

Roll No



**PRESIDENCY UNIVERSITY  
BENGALURU**

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

**Semester :** Semester II - B.Tech PET - 2022

**Course Code :** PET2003

**Course Name :** Sem II - PET2003 - Fundamental of Oil and Gas Well Drilling Technology

**Program :** B.Tech. Petroleum Engineering

**Date :** 18-APR-2023

**Time :** 2.00 PM - 3.30 PM

**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. State the differences between Conventional Drilling and Top Drive System. (CO1) [Knowledge]
2. Mention one function of BOP along with its classification. (CO1) [Knowledge]
3. What Is the difference between Yield Strength and Tensile Strength of Drill Pipe? (CO2) [Knowledge]
4. What is shape and building material of Kelly? (CO2) [Knowledge]
5. A is the the most heavily loaded component in the Drill string. What is A? What is its average length? (CO2) [Knowledge]

## PART B

### ANSWER ALL THE QUESTIONS

(2 X 10 = 20M)

6. A body is having a weight measured on the surface is X. Then it is inserted into a well bore filled with fluid of density Y. The weight measured when the body is inside the wellbore is found to be Z. What is the relation between X & Z? Discuss, why it is so? Also how this condition is relatable with Drill String design calculation.
7. The “X” is system on a drilling rig does the heavy lifting on the rig. It is used to raise, lower, and suspend the drill string and lift casing and tubing for installation into the well. What is “X”? Discuss all the components of along with a suitable diagram.

(CO1) [Comprehension]

(CO2) [Comprehension]

## PART C

### ANSWER THE FOLLOWING QUESTION

(1 X 20 = 20M)

8. Design a drilling string for an exploratory well with the following parameters: Hole size= 9 inch, Hole depth=20000 ft.  
7" x 3 1/2", 700 ft. Drill collar  
Remaining length is Drill pipe  
Select any higher grade Drill Pipe of Class 2 type.  
Safety factor=1.35; MOP= 30000 lb.  
Average length of Drill Pipe=30 ft.  
Percentage yield=90%  
Mud weight=15 ppg; Density of steel=489.5 pcf.  
Take the required values from the standard API tables.

(CO2) [Application]