PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING

SUMMER TERM / MAKE UP END TERM EXAMINATION

Semester: Summer Term 2019 | **Date**: 26 July 2019

Course Code: PET 307 | **Time**: 2 Hours

Course Name: Directional Drilling | **Max Marks**: 80

Program & Sem: B.Tech (PET) & VI Sem (2015 Batch) | **Weightage**: 40%

Instructions:

(i) Read the question properly and answer accordingly.
(ii) Question paper consists of 3 parts.
(iii) Scientific and Non-programmable calculators are permitted

Part A

Answer **all** the Questions. **Each** question carries **five** marks. (3Qx5M=15)

1. What are the consequences of collision of two well paths?
2. What are the conditions that may likely to cause wellbore instability?
3. How does the positive pulse telemetry method differ from negative pulse method?

Part B

Answer **all** the Questions. **Each** question carries **ten** marks. (5Qx10M=50)

4. Explain any two methods of sending information from downhole to the surface.
5. Write the assumption and equations for Balanced Tangential Method of survey calculations with neat diagram.
6. The drill string becomes struck while drilling a directional well. The driller reports that he can still circulate, rotate and reciprocate the pipe.
   (i) What is the most likely cause of the stuck pipe?
   (ii) Describe the cause.
   (ii) What action should the driller take to free the pipe?
7. Discuss the problems associated with highly deviated and horizontal drilling.
8. Explain the applications of MWD.

Part C

Answer the Question. **The** Question carries **fifteen** marks. (1Qx15M=15)

9. a) Use (a) balanced tangential, and (b) minimum curvature methods to calculate the coordