would considerably affect the climatic conditions on earth.*

*Look at the next sentence.*

*“ But most experts now agree that -----*

*The transitional word But is used to introduce an idea contrasting with what has happened before. The idea given in the missing sentence must be in contrast with this one. So from this sentence, you can make inferences: People might not have agreed with Professor Bert Bolin or they were in the state of uncertainty. They may have had doubts as to this prediction being true.*

*Among six sentences, sentence D is the most appropriate one. There are two reasons:*

1. *The subject of this sentence is “his predictions”*

*The sentence before this one states the prediction of the professor.*

2. *His predictions were first thought as sentence fiction.*

*In other words, they were regarded to be rather far- fetched or incredible.*

*This sentence is in total contradiction with the following one. The word “but” shows these two contradictory ideas.*

*The second and the third gaps are in the fourth paragraph. Let's have a look at paragraph 4.*

### Paragraph 4

When living creatures breathe out and when things are burned, CO<sub>2</sub> enters the atmosphere. 2.....

But the balance of nature has been disturbed. In power stations, in factories and in cars, we are burning more and more fossil fuels (coal, oil and natural gas). 18 billion tons of CO<sub>2</sub> enter the atmosphere every year. And the destruction of forests means that there are fewer trees to convert the CO<sub>2</sub> into oxygen. 3.....

*The first sentence of this paragraph explains the basic cause of presence of carbon dioxide in the atmosphere. The third sentence is about the disturbance to nature, which is the outcome or result of the increasing amount of CO<sub>2</sub> in the atmosphere. Cause and effect relationship can be shown with the transitional words like 'Therefore, Consequently, or As a result, Thus'.*

*So, you can make inferences:*

1. *People might have tried something or found ways to prevent CO<sub>2</sub> from entering the atmosphere.*
2. *But their attempts proved to be ineffective.*
3. *Or there must be something which can reduce CO<sub>2</sub> in the atmosphere.*

*Among the sentences given in Ex. I, only sentence A gives this idea of the balance of nature.*

*Gap. 3 is easy. The preceding sentence explains the cause of increasing amount of CO<sub>2</sub> in the atmosphere. It is due to the devastation of forests. So, for this gap, sentence B is the most appropriate one.*

*Let's look at paragraph. 5*

### **Paragraph 5**

As sunlight enters the atmosphere, the surface of the earth is warmed. Some of this heat escapes back into space, but the rest is trapped by CO<sub>2</sub>, which acts rather like the glass in a greenhouse, allowing sunshine and heat to pass in but not out again. 4.....

*The sunlight, some of which is trapped by CO<sub>2</sub> cannot escape and accumulates.*

*What is the result?*

*The earth becomes warmer little by little.*

*So, the missing sentence is sentence F.*

*Let's look at paragraph 9.*

**Paragraph 9**

5.....

For Northern Europeans, the extra warmth may be welcome-but there is also likely to be increased rainfall.

*This time you have to use your own knowledge and experience. The weather condition is very extreme in northern hemisphere especially in Northern Europe. Sometimes, the temperatures falls below 0°C and the land freezes over. People in that area long for warmth. It you look at the first sentence of paragraph 10, you'll find that paragraph 10 discusses the destructiveness of global warming. So, paragraph 9 will probably be about benefits of global warming.*

*Let's move on to the last paragraph.*

**Paragraph 11**

Many experts believe that the Greenhouse Effect will bring significant changes to the Earth's climate, though they don't all agree how long this will take, or what form it will take.

6.....

*This is the concluding paragraph. Many researchers and environmentalists have tried to predict something about the greenhouse effect. It has been the subject of much debate. They haven't reached a consensus of opinion on this greenhouse effect. But the earth is only the place which people can live in. We, human beings, have no choice. The greenhouse effect may bring about better or worse conditions. What we can do is we must be prepared for anything to happen. There is no place for human beings to escape from these disastrous consequences but to accept them. So the missing sentence is E.*

*Let's look at the rest of the text.*

**Paragraph 2**

Although a temperature rise of 2° may not seem significant, the local effects may be much greater: by 2025 a rise of 10° is possible in Polar Regions and 4° in Northern Europe. Indeed the first effects will be felt by the end of the century – perhaps they are already being felt.....

