

Name:
Enrolment No:



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
END Semester Examination, Dec 2022

Course : Production Engineering
Programme : MTech (PE)
Course Code : PEAU 7015
Nos. of page(s) : 1

Semester : I
Time : 03 hrs
Max. Marks : 100

Instructions: Assume any data missing

SNo	SECTION A (5Qx4M=20 Marks)	Marks	CO
Q 1	Comment on various stages of production of oil and gas.	4	CO1
Q 2	Classify various types of perforators.	4	CO1
Q 3	Classify various gas-oil separators.	4	CO2
Q 4	List various mechanisms by which the emulsifiers promote the emulsion phenomenon.	4	CO3
Q 5	Comment on various techniques used to treat sulphur from hydrocarbons.	4	CO4
SECTION B (4Qx10M=40 Marks)			
Q 6	Classify various types of completions and explain about single zone completion.	10	CO1
Q 7	Design the size of a vertical separator for the following requirements: Gas - 15 MMSCFD at 0.65 specific gravity & Z=0.86; Oil - 1800 BPD at 34°API; Operating Pressure & Temperature - 800 psia & 80°F at which Viscosity = 0.014 cp; Retention time = 3 min for Droplet size of 140 micron removal; C _D = 0.933 Liquid fractions = α=β=0.5; Thickness of shell = 0.75 inch.	10	CO2
Q 8	Compare and contrast between various heater treaters to separate oil-water.	10	CO3
Q 9	Classify various oil & gas metering devices and explain in detail the working principle of any one metering device.	10	CO4
SECTION-C (2Qx20M=40 Marks)			
Q10	i. Explain with a neat diagram the working of a horizontal heater treater ii. Establish the design parameters for a horizontal heater-treater given the following data: Q _o = 2000 BOPD; P _o = 35 psig; W _{Cinlet} = 15%; W _{Coutlet} = 1%; T _o = 80°F; Y _o = 34°API; Y _w = 1.07; μ = 10 cp; and tr _o = 20 min; Operating Temperature = 130°F at which Y _o = 34°API and Y _w = 1.05; μ = 3.676 cp. a) If μ _o < 70cp, then d _m = 242W _c ^{0.33} μ _o ^{0.25} b) If μ _o ≥ 70cp, then d _m = 700W _c ^{0.33}	20	CO3
Q11	i. Compare and contrast between the various water treatment methods used in the production operations. 10M ii. Explain with a neat diagram the fixed roof storage tanks for oil storage. 10M	20	CO4