

Sample Questions and Answers for Final Exam(2008)
PE-5045 (Enhanced Oil Recovery) B.E

1. Describe the following
(a) Surfactants
(b) Solutions
(c) Colloids
(d) Micelles

Pg(1)
2. Explain formulation of surfactant slug.

Pg(2),(3)
3. Discuss mobility control.

Pg(3),(4),(5)
4. Describe petroleum sulfonates.

Pg(5),(6)
5. Sketch the following.
(a) Typical water-oil relative permeability curves.
(b) Total relative mobility vs water saturation.

Pg(5)
6. Explain description of process.

Pg(6),(7),(8)
7. Explain with the sketch water treating system.

Pg(8)
8. Describe with the sketch surfactant slug blending system.

Pg(8)
9. Explain with the sketch fluid injection system.

Pg(9),(10)
10. Write down application of the micellar flooding

Pg(10),(11)
11. Describe advantage of the micellar flooding.

Pg(11)
12. Describe disadvantage of the micellar flooding.

Pg(11)
13. Explain reservoir heterogeneity in polymer flooding.

Pg(12),(13)
14. Write down mobility ratio in polymer flooding.

Pg(13),(14)
15. Describe Polymer chemistry.

Pg(14),(15)
16. Discuss displacement mechanisms for polymer flooding.

Pg(15),(16),(17)
17. Explain reservoir selection for polymer flooding.

Pg(17),(18)

18. Describe application, advantages, and disadvantages of miscible slug process.
Pg(27),(28)
19. Discuss surfactant flooding. Pg(1),(2)
20. Sketch miscellar flood process used for tertiary operation.
Pg(6)
21. Draw water treating system diagrams. Pg(8)
22. Describe application, advantages and disadvantages of miscellar flooding.
Pg(10),(11)
23. Explain application, advantages and disadvantages of polymer flooding.
Pg(19),(2)
24. Write down reservoir selection for caustic flooding.
Pg(21),(22)
25. Sketch dry polymer blending diagram.
Pg(18)
26. Explain application, advantages, and disadvantages of propane slug process.
Pg(27),(28)
27. Describe application, advantages, and disadvantages of enriched gas process.
Pg(29)
28. Sketch schematic representation of propane slug processes. Pg(20)
29. Draw schematic representation of enriched gas processes. Pg(29)
30. Write down advantages, and disadvantages of carbon-dioxide miscible process.
Pg(37),(38)

Sample Questions and Answers for Final Exam(2008)
PE-5046(Petroleum Economics, Evaluation and Accounting) B.E

1. Explain critical path method (CPM). Pg(1),(2)
2. Describe description of critical path method. Pg(2),(3)
3. Write down the following formula.
(a) Earliest start times.
(b) Latest finished times.
Pg(6)
4. Write down the following formula.
(a) Earliest finish of vactivity(ij)
(b) Latest start of activity(ij)
Pg(6)
5. Discuss calculations of slack times, TF and FF. Pg(6),(7)
6. Discuss evaluation of future production by performance trends. Pg(10)
7. Explain the following.
(a) Conventional production decline curve.
(b) Percentage decline curve
(c) Persistence curve
Pg(11)
8. Describe the following.
(a) Cumulative production curves
(b) Future production curve
Pg(11)
9. Write down the following.
(a) Rate verses cumulative
(b) Reservoir pressure verses cumulative production
(c) Well potential verses cumulative production.
Pg(11)
10. Explain decline curves, theoretical relations. Pg(12)
11. Describe case of $b=0$, exponential decline. Pg(13)
12. Write down case of $0 < b < 1$, general hyperbolic decline. Pg(13),(14)
13. Discuss conversion to yearly production calculations. Pg(14),(15)

14. Describe estimating time by extrapolating rate-time curves and calculating reserves.

Pg(15),(16)

15. Discuss detailed evaluation report.

Pg(44),(45)

16. Given data:

Year	Production (bbl)
1	30,000
2	22,050
3	16,900
4	13,330

Estimate the remaining reserves by hyperbolic.

Pg(17),(18)

17. Discuss the evaluation report.

Pg(38),(39)

18. Describe purpose of the report.

Pg(39),(40)

19. Write down summary sheets for types of reports.

Pg(40)

20. Discuss general evaluation summaries for types of reports.

Pg(40),(41)

21. Discuss the reserves.

Pg(41),(42)

22.

List of articles

I	J	T _E	Critical	Activity
1	2	0	*	(Start)
2	3	10		Order and obtain pump
2	4	14	*	Power concrete foundations (dummy)
3	4	0		
4	5	7	*	Install machinery
5	6	4		Test machinery
5	7	7	*	Erect building
6	7	0		(dummy)

Draw activity on arrow diagrams.

