

Name:

Enrolment No:



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
Online End Semester Examination, December 2020

Programme : B.TECH GSE

Semester : VII

Course Name : Principle of Reservoir Engineering

Time : 03 hrs.

Course Code : PEAU 4005

Max. Marks: 100

Nos of Page(s) : 02

Instructions: All questions are Compulsory

SECTION A

1. Each Question will carry 5 Marks

2. Instruction: Complete the statement / Select the correct answer(s)

S. No.		Marks	CO
Q 1	I. Fluid compositional description tool is required to calculate ----- and ----- behavior. (2M) II. Two types of models that are generally used for calculating the reservoir fluid compositions. (2M) III. ----- pores will not contribute to recoverable reserves (1M)	5M	CO1
Q 2	I. Tortuosity of porous network is useful to describe ----- in porous media II. The simplest mathematical method to estimate tortuosity is ----- III. Tortuosity will effect the saturation of oil and gas. (True or False) IV. Judge the statement “ All factors that are effecting permeability will effect porosity” (True or False) V. Reservoir compactness results in ----- porosity and ----- permeability	5M	CO2
Q 3	I. The flow behaviour of any fluid is represented by ----- (1M) II. A contact angle of ----- to ----- will have a tendency to repel the liquids. (2M) III. The capillary pressure that exists within a porous medium between two immiscible phases is a function of the -----and the ----- (2M)	5M	CO3
Q 4	I. Shrinkage factor is ----- of Bo. II. Oil & gas processing will effect ----- and ----- Values. III. Total formation volume factor is termed as----- IV. In under saturated oil reservoir, oil volume changes is significant when the reservoir pressure is V. Empirical correlations relates the black oil parameters like Bo and Rs to ----- -----	5M	CO4
Q 5	I. Set of drive mechanisms that comes under depletion drive mechanism (1M) II. Gas liberated under solution gas drive is considered as ----- (1M) III. Reservoir performance under drive mechanisms mainly depends on ----- ,----- and ----- (3M)	5M	CO4

Q 6	<p>I. Which of the following method is used to calculate fluid saturations directly? a) Vacuum distillation method. (1M) b) Using scanner survey. c) Cory model. d) Pirson model.</p> <p>II. ----- and ----- have a significant impact on the shape of the relative permeability curves (2M)</p> <p>III. When depleted gas reservoirs are used for gas storage permeability of reservoir determines: (1M) (a) Rate of Injection (b) Withdrawal of gas from storage (c) Both- Rate of Injection and Withdrawal rate (d) None of above</p> <p>IV. Changes in gas composition is neglected in ----- reservoir during PVT analysis (1M)</p>	5M	CO3
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SECTION B

1. Each question will carry 10 marks

2. Instruction: Write short / brief notes

Q 7	What is Darcy's law and the material balance expressed as a linear equation	10M	CO2
Q 8	Describe the reservoir performance characteristics of a water drive reservoir and solution gas drive reservoir	10M	CO3
Q 9	Explain the hydrocarbon phase behavior and the procedure to calculate the hydrocarbon volumes	10M	CO4
Q 10	Explain in detail about various methods used for determining fluid saturation and the uses of the capillary pressure.	10M	CO3
Q 11	Discuss the applicability of different reservoir estimation techniques at different stages in life cycle of oil and gas field.	10M	CO4

SECTION-C

1. Each Question carries 20 Marks.

2. Instruction: Write long answer.

Q 12	<p>a) Illustrate the importance of different recovery methods in enhancing the oil recovery efficiency. (10M)</p> <p>b) Analyze the role of reservoir fluid properties in well productivity, separation process and recovery process. (10M)</p>	20M	CO4
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