

Roll No



**PRESIDENCY UNIVERSITY
BENGALURU**

**SCHOOL OF ENGINEERING
MID TERM EXAMINATION - NOV 2023**

Semester : Semester V - 2021

Course Code : PET3011

Course Name : Sem V - PET3011 - Well Intervention Technologies

Program : B. TECH

Date : 6-NOV-2023

Time : 2:00PM - 3:30PM

Max Marks : 50

Weightage : 25%

Instructions:

- (i) Read all questions carefully and answer accordingly.
- (ii) Question paper consists of 3 parts.
- (iii) Scientific and non-programmable calculator are permitted.
- (iv) Do not write any information on the question paper other than Roll Number.

PART A

ANSWER ALL THE QUESTIONS

(5 X 2 = 10M)

1. List out the valves available in Xmas tree. (CO1) [Knowledge]
2. Define-“Well Stimulation” and “Well Simulation”. (CO1) [Knowledge]
3. List out the primary function of Tubing head. (CO1) [Knowledge]
4. Define workover. State the reason for workover. (CO2) [Knowledge]
5. Name the components of the “Coil Tubing Unit”. (CO2) [Knowledge]

PART B

ANSWER ALL THE QUESTIONS

(2 X 10 = 20M)

6. Do as directed: [2+8]
 1. Distinguish between Open and Cased hole completion.
 2. Compare Coil Tubing (CT) operation over other conventional well intervention technologies. Do state why CT is preferred over other technologies. (CO1) [Comprehension]

7. The working principle behind all stimulation techniques available till today for the improvement of flow rate is based on the modified Darcy's equation given below. Relate the equation and state how we can manipulate the parameters from the right hand side and enhanced productivity.

$$Q_o = \frac{K_o h (P_e - P_{wf})}{141.2\mu B_o \{ \ln(r_e/r_w) + S \}}$$

(CO2) [Comprehension]

PART C

ANSWER THE FOLLOWING QUESTION

(1 X 20 = 20M)

8. Let's assume some XYZ company is exploring an oil well near Itgalpura area. Due to multiple drillpipe failure and bad weather condition the drilling team was lagging behind the expected schedule and because of this delay the company is also suffering from huge lost. The company has hired an expert team from 6PET-1 DOPE, PU to complete the well. Let's assume you are member of that team and following informations were provided to you,

Unconsolidated payzone,

Sour crude oil,

HPHT well,

Being a Type-III well profile more torque and drag is expected,

Moderately viscous fluid,

It is expected to implement artificial lift in future and

Water production is expected.

Keeping the above parameters and the fact the company is already losing money, design a well completion plan and briefly justify it as well.

(CO1) [Application]