

Roll No



**PRESIDENCY UNIVERSITY
BENGALURU**

SET B

**SCHOOL OF ENGINEERING
END TERM EXAMINATION - JAN 2024**

Semester : Semester VII - 2020

Course Code : PET3003

Course Name : Offshore Drilling and Petroleum Production Practices

Program : B.Tech.

Date : 04-JAN-2024

Time : 9:30AM - 12:30 PM

Max Marks : 100

Weightage : 50%

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 2M = 10M

1. Explain the full form of BOEM and BSEE.
(CO1) [Knowledge]
2. Distinguish between "weather" and "climate".
(CO1) [Knowledge]
3. List out the parameters affecting the meteorology.
(CO1) [Knowledge]
4. Define "Wind".
(CO2,CO1) [Knowledge]
5. State "Archimedes Principle"
(CO1,CO2) [Knowledge]

PART B

ANSWER ALL THE QUESTIONS

5 X 10M = 50M

6. Discuss various terminologies related to the "WAVE" which define its characteristics with schematic.
(CO1) [Comprehension]

7. Compare and contrast the key difference in terms of application and utility among the different types of Jack-up Rig used in the offshore operations.
(CO2,CO1) [Comprehension]
8. Explain the term “degree of freedom” for a floating offshore structure and also list out various degree of freedom. Use a schematic to clearly explain these.
(CO2,CO3) [Comprehension]
9. Distinguish between “Dry Tree” and “Wet Tree” Completions. Also highlight the advantages and disadvantages for both type of completions employed for offshore region.
(CO3,CO2) [Comprehension]
10. Identify the importance of “Station Keeping” and its various ways. Also outline the term “offset” in station keeping and provide its acceptable range during different modes of the floating structure.
(CO4) [Comprehension]

PART C

ANSWER ALL THE QUESTIONS

2 X 20M = 40M

11. “When a floating body is disturbed from its equilibrium position, it experiences a shift in its center of buoyancy due to the water's buoyant force acting on it. The metacentre is the intersection point between the initial vertical line passing through the body's center of buoyancy and the new vertical line when the body is tilted slightly. This intersection point determines the body's stability.” Based on this concept and your understanding about the importance of center of gravity and centre of buoyancy, determine whether a vertically upright floating cylindrical body of dimensions 7cm in diameter and 21 inches in height will float or sink. Water density is 1000 Kg/m³ and the density of the material of the body is 900 Kg/m³.
(CO3,CO4) [Application]
12. The apparent force affecting the movement of an object refers to a force that seems to act on the object when observed from a non-inertial or accelerating reference frame. This apparent force isn't an actual physical force but appears to exist due to the frame of reference's motion or acceleration. Keeping this mind describe the Coriolis force and its significant contribution to wind energy production. Investigate how the observed curvature of air masses due to the Earth's rotation profoundly affects wind patterns in different geographical locations.
(CO1,CO4) [Application]