Ch(1) Pg(4)

23. Table 2.3

Pg(16),(17)

24. Ch(2) Example

Pg(25),(26)

25. Table 2.7

Pg(20),(21)

- 26. Table 2.6 Pg(19)
- 27. Table 2.8. Pg(22),(23)
- 28. Table 2.9 Pg(23),(24)
- 29. Discuss types of production curves. Pg(11),(12)
- 30. Describe case of $b = 0$, exponential decline and case of $b = 1$, Harmonic decline. Pg(13),(14)

Sample Questions and Answers for Final Exam(2008)
PE-5056(Computer Programming in Petroleum Engineering) B.E

1. Write down the following.
(a) Input/ Output units (I/ O)
(b) Printers
(c) Plotters

Pg(5),(6)
2. Describe backing store (auxiliary memory) and software.

Pg(6),(7)
3. Explain system software and application software.

Pg(7),(8)
4. Discuss programming concepts and programming language.

Pg(9),(10)
5. Calculation of Chapter(2) Example(1).

Pg(10),(11),(12)
6. Draw Flow chart of Chapter(2) Example(1).

Pg(13)
7. Write a Fortran Program of Chapter(2) Example(1).

Pg(14)
8. Calculation of Chapter(3) Example(1).

Pg(15),
9. Draw a flow chart of Chapter(3) Example(1).

Pg(16)
10. Write a Fortran program of Chapter(3) Example(1).

Pg(17)
11. Calculation of Chapter(4) Example(1).

Pg(29)
12. Draw a flow chart of Chapter(4) Example(1).

Pg(30)
13. Write a Fortran program of Chapter(4) Example(1).

Pg(31)
14. Draw a flow chart of Chapter(5) Example(1).

Pg(36),
15. Write a Fortran program of Chapter(5) Example(1).

Pg(37)
16. Calculation of Chapter(6) Example(1).

Pg(39),(40),(41)
17. Draw a flow chart of Chapter(6) Example(1).

Pg(42)
18. Write a Fortran program of Chapter(6) Example(1).

Pg(44)
19. Calculation of Chapter(6) Example(4).

Pg(58)

20. Draw a flow chart of Chapter(6) Example(4). Pg(59),(60)
21. Write a Fortran of Chapter(6) Example(4). Pg(61),(62)
22. Ch(4) Example(2) Pg(32),(33),(34)
23. Ch(3) Example(4) Pg(25),(26),(27),(28)
24. Ch(6) Example(2) Pg(45),(46),(47),(48),(49)
- 25.. Ch(6) Example(4) Pg(58),(59),(60),(61),(62)
26. Ch(3) Example(3) Pg(22),(23),(24)
27. Ch(4) Example(1) Pg(29),(30),(31)
28. Ch(3) Example(2) Pg(18),(19),(20),(21)
29. Explain the following.
 (a) What is a computer?
 (b) Computer types.
 (c) Classification of computer.
 (d) Advantages of a computer.
 Ch(1),Pg(1),(2),(3)
30. Explain the following
 (a) Microcomputers
 (b) Minicomputers
 (c) Mainframes
 (d) Memory
 (e) CPU
 Ch(1),Pg(2),(3),(4)

Sample Questions and Answers for Final Exam(2008)
B.E PE-5052 (Advanced Drilling Engineering)

1. Example 1.6. Pg(15)
2. Example 1.7. Pg(15)
3. Example 1.8. Pg(16)
4. Explain uses of horizontal well. Pg(24)
5. Describe types of Horizontal wells. Pg(24)
6. Example 2.2. Pg(31)
7. Example 2.3. Pg(32)
8. Example 2.4. Pg(32)
9. Example 2.5. Pg(34),(35)
10. Example 2.6. Pg(40),(41),(42)
11. Example 2.7. Pg(42)
12. Example 2.8. Pg(43)
13. Example 2.9. Pg(43)
14. Example 2.10. Pg(44)
12. Discuss Wellbore pressure (effects of surface pressure)
Pg(52)
17. Discuss gas migration and expansion. Pg(53),(54)
18. Describe causes and preventive measures of kicks. Pg(59)
19. Explain the following equipment for horizontal drilling.
 - (a) Steering tool Pg(27)
 - (b) Directional measurement while drilling Pg(27)
20. Describe the following equipment for horizontal drilling.
 - (a) Measurement while drilling Pg(28)
 - (b) Survey tools Pg(28)

