Roll No											

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING
MID TERM EXAMINATION - APR 2023

Semester : Semester VI - B.Tech PET - 2020
Course Code : PET3005
Course Name : Sem VI - PET3005 - Multilateral and Horizontal Well Technology
Program : B.Tech. Petroleum Engineering

Date : 15-APR-2023
Time : 2:00PM - 3:30PM
Max Marks : 60
Weightage : 30%

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. State the applications of MPD.

(CO1) [Knowledge]

2. Define coning.

(CO1) [Knowledge]

3. List the conditions when short radius horizontal wells should be drilled.

(CO1) [Knowledge]

4. Define skin factor and state the typical values.

(CO2) [Knowledge]

5. State the advantages of liner.

(CO2) [Knowledge]

PART B

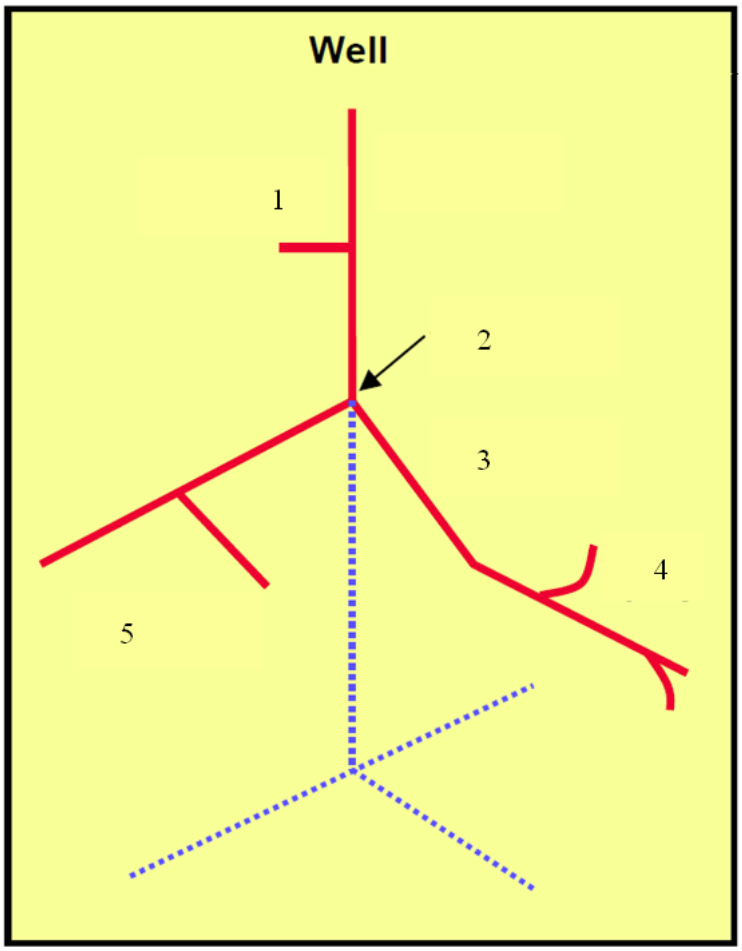
ANSWER ALL THE QUESTIONS **(3 X 10 = 30M)**

6. “Sidetracking is the term used for drilling a directional hole to bypass an obstruction in the well that cannot be removed or has damaged the well”. Give examples for the conditions where these types of directional drilling are done and enumerate the typical steps involved in the process.

(CO1) [Comprehension]

7. In the figure given below, identify and describe the item from serial no. 1 through 5.

(CO1) [Comprehension]



8. "Once the geological aspects of horizontal wells has been considered the development phase starts". Discuss the above statement enumerating the future steps involved in development of horizontal well.

(CO2) [Comprehension]

PART C

ANSWER THE FOLLOWING QUESTION **(1 X 20 = 20M)**

9. Hawkins (1956) suggested that the permeability in the skin zone is uniform and can be approximated by Darcy's equation. Based on the given statement,

a. Apply Darcy's equation to obtain the pressure drop due to skin and hence obtain the equation for skin factor.
b. Illustrate the effect of skin damage caused by drilling fluid invasion on low and high permeability formation.
c. Compute the pressure drops in the skin zones, in vertical and 1500-ft-long horizontal wells. The well tests show skin factor +1 for vertical as well as horizontal well. The following reservoir properties are given:

s = + 1	Bo = 1 .06 RB/STB
h = *50* ft	Kv = Kh = 10 md
Qh = 3000 BOPD	Qv = 1250 BOPD
μo= 0.8 cp	

(CO1) [Application]