Name: Enrolment No:	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
Online End semester Examination, December 2020

Course: Drilling Engineering **Semester: V**
Program: B. Tech. GSE **Time 03 hrs.**
Course Code: PEAU 3028 **Max. Marks: 100**

SECTION A

1. **Each MCQ will carry 2 Marks**
2. **Instruction: Select the correct option**

Q1.1. A system connecting seabed facilities to surface facilities is called CO1

a. riser
b. wellhead
c. accumulator
d. BOP

2. Types of well trajectories include the following except
a. build and hold
b. S-type
c. modified S-type
d. none of the above

3. A Chain/rope system keeping floating surface facilities in place is called
a. mooring
b. wireline
c. drawworks
d. none of the above

Q2. 4. What is the name for the longest string of casing ran in a well?
a. Surface casing
b. intermediate casing
c. production casing
d. conductor casing

5. Journal angle is related to
a. Rig design
b. casing design
c. drill string design bit design
d. bit design

6. What is the maximum allowable annular surface pressure (MAASP)?

a. The total pressure applied at the shoe that will cause loss
b. the total pressure that will cause losses to the formation minus hydrostatic pressure
c. The maximum pressure allowed on the drill pipe gauge during a kill operation
d. The maximum allowable bottom hole pressure during a kill operation

Q3. 7. What change in pump pressure will you see after one complete circulation if the mud weight is increased?

a. The pump pressure will stay the same
b. The pump pressure will increase
c. the pump pressure will decrease
d. None of the above

8. How does annular pressure loss affect bottom hole pressure?

a. It will have no effect on BHP
b. the BHP will be greater than hydrostatic pressure
c. The BHP will be less than hydrostatic pressure
d. None of the above

Q4. 9. If the drill string washes out during a kill operation, which of the following pressures would remain constant?

a. Casing pressure
b. Drill pipe pressure
c. Initial circulating pressure
d. Slow circulating rate pressure

10. Which of the following is the purpose of conductor casing?

a. Prevent well kick
b. Provide support to the wellhead
c. Protect tubulars from corrosive fluids
d. all of the above

Q5. 11. The mud property that is responsible for providing the necessary hydrostatic pressure is

a. Mud viscosity
b. Gel strength
c. Mud weight
d. All of the above

12. Sizes of the casing string depend mainly upon

a. Well depth
b. Well type
c. Expected pore pressure
d. Expected production

13. In casing design, which of these represents the worst condition for burst

a. No fluid in the annulus while lower density fluid in the casing
b. Casing is filled with denser fluid while no fluid in the annulus
c. No fluid in casing while annulus is filled with a lower density of fluid
d. Gas in the casing while no fluid in the annulus

Q6. 14. If a 17 inch hole was drilled in a well which of the following casing size will be run?

a. 17.5 inch

b. 13.5 inch
c. 17 inch
d. 19 inch

15. Which one is not a function of drilling mud?

a. Remove drill cuttings
b. Formation of mud cake
c. Cooling of drill bit
d. Drill pipe lubrication

SECTION B **1. Each question will carry 10 marks** **2. Instruction: Write short / brief notes**		
Q 1	Explain in detail the classification of drilling fluid: -	**CO3**
Q 2	Elaborate about indicators of kick in an oil well.	**CO2**
Q 3	Explain the following well control methods: a)Driller's method b)Wait and weight method	**CO3**
Q 4	A 10 lbs/gal drilling mud is flowing at 500 gpm through a jet bit. Compare the hydraulic horsepower generated across the bit for each of the following nozzle sets: • 9-9-9 10-10-10 11-11-11 Note that nozzle sizes (diameters) are expressed in 32nds of an inch. Assume discharge coefficient = 0.95 for nozzle set.	**CO5**
Q 5	Explain the equipment's used in drilling mud circulation system. OR For oil well drilling briefly explain a) data acquisition & monitoring system b) special systems for offshore drilling	**CO4**
Section C **1. Each Question carries 20 Marks.** **2. Instruction: Write complete solution**		

Q 1	Following data is given for a directional offshore well drilled as J-profile: Origin (O): 0 ft. Kick-off point (K) = 1000' Build Rate (BUR) = 2.5^0/100' Target data True vertical depth = 9500' Northings (D_n) = +3507' Eastings (D_e) = -1752' **Find the following:** 1. Horizontal Departure 2. Azimuth of the well 3. Final inclination of the well 4. End of build at TVD 5. End of build at departure 6. Measured depth at end of build 7. Total measured depth at the target OR Following mud data is given for an oil well under drilling stage diameter of hole =12.25 inch oil flow rate= 700gpm fann VG meter reading at 600 rpm = 36 fann VG meter reading at 300 rpm = 24 drilling mud density = 8.824 ppg surface connection is of type 4 DP specification: 5 inch x 4.276 inch, 6480 ft. DC specification: 8 inch x 2.875 inch, 620 ft. Bit nozzle size used: 15-15-15 Last casing specification: 13.375 inch x 12.565 inch set at 2550 ft. Calculate a) total pressure drop across the well in psi b) required horsepower to run the mud pump	**CO6**