21. Describe the factors which include drag on the drill string.
Ch(2), Pg(37)
22. Calculate the hydrostatic pressure and hydro pressure gradient of each of the following systems
- (i) 15,000 ft of 15.0 ppg mud
 - (ii) 12,000 ft of 75.0 lb/ ft³ mud
 - (iii) 10,000 ft of 1.2 specific gravity mud.
- Ch(2)Pg(54)
23. A well is drilled at 8000 ft with 11.0 ppg mud. Surface casing is sea at 2500 ft.
- (i) What is the hydrostatic pressure of 8000ft.?
 - (ii) What is the hydrostatic pressure at the surface casing shoe at 2500ft?
- Ch(2)Pg(54)
24. If the well was shut in with reservoir pressure 9000 psia and we have gained 50 bbl of 9.0 ppg salt water at one time during a connection.
- (i) What should be the shut in drill pipe pressure (SIDPP)?
 - (ii) What mud weight would be repaired to balance the reservoir pressure?
- Ch(3), Pg(55)
25. Example 3.6 Pg(57)
26. Example 3.8. Pg(58)
27. Example 1.1. Pg(3),(4)
28. Example 1.2. Pg(7),(8)
29. Example 1.5. Pg(13)
30. Determine the primary purpose of horizontal wells. Pg(3),

Sample Questions and Answers for Final Exam(2008)
B.E PE-5033 (Advanced Petroleum Production Engineering)

1. Sketch diagrammatic of chamber-lift installation. Pg(42)
2. Sketch diagrammatic of plunger-lift installation. Pg(42)
3. Example 3.1. Pg(46),(47),(48),(49),(50)
4. Example 3.2. Pg(50),(51)
5. Example 3.3. Pg(52)
6. Example 3.4. Pg(53),(54),(55)
7. Discuss pump size selection. Pg(57),(58)
8. Example 4.1. Pg(58),(59)
9. Sketch conventional units. Pg(62)
10. Sketch air balance system. Pg(62)
11. Sketch Lufkin mark II unit. Pg(62)
12. Write down the formula of PPRL and MPRL of conventional units, air balance unit and mark II units. Pg(61),(62)
12. Describe producing characteristics and fluid properties of factors affecting selection of artificial lift equipment. Pg(67),(68)
13. Describe hole characteristics and reservoir characteristics of factors affecting selection of artificial lift equipment. Pg(68),(69)
14. Write down the following of factors affecting selection of artificial lift equipment.
(a) Long-range recovery plan.
(b) Surface facilities.
(c) Location Pg(69)
15. Discuss relative economics of the selection of artificial lift equipment. Pg(69),(70)

17. Explain producing methods involving liquid slugs for intermittent gas lift.
Pg(40),(41)
18. Describe producing methods involving liquid slugs for plunger lift.
Pg(40),(41)
19. Explain with the sketch the producing methods producing methods involving liquid slugs for chamber lift.
Pg(42)
20. Example 4.2
Pg(63),(64)
21. Describe common problems affecting lift selection. Pg(67)
22. Describe advantages of sucker rod pumping system. Pg(70)
23. Describe disadvantages of sucker rod pumping system. Pg(70),(71)
24. Describe advantages of gas lift system. Pg(71)
25. Describe disadvantages of gas lift system. Pg(71)
26. Write down advantages of hydraulic pumping. Pg(71),(72)
27. Write down disadvantages of hydraulic pumping. Pg(72)
28. Explain advantages of electrical submersible pump. Pg(73)
29. Explain disadvantages of electrical submersible pump. Pg(73)
30. Discuss torque factor in a beam pumping system. Pg(62),(63)

Sample Questions and Answers for Final Exam(2008)
B.E PE-5057 (Management for Petroleum Engineering)

1. Sketch the integration of reservoir management. Pg(21)
2. Sketch the nature of the following oil properties.
(a) Pressure vs. formation volume factor.
(b) Pressure vs. viscosity.
(c) Pressure vs. gas solubility
Pg(75)
3. Sketch the nature of the following gas properties.
(a) Pressure vs. Viscosity.
(b) Pressure vs. gas formation volume factor
Pg(76)
4. Sketch the following relative permeability chart.
(a) Gas oil relative permeability.
(b) Water oil relative permeability.
Pg(76)
5. Discuss the volumetric method for estimating recoverable reserves.
Pg(105),(108)
6. Discuss the decline curve method for estimating recoverable reserves.
Pg108),(109),(110)
7. Discuss the material balance method for estimating recoverable reserves.
Pg(114)
8. Describe input data for simulation process. Pg(130),(131)
9. Describe history matching for simulation process. Pg(131),(132)
10. Describe performance prediction for simulation process. Pg(132)
11. Define the following.
(a) Payout time
(b) Discounted cash flow
(c) Profit to investment ratio
Pg(142),(143)
12. Define the following
(a) Present worth net profit
(b) Investment efficiency
(c) internal rate of return
Pg(143)
13. Describe description, mechanisms, limitations, and problems of steam flooding.
Pg(177)

