


Name:			
Enrolment No:			
<b>UNIVERSITY OF PETROLEUM AND ENERGY STUDIES</b> <b>End Semester Examination, December 2022</b>			
Programme Name: B.Tech. (APEG)		Semester : VII	
Course Name : Production Engineering II		Time : 3 Hrs.	
Course Code : PEAU4013P		Max. Marks : 100	
Nos. of page(s) : 2			
<b>Instructions:</b>			
1. All questions are compulsory.			
2. Assume any missing data, if any			
S. No.	Section - A (Attempt all questions) (6Qx10M=60Marks)	Marks	CO
Q1	List the advantages and disadvantages of both horizontal and vertical separators	10	CO1
Q2	Draw the various components of a separator along with their respective functions.	10	CO1
Q3	Enumerate and describe the variables that influence the stability of oil-water emulsion	10	CO2
Q4	How the skin factor and flow efficiency provide insight into the formation damage	10	CO3
Q5	List the features of different compression processes in a compressor	10	CO5
Q6	Discuss the following attributes of the flow measurement devices a) Rangeability b) Repeatability	10	CO5
	<b>Section - B (Attempt all questions) (2Qx2M=40Marks)</b>		
Q7	A 20-wt% HCl is needed to propagate wormholes 3 feet from a 0.328-foot radius wellbore in a dolomite formation (specific gravity 2.71) with a porosity of 0.15. The designed injection rate is 0.15 bbl/min-ft, the diffusion coefficient is $10^{-9}$ m <sup>2</sup> /sec, and the density of the 20 % HCl is 1.14 g/cm <sup>3</sup> . In linear core floods, 2-pore volume is needed for wormhole breakthrough at the end of the core. Calculate the following a) Chemical reaction involved (Marks -1) b) Gravimetric dissolving power (Marks -2) c) Volumetric dissolving power (Marks -2) d) Acid capillary number (Marks - 5) e) Acid volume requirement in gal/ft. using Daccord's model (Marks -5) f) Acid volume requirement in gal/ft. using Volumetric model (Marks -5)	20	CO3
Q8	a) A sandstone at a depth of 10000 feet has a poison's ratio of 0.25 and a pore-elastic constant of 0.72. The average density of the overburden	10+10	CO4

	<p>formation is 160 lb/ft<sup>3</sup>. The pore pressure gradient in the sandstone is 0.38 psi/ft. Assuming a tectonic stress of 200 psi and a tensile strength of the sandstone of 1000 psi. Calculate the breakdown pressure for the sandstone.</p> <p>b) Differentiate between KGD and PKN fracture propagation model</p>		
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