

Total No. of Questions : 10]

SEAT No. :

P1164

[4659] - 270

[Total No. of Pages : 5

B.E.(Petroleum Engineering)

A : Petroleum Exploration (Elective - I)

(2008 Pattern) (Semester - I)

Time : 3 Hours]

[Max. Marks : 100

Instructions to the candidates:

- 1) *Answers to the two sections should be written in separate answer-books.*
- 2) *Neat diagram must be drawn wherever necessary.*
- 3) *Attempt any three questions from Section - I and Section - II.*
- 4) *Figures to the right indicate full marks.*

SECTION - I

Q1) Answer **any three** questions of the following:

[15]

- a) Draw basic magnetic anomaly patterns and describe them in brief.
- b) Latitude and elevation corrections in gravity observations.
- c) Draw Bouger anomaly profile across a basement granite and a sedimentary basin.
- d) Vertical electrical sounding interpretation.
- e) Differentiate between Wenner and Schlumberger electron configuration, Draw neat sketches.
- f) Radioactivity in rocks and detection in field.

Q2) a) Write in brief with the help of a neat diagram important wave parameters that are applicable in seismic exploration. **[5]**

b) Define and explain different seismic data acquisition parameters. **[10]**

P.T.O.

OR

Q3) Write short answers for the following questions. **Solve any five** [15]

- a) Difference between 2D and 3D seismic mapping?
- b) Types of noise in seismic record.
- c) What is Acoustic Impedance?
- d) Deconvolution process and types.
- e) Static correction applied in seismic data acquisition.
- f) Normal Move out correction.
- g) Migration Velocity.
- h) Amplitude Versus Offset Analysis.

Q4) a) Write a note on Direct Hydrocarbon Indicators. [5]

b) How to generate a time seismic map? [5]

c) What is synthetic seismogram? [5]

d) List down the factors that affect velocity estimation in seismic. [5]

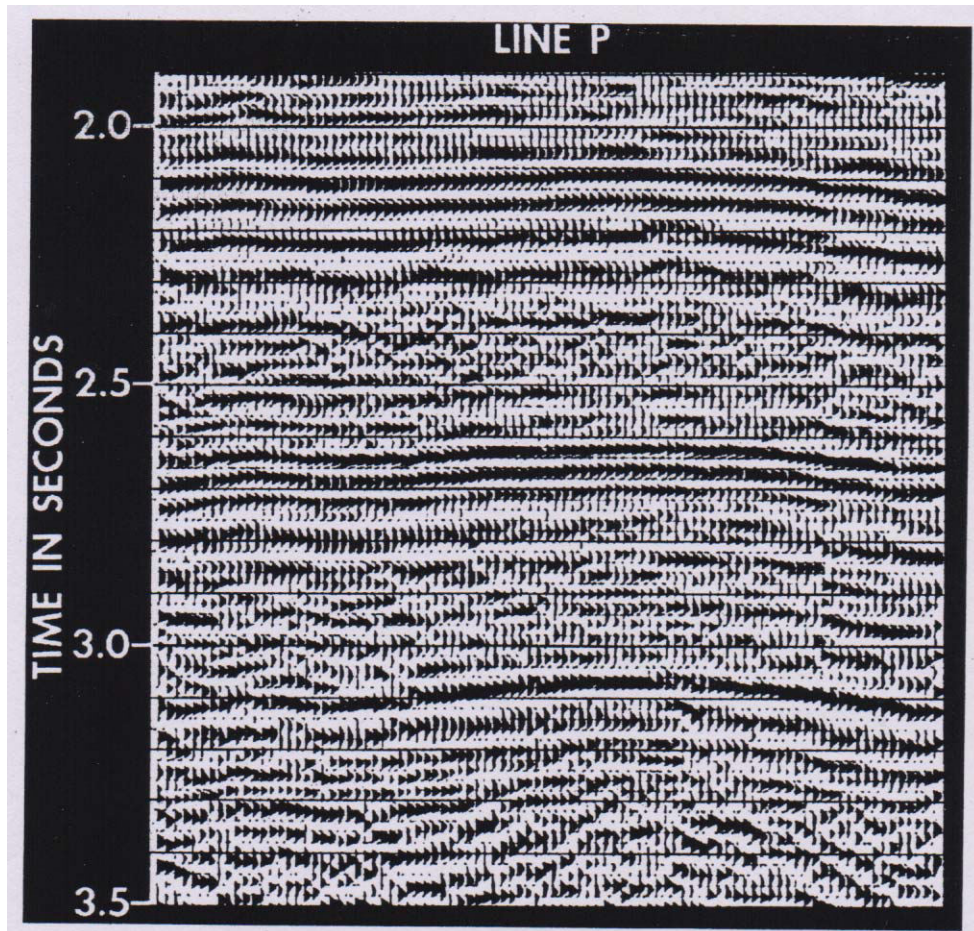
OR

Q5) a) You are given a vertical section of line P. Answer following questions using this diagram. [10]

i) What approach you will follow to read the line?

ii) What procedure is to be adopted to tie the well on this seismic section?

- iii) What may be the location for taking a well and why?
- iv) What is the resolution of the section?
- v) Write possible interpretation.



- b) What are “Seismic facies”? How are they recognized and mapped?[10]

SECTION - II

- Q6)** a) Explain different modes of transport of micro seepages of petroleum from reservoir to surface? [10]
- b) What are the different geochemical correlation methods? [5]

OR

- Q7) a)** What is biodegradation of oil? [5]
- b) Write a note on Source rock - Oil correlation. [5]
- c) What are biomarkers? [5]

Q8) Write the basic volumetric equation for the calculation of Original Oil In Place (OOIP). How to estimate different parameters quoted in the equation and what are the uncertainties associated with each parameter? [15]

OR

Q9) a) Following are the details of different parameters required in the volumetric estimation of reserves. [10]

Parameter	Range of value
Area	10 to 30 Km ²
Formation thickness	11 to 19 m
Porosity	9 to 19%
Water Saturation	15 to 45%
Formation Volume Factor,	1.14 to 1.26 m ³ / sm ³
Recovery Factor	20 to 30%

What is the reason for uncertainty in different parameters? What may be the errors in the calculations? Calculate Minimum and Maximum Recoverable Reserves

- b) What are the important parameters that need to be analyzed in the mapping of petroliferous basins? [5]

Q10) Answer in brief any four of following with neat sketches. [20]

- a) Difference between conventional petroleum system and continuous accumulation system.

- b) Exploration in sand shale sequence.
- c) Elastic properties of rocks.
- d) Mapping in Structural traps.
- e) Frontier and Matured Basins.
- f) Temporal changes associated to producing fields.
- g) 4 D seismic.
- h) Multivariate maps.

