Seat No: _____ **Enrollment No: _____**

PARUL UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

B.Tech. Winter 2019 - 20 Examination

Semester: 3 **Date: 27/11/2019**
Subject Code: 203120203 **Time: 2:00pm to 4:30pm**
Subject Name: Drilling Engineering-1 **Total Marks: 60**

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 **Objective Type Questions** - (Fill in the blanks, one word answer, MCQ-not more than Five in case of MCQ) (All are compulsory) (Each of one mark) **(15)**

1. Rotary table is used for

   a) Rotating Kelly/drill string
   b) Upward motion of drill string
   c) Downward motion of drill string
   d) None of above

2. Well depth is 1000 MTR and mud weight is 1.2 GM/CC. What will be the hydrostatic head.

   a) 1200 GM/CM^2
   b) 1400 KG/CM^2
   c) 120 KG/CM^2
   d) 12 KG/CM^2

3. Most appropriate indication for kick.

   a) Self flow
   b) Drilling break
   c) Pit gain
   d) None of the above

4. BOP is used on drilling rigs ?

   a) To close the well in case of kick/activity.
   b) To close the well during shift change over
   c) To hold the casing
   d) To connect flow channel

5. Shale shaker is used after ?

   a) Degasser
   b) Desender
   c) Desilter
   d) None of the above

6. CMC polymer is use as_____ additive.
7. Time For allowing proper cement setting is known as_____
8. pressure exerted by a column of fluid is _____
9. _____ additives ude to increase thickening time of Slurry
10. fluid behavior index (n) is_____ for dilatant fluid.
11. What is gel strength of drilling fluid?
12. What do you mean by thickening time of cement slurry?
13. Write name of different types of clay.
14. Write definition of wildcat well.
15. What do you mean by Liners?

Q.2 Answer the following questions. (Attempt any three) **(15)**

A) What do you mean by Kick? Write a short note on BOP.

B) Write a brief note on Geo-Technical order.

C) Define following

a. Psuedoplastic fluid
b. Dilatant fluid

D) Define following

c. TCR bit
d. PDC bit

Q.3 A) Calculate the mud density resulting from adding 100 barrels of 0.82 specific gravity crude oil to 800 barrels of 11.3 ppg mud. If the density of the mud is to be maintained at its original value, how much barite (Lbs) will also have to be added ? **(07)**

B) A drill string consists of 600 ft of 8 ¼ in x 2.13/16 in drillcollars and the rest is a 5 in drillpipe, 19.5 lbm/ft Grade X95 drillpipe. If the required MOP is 100,000 lb and mud weight is 10 ppg, calculate the maximum depth of hole that can be drilled when (a) using new drillpipe (Pt = 501,090 lb) (b) using Class 2 drillpipe having a yield strength (Pt) of 394,000 lb. **(08)**

OR

B) With the help of neat figure describe the drill string and its components **(08)**

(07)

Q.4 A) What is the density and yield of the following slurry: Class G (1 sack) + 35% silica flour(0.0454 gal/lb) plus 2% fluid loss additive (absolute volume = 0.0932 gal/lb) plus 44% water.

OR

A) With the help of derivation prove that Volume of filtrate through filter press is directly proportional to root square of time. **(07)**

B) What do you mean by cementation. Describe various equipments use in Primary cementing. **(08)**