Total No. of Questions : 3] **[Total No. of Pages :2**

P 1016 [4029] - 301

M.Sc. (Appl) Petro leum Technology Sem. - III

PT - 9 : Reservois Dynamics (New)

(2008 Pattern)

Time : 3 Hours] ***[Max Marks : 80***

Instructions to the candidates :

1) ***All questions are compulsory.***
2) ***All auestions carry equal marks.***

Q1) What factors affect the movement of oil with in the reservoris? Explain the 'Diffisivity equation' with regard to reservoris conditions and also its importance. **[20]**

OR

What is meant by 'Surface tension' of oil? Describe, in detail, various interactions of reservois fluids at their interfaces. Along with their wettability.

Q2) Define 'Finite' and 'Infinite' reservoirs. Describe the 'Formation Volume Factor' of undersaturaled oil reservoirs. **[15]**

Q3) Write note on: (any three) **[15]**

a) Gas Cap Drive

b) Reservois pressures.

c) Compressibility of fluids.

d) Combination drive.

e) Volumetric and non volumetric reservoirs.

Q4) Explain how Poisseulle's law for capillary flow-unsteady state can be used for reservois andition. **[15]**

P.T.O.

Q5) Describe how 'Gas-m-Place' can be calculated by volumetric method. **[15]**

Q6) Write notes on (any 3) **[15]**

a) CHDT
b) Limitations of MBE.
c) Gas condensate roservoirs.
d) Non-ideal Ereal gases.
e) Influence of casing and channel leak on reservoirs conditions.

Q7) Define WOR and GOR. Describe, in detail, how gas and water production trends in roservoirs can be estimated. **[15]**

⌘⌘⌘

Total No. of Questions : 7] **[Total No. of Pages :2**

P 1017 [4029] - 302

M.Sc. (Appl) Petroleum Technology Sem. - III

PT - 10 : Formation Evaluation - I

(New Syllabus) (2008 Pattern)

Time : 3 Hours] ***[Max Marks : 80***

Instructions to the candidates :

1) ***Question No. 1 is compulsory out of the remaining attempt 4 questions.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***You are advised to attempt not more than 5 questions.***

Q1) Write note on any four of the following: **[20]**

a) Archies Principle

b) Scintillation counter

c) Calibration of Gamma pay fool.

d) Shale potential.

e) Role of mud logging and its' role in formation evaluation.

Q2) Describe in brief the different components of wirline logging equipment with a neat diagram. **[15]**

Q3) What is the main difference in the use of focussed and non focussed electrical resistivity logs? Describe the principle and applications of lateral and spherically focussed log. **[15]**

Q4) Explain the difference in physical principles of resistivity logs and induction logs. What is the physical property measured in each and their advantages and disadvantages. **[15]**

Q5) Explain the qualitative and quantitative applications of SP logs. **[15]**

P.T.O.

Q6) Write in short about geothermal gradient and the use of borehole temperature in formation evaluation. **[15]**

Q7) Write short note on any three of the following: **[15]**

a) Compton seattering.

b) Ionization chamber.

c) Objective of MWD and LWD.

d) When DST is carried out and the important information obtained from DST.

e) SSP. (Static S P).

⌘⌘⌘

Total No. of Questions : 7] **[Total No. of Pages :2**

P 1018 [4029] - 303

M.Sc. (Appl.) Petroleum Technology

PT - 11 : Drilling and Well Completions

(New Course) (2008 Pattern)

Time : 3 Hours] ***[Max Marks : 80***

Instructions to the candidates :

1) ***Question No. 1 is compulsory out of the remaining attempt 4 questions.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***You are advised to attempt not more than 5 questions.***

Q1) Enumerate the major components of an Oil rig and describe in detail it's "Circulatory System". **[20]**

OR

Describe different off shore rigs and add a note on their advantages and disadvantages.

Q2) Enumerate different components of a "drill string" and explain their working. **[15]**

Q3) Answer the following: **[15]**

a) Discuss the criteria used for bit selection.

b) Discuss the geometry of a directional well.

Q4) Write notes on: (any three) **[15]**

a) Functions of drilling muds.

b) Rig Personnel.

c) GTO.

d) Drilling cost Analysis.

e) PDC bits.

P.T.O.

Q5) Describe in brief well completion operations. **[15]**

Q6) a) Explain the situations, requiring fishing jobs and describe any two fishing tools. **[8]**

b) Explain why different cement additives are used. **[7]**

Q7) Write notes on: (any three) **[15]**

a) Open hole Completions.

b) Lost Circulation materials.

c) Temperature log in cement evaluation.

d) Squeeze cementing.

e) Causes of kicks & blow outs.

⌘⌘⌘

Total No. of Questions : 7] **[Total No. of Pages :2**

P 1019 [4029] - 401

M.Sc. (Appl.) Petroleum Technology

PT - 13 : Reservoir Performance

(New Course) (2008 Pattern)

Time : 3 Hours] ***[Max Marks : 80***

Instructions to the candidates :

1) ***Question No. 1 is compulsory out of the remaining attempt 4 questions.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***You are advised to attempt not more than 5 questions.***

Q1) Why is there a necessity for designing reservoir model? Describe various factors and steps to be considered in preparing an integrated model and explain the designing of a tank model. **[20]**

OR

Define a permeability of a reservoir. State the factors affecting the permeability and describe, with neat diagrams, the utility of permeability curves in predicting reservoir performme.

Q2) What is the importance of 'Pressure Transient Test' in reservoir studies? Describe its utility in reservoir studies with the help of diffusivity equation. **[15]**

Q3) Why is water flooding required during the life of a producing well? Describe in detail, the use of water finding in EOR. **[15]**

Q4) Write notes on: (any three) **[15]**

a) Future of EOR.

b) 3 D models in Reservoir simulation.

c) Forecasting future per formance of reservoir.

d) Immiscible gas injection.

e) Inflow Performance Relationship (TPR).

P.T.O.

Q5) Explain the basic criteria that should be considered to establish a rational development System of an oil field. **[15]**

Q6) Explain the use of Horner's goaph for predicting static pressure at infinite closed time and its utility in reservoir performance. **[15]**

Q7) Write notes on: (any three) **[15]**

a) Productivity Index.

b) Production rate decline crime & its uses.

c) Flowing bottom hole pressure and its uses.

d) Flowing well performance.

e) Drill stem test.

⌘⌘⌘

Total No. of Questions : 7] **[Total No. of Pages :2**

P 1020 [4029] - 402

M.Sc. (Appl.) Petroleum Technology

PT - 14 : Formation Evaluation - II (Sem. - IV)

(New Course) (2008 Pattern)

Time : 3 Hours] ***[Max Marks : 80***

Instructions to the candidates :

1) ***Question No. 1 is compulsory out of the remaining attempt 4 questions.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***You are advised to attempt not more than 5 questions.***

Q1) Describe thermal decay time OR sonic log with reference to principles, tools, log representation, environmental effects and applications. **[20]**

Q2) a) Discuss the Principles and measurement characteristics of chlorine log. **[8]**

b) Write a note on High resolution spectroscopy. **[7]**

Q3) Discuss the geological factors affecting the hydroges widex with reference to Neutron logs. Add a note on its applications. **[15]**

Q4) Write notes on: (any three) **[15]**

a) Compton Scattering.

b) Difference between ditho-derisity and Density log.

c) Types of Neutran logs.

d) Acoustic Impedance and Reflection Coefficient.

e) Why two detectors (Near/Far) are used in Density Tools.

Q5) Explain how geological parameters affect the measurement of EPT log. Add a note on it's applications. **[15]**

P.T.O.

Q6) Explain the principle of Bore-hole Tele Viewer and describe it's tool. **[15]**

Q7) Write notes on: (any three) **[15]**

a) Uses of Density-Neutron cross-plots.

b) Clay Volume from geophysical logs.

c) NML Tool.

d) Applications of EPT log.

e) Cement Bond log.

⌘⌘⌘

Total No. of Questions : 7] **[Total No. of Pages :2**

P 1021 [4029] - 403

M.Sc. (Applied) (Sem. - IV)

PETROLEUM TECHNOLOGY

PT - 15 : Production Operations

(New 2008 Pattern)

Time : 3 Hours] ***[Max Marks : 80***

Instructions to the candidates :

1) ***Question No. 1 is compulsory. Out of the remaining attempt 4 questions.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***You are advised to attempt not more than 5 questions.***

Q1) What is acidizing? Why it is required to acidize an oil well? Describe in detail different types of acidizing techniques used in oil wells. **[20]**

OR

What is formation damage? Explain its mechanism with reference to productivity reduction in an oil well. **[20]**

Q2) What are scales? Describe different methods by which scales can be identified and prevented. **[15]**

Q3) What is 'Drill Stem Test'? Explain how the pressure charts are interpreted? **[15]**

Q4) Write notes on : (any three) **[15]**

a) Carbonate Porosity.

b) Sequestering agents.

c) Corrosion Fatigue.

d) Packer Fluids.

Q5) What are surfactants? Explain use and action of different surfactants. How can they be used to help in well stimulation? **[15]**

P.T.O.

Q6) What are workover jobs? Why is it essential? Give reasons for workovers? **[15]**

Q7) Explain the following. (any two) **[15]**

a) Mechanical methods of sand control.

b) Factors controlling acid reaction in carbonate acidizing.

c) Primary Cementing Practices.

⌘⌘⌘