*The rise of temperature averages 2°C which seems to be negligible at first sight or glance. But in particular regions such as Polar Regions and Northern Europe, the temperature rise is quite considerable.*

### **Paragraph 3**

But how does the Greenhouse Effect operate and why should such a tiny proportion of CO<sub>2</sub> have such a harmful effect?

*A question comes up in this paragraph which asks the reason why a very small amount of CO<sub>2</sub> in the atmosphere affects greatly on the earth.*

### **Paragraph 6**

As the temperature rises, the amount of water vapour in the air will increase and this too will absorb more of the Earth's heat the oceans too will become warmer and store more heat, so that they increase the warming effect.

*The rise in temperature is the result of the sunlight, some of which is caught by CO<sub>2</sub> and this also becomes the cause for increasing warming effect in oceans again.*

### **Paragraph 7**

According to some scientists, the polar icecaps will start to melt and the oceans will expand as more snow and ice melts. Because the exposed ground, formerly covered in snow, won't reflect the heat so well; it will absorb more sunlight and this will lead to even more snow melting.

*The temperature rise in atmosphere leads to melting the icecaps away and the expansion of oceans. The ground which is covered with snow does not throw the heat back but take it in. This also results in melting snow more.*

### **Paragraph 8**

Scientists predict that the level of the sea will have risen by ½ to 1 ½ metres by 2050. This will affect many low-lying areas of the world-millions of people today live less than one meter above sea level.

*Another effect threatens people who live near the oceans and seas, as the sea level is predicted to rise by ½ to 1 ½ meters.*

**Paragraph 10**

But many areas may suffer: the southern states of the USA can expect hotter summers and less rainfall, leading to worse conditions for agriculture, and the Mediterranean region may well be much drier and hotter than now.

*The tropics such as Southern state of the USA, Mediterranean are expected to face unfavourable conditions such as aridity and drought.*

*Let's do exercise II.*

**Exercise II**

Check your Understanding.

Answer the following questions.

1. What is the cause of global warming?
2. Does an increase in the amount of CO<sub>2</sub> in the atmosphere make significant changes in the earth's climate ?
3. What happens when living creatures breathe out?
4. What happens to CO<sub>2</sub> in the atmosphere?
5. What are the causes of an increase in the amount of CO<sub>2</sub> in the atmosphere?
6. What is the result of destruction of forests?
7. What does CO<sub>2</sub> do to the heat from the sun?
8. What will happen when the temperature rises?
9. Concerning the global warming, what do scientists predict?
10. Does the greenhouse effect only bring about destructive effect?

**Check!**

**Key to Exercise II**

1. *The cause of global warming is an increase in the amount of carbon dioxide in the atmosphere.*
2. *Yes, an increase in the amount of CO<sub>2</sub> in the atmosphere makes significant changes in the earth's climate.*
3. *When living creatures breathe out, CO<sub>2</sub> enters the atmosphere.*
4. *It is absorbed by trees and plants and then converted into oxygen.*
5. *Burning more and more fossil fuels in power stations, in factories and in cars and the destruction of forests are the causes of an increase in the amount of*

*CO<sub>2</sub> in the atmosphere.*

6. *There are fewer trees to convert the CO<sub>2</sub> into oxygen.*
7. *CO<sub>2</sub> traps the heat from the sun.*
8. *As the temperature rises, the amount of water vapor in the air will increase and this will absorb more of the Earth's heat, and the oceans will become warmer and store more heat so as to increase the warming effect.*
9. *Concerning the global warming, scientists predict that the polar icecaps will start to melt and the oceans will expand as more snow and ice melts. Because the exposed ground, formerly covered in snow, won't reflect the heat so well; it will absorb more sunlight and this will lead to even more snow melting. The level of the sea will have risen by  $\frac{1}{2}$  to  $1\frac{1}{2}$  meters by 2050. This will affect many low-lying areas of the world – millions of people today live less than one meter above sea level.*
10. *No, it also brings about constructive effect.*

*Let's move on to Ex. III*

*Match the cause and the potential results. In this exercise, you'll find that the one which is the result in one situation can be the cause in another.*

**Exercise . III.**

Match the cause in Column A with the appropriate result in Column B.

<b>Cause</b>	<b>Result</b>
1. Sending out of air by living creatures and burning fossil fuels.	a. the rise of temperature in the Earth and the continuous decrease in the amount of CO <sub>2</sub> in the atmosphere.
2. Devastation of forest.	b. the oceans become warmer, keeping more heat and increasing the warming effect.
3. Entering of the sunlight into atmosphere	c. an increase in the amount of CO <sub>2</sub>
4. The reflection of the trapped from the sun back to earth.	d. the surface of the of the earth getting warmer

- |   |   |
|---|---|
| 5. The rise of the temperature.                         | e. an increase in the amount of water vapour in the air |
| 6. An increase in the amount of water vapor in the air. | f. decrease in rainfall.                                |
| 7. Snow and ice melt.                                   | g. more snow melts.                                     |
| 8. Absorption of the sunlight from the ground.          | h. the oceans will expand.                              |
| 9. The dramatic result of higher Temperatures           | i. rising of sea level.                                 |
| 10. The higher temperature                              | j. no inversion of CO <sub>2</sub> into O <sub>2</sub>  |

**Check!**

***Key to Exercise III.***

1. c   2. j   3. d   4. a   5. e   6. b   7. h   8. g   9. i   10. f

**Structure**

**Cause and Effect**

*This structure is predominant in the passage as this passage describes the causes and results of the global warming. As you can see in the examples there are three different ways to show the relationship of cause and result.*

*In the first example, the two sentences which show cause and result are joined with the subordinating conjunction “when”. The sentence which shows the cause loses its independence as a dependent word introduces the clause. The addition of the dependent word “when” makes the clause unable to stand alone.*

*The second type is using the verbs which link the cause to the result. When you use these verbs, be careful of your structure. It is not possible to use a clause as it is.*

*e.g. The polar icecaps melt. The oceans expand.*

*The melting of polar icecaps causes the oceans to expand.*

*( = The melting of polar icecaps is the reason why oceans expand.)*

*The third type is using adverbs. Please do these exercises.*

**Exercise I**

Make statements about the actions and results.

1. The match is rubbed against the side of the box. It ignites.
2. A plant is kept away from the light. It becomes etiolated.
3. Photographic paper is exposed to the light. It becomes dark.
4. Blue litmus paper is placed in acid. It turns red.
5. A solution of salt and water is evaporated. It changes into steam and salt crystals.
6. Wood is burned. It is converted into burning gases, ash and charcoal.
7. Iron is exposed to air and water. It changes into iron oxide.

**Exercise . II.**

Match the cause in Column A with the result in Column B and make statements.

A	B
1. Formation of hard water.	A. formation of shells
2. Decomposition of dead animals	B. production of carbohydrates
3. Absorption of CO <sub>2</sub> by the sea	C. formation of good teeth and bones in animals
4. Photosynthesis	D. formation of carbonic acid
5. The combination of rain and CO <sub>2</sub> in the atmosphere	E. the release of CO <sub>2</sub> into the atmosphere
6. Decomposition of dead plants under pressure	F. carbon dioxide is given off
7. The combustion of coal	G. the formation of coal

**Check!**

**Key to Exercise I**

1. *The match is rubbed against the side of the box and as a result it ignites.*
2. *A plant is kept away from the light and consequently it becomes etiolated.*
3. *Photographic paper is exposed to the light with the result that it becomes dark.*

4. *Placing the blue litmus paper causes it to turn red.*
5. *When a solution of salt and water is evaporated, it changes into steam and salt crystals.*
6. *When wood is burnt, it is converted into burning gases, ash and charcoal.*
7. *Iron is exposed to air and water and consequently it changes into iron oxide.*

**Key to Ex II**

1. C 2. E 3. A 4. B 5. D 6. G 7. F

1. *Formation of hard water leads to the formation of good teeth and bones in animals.*
2. *Decomposition of dead animals results in the release of CO<sub>2</sub> into the atmosphere.*
3. *Absorption of CO<sub>2</sub> by the sea leads to the formation of shells.*
4. *Production of carbohydrates results from photosynthesis.*
5. *The combination of rain and CO<sub>2</sub> in the atmosphere results in the formation of carbonic acid.*
6. *The formation of coal results from decomposition of dead plants under pressure.*
7. *As a result of combustion of coal, carbon dioxide is given off.*