


Name:			
Enrolment No:			
UPES End Semester Examination, May 2024			
Course: Advanced Production Engineering Program: B.Tech Applied Petroleum Engineering Upstream Course Code: PEAU 3019 Instructions: Attempt all the questions.		Semester: VI Time : 03 hrs. Max. Marks: 100	
SECTION A (5Q x 4M=20Marks)			
S. No.		Marks	CO
Q 1	Explain the requirement of multistage separation of hydrocarbons.	4	CO2
Q2.	Discuss briefly the factors affecting the stability of an oil-water emulsion in oilfield processing facilities.	4	CO2
Q3.	Discuss the functions of level, temperature and flow control system of hydrocarbons for production facilities. Draw schematic diagram of few such control systems.	4	CO3
Q4.	Define the importance of nodal analysis and its role in production optimization.	4	CO3
Q5.	Why custody transfer metering is essential for oilfield companies. List names of meters/equipments used for this purpose.	4	CO3
SECTION B (4Q x 10M= 40 Marks)			
Q6	For the injection of 1.03 specific gravity water (density= 64.3 lb _m /ft ³) in an injection well with 6.094 inch, 32 lb/ft casing, construct a graph of Reynolds number versus volumetric flow rate (in bbl/d). The viscosity of the water at bottomhole conditions is 0.6 cP. At what volumetric flow rate will the transition from laminar to turbulent flow occur?	10	CO2
Q7	. Elaborate about two API standards involved in storage tank design.	10	CO4
Q8	Discuss the role of artificial lift in petroleum production and discuss any one type of artificial lift in detail.	10	CO5
Q9	Analyze the holdup behaviour during multiphase flow of oil wells and discuss the importance of slip velocity OR Analyze the working of storage tanks by discussing about the following phenomena/terminologies of the storage tanks a) Vapor Recovery System b) Losses during Breathing & Tank Filling /Pumping Operations c) Gas Blanketing Systems	10	CO3

SECTION-C
(2Q x 20M=40 Marks)

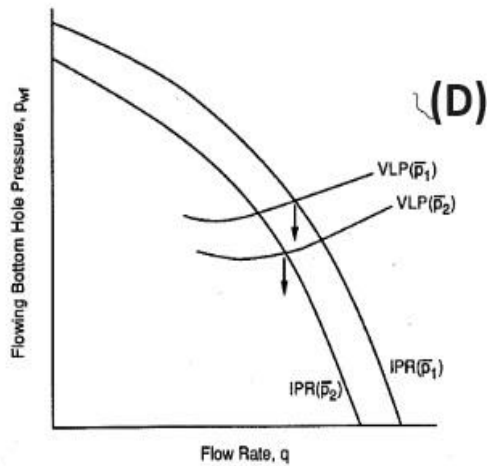
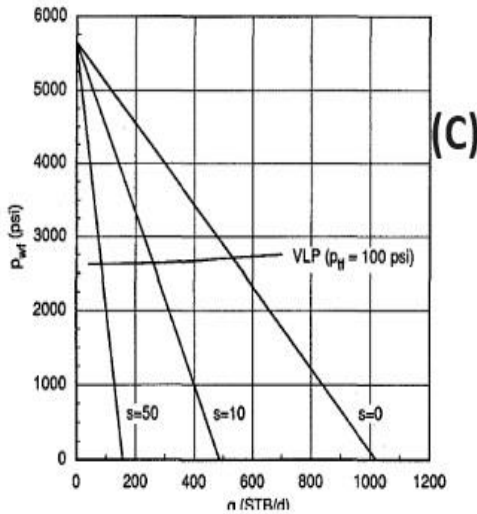
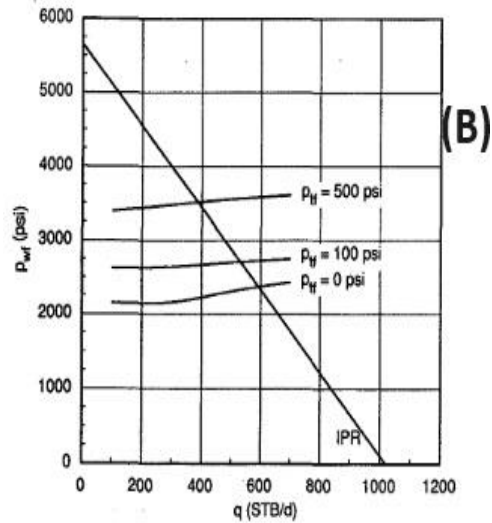
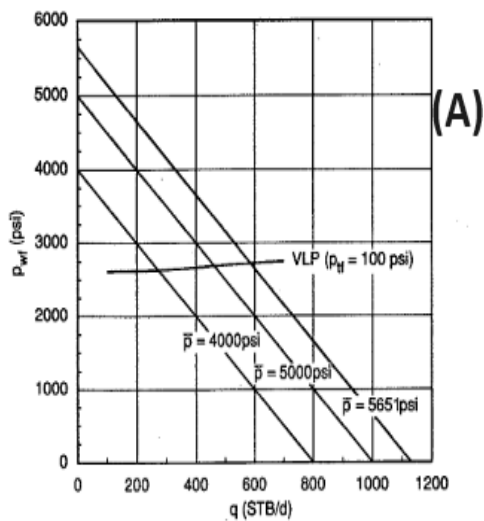
Q10. Briefly discuss the working and draw schematic diagrams of the following
 a. Vertical skimmer vessel treatment facility.
 b. Parallel Plate Interceptor treatment facility

10+10 **CO2**

OR

Briefly discuss the working and draw schematic diagrams of
 c. Vertical Heater Treater
 d. Electrostatic Heater Treater

Q11.



5*4
=20

CO5

Analyze the figures (A)-(D) and provide your analysis about the production performance by evaluating the Inflow performance relationship and vertical lift performance of single phase flow of fluids Fig. (A)-(C) and two-phase flow of fluids Fig. (D). Provide your insights about the phenomena occurring in these figures.