14. Describe description, mechanisms, limitations, and problems of In-situ combustion..
Pg(178)
15. Write down description, mechanisms, limitations, and problems of polymer flooding.
Pg(179)
16. Explain description, mechanisms, limitations, and problems of surfactant flooding.
Pg(180)
17. Discuss description, mechanisms, limitations, and problems of alkaline flooding.
Pg(181)
18. Describe description, mechanisms, limitations, and problems of hydrocarbon miscible flooding.
Pg(183)
19. Write down description, mechanisms, limitations, and problems of Carbon dioxide flooding.
Pg(184)
20. Describe scope, objective, and definition of reservoir management.
Pg(2),(3),(7)
21. Discuss history of reservoir management.
Pg(8),(9)
22. Explain fundamentals of reservoir management.
Pg(9),(10),(11)
23. Sketch the following reservoir management team. Pg(13)
24. Sketch integration of reservoir management. Pg(2)
25. Discuss remains for failure of reservoir management programs.
Pg(44),(45),(46)
26. Describe characteristics of various driving mechanisms.
Pg(104)
27. Sketch the nature of the following.
 - (a) Log of production rate vs. time.
 - (b) Production rate vs. cumulative production.
 - (c) Log of water cut vs. cumulative oil production.Pg(109)

28. Sketch the nature of the following
- (a) Log of oil cut vs. cumulative oil production.
 - (b) O/W contact or G/O contact vs. cumulative oil production.
 - (c) Log cumulative gas vs log cumulative oil production.
Pg(110),(111)
29. Example 6.4 Pg(113)
30. Discuss summary of different material balance methods.
Pg(115),(116),(117)

Sample Questions and Answers for Final Exam(2008)
B.E PE-5035 (Petroleum Reservoir Engineering)

1. Describe calculation of hydrocarbon volumes.. Pg(1),(2),(3)
2. Discuss oil recovery(recovery factor). Pg(10),(11),(12)
3. Example 2.1. Pg(52),(53)
4. Example 2.2. Pg(65)
5. Describe complete PVT analysis. Pg(70)
6. Example 3.3. Pg(88)
7. Example 4.1. Pg(111),(112),(113)
8. Drive radial steady state flow; well stimulation. Pg(115),(116),(117)
9. Write down increasing the effective permeability (k) to increase the PI.
Pg(119)
5. Describe mobility control. Pg(126)
11. Explain tertiary flooding. Pg(127),(128)
12. Discuss Surfactant flooding. Pg(128),(129)
13. Write down the derivation of the basic radial differential equation.
Pg(131),(132),(133)
14. Describe radial flow under transient conditions. Pg(134)
15. Discuss radial flow under semi steady state conditions. Pg(134),(135),(136)
16. Explain radial flow under steady state conditions. Pg(136),(137)
17. Example 1,1 Pg(15),(16),(23),(24),(25)
18. Example 1,2 Pg(33),(34),(35)
19. Example 3,1 Pg(82),(83)
20. Sketch the Schematic of Darcy's experimental equipment. Pg(104)

21. Draw the Orientation of Darcy's apparatus with respect to the Earth's gravitational field.
Pg(105)
22. Given data
 $B_o = 1.0940$, $B_{oi} = 1.2417$, $B_g = 0.00339$
 $R_{si} = 510$ $R_s = 122$
 The reservoir will be produced down to an abandonment pressure of 900 psia.
 Determine an expression for the recovery at abandonment as a function of the cumulative gas oil ratio R_p .
 What do you conclude from the nature of this relationship.
 Pg(83),(84),(85)
23. Example 3.4 Pg(90),(91),(92),(93)
24. Discuss removal of skin (s) to increase the PI. Pg(118)
25. Describe increasing the effective permeability(k) to increase the PI.
Pg(119)
26. Discuss viscosity reduction to increase the PI. Pg(119),(120)
27. Describe increasing the well penetration to increase the PI.
Pg(120),(121)
28. Discuss the Polymer flooding. Pg(126)
29. Describe thermal method Pg(127)
30. Explain Carbon dioxide flooding Pg(128)
