PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING
MID TERM EXAMINATION - OCT 2023

Semester : Semester VII - 2020

Course Code : PET3003

Course Name : Sem VII - PET3003 - Offshore Drilling and Petroleum Production Practices

Program : B. TECH

Date : 31-OCT-2023

Time : 9:30AM - 11:00AM

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. Describe the purpose of a jack-up rig in offshore drilling.

(CO2) [Knowledge]

2. State various key components of a jacket platform.

(CO2) [Knowledge]

3. List some environmental considerations in offshore drilling.

(CO2) [Knowledge]

4. Differentiate between a fixed platform and a floating platform.

(CO2) [Knowledge]

5. Enlist some advantages of using a jackup rig for offshore drilling.

(CO2) [Knowledge]

PART B

ANSWER ALL THE QUESTIONS   **(2 X 15 = 30M)**

6. Provide a comprehensive explanation regarding the phenomenon of tides, encompassing the fundamental mechanisms that give rise to tidal movements in Earth's oceans. Additionally, explain with figure about the reasoning behind the occurrence of two high tides and two low tides in a single day. In essence, provide a detailed elucidation that covers both the theoretical underpinnings and the practical manifestations of tidal phenomena on our planet."

(CO1) [Comprehension]

7. Based on the understanding about the terminologies related to the offshore production and drilling, elucidate the key differences between the terms 'coast,' 'beach,' and 'shore'. Explain the relation of these terminology in the context of coastal geography, considering factors like geological features, ecological significance, and their roles in human activities.

(CO1) [Comprehension]

PART C

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

8. The metacentre is the point of intersection of the normal to a slightly inclined waterplane of a body, rotated without change of displacement, through the centre of buoyancy pertaining to that waterplane and the vertical plane through the centre of buoyancy pertaining to the upright condition. Based on this knowledge compute the condition of the floating cylinder whose dimensions are 5 m diameter and 10m high; floating in water of density (1.1 g/cc) axis vertical. If the specific gravity of the material of cylinder is 0.35. Using the given information and your knowledge, state whether the body will be in stable equilibrium, neutral equilibrium or unstable equilibrium.

(CO2) [Application]