Name: Enrolment No:	UPES

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

Programme : B.TECH APE GAS **Semester : V**
Course Name : Reservoir Engineering **Time : 03 hrs.**
Course Code : PEAU 3009 **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. For economic viability for oil & gas production reservoir rock must exceed ---------- a) Minimum thickness b) Maximum porosity c) Optimum volume d) Optimum area II. ---------- rocks are porous but are not interconnected III. ---------- pores will not contribute to recoverable reserves IV. Porosity of any reservoir depends on a) Grain size b) Clay and mineral compositions. C) Packing of grains d) All of the above. V. Porosity range of limestone reservoirs a) 35-45% b) 20-35% c) 10-30% d) 5-20%	**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----------	**5M**	**CO4**

	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 ----------		
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	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. II. ---------- and ---------- have a significant impact on the shape of the relative permeability curves (2M) 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 IV. Changes in gas composition is neglected in ---------- reservoir during PVT analysis (1M)	**5M**	**CO3**
SECTION B **1. Each question will carry 10 marks** **2. Instruction: Write short / brief notes**			
Q 7	Illustrate the various techniques used to measure permeability.	**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 application of PVT parameters to relate surface to reservoir hydrocarbon volumes; below bubble point pressure.	**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	a) Illustrate the importance of different recovery methods in enhancing the oil recovery efficiency. (10M) b) Analyze the role of reservoir fluid properties in well productivity, separation process and recovery process. (10M)	**20M**	**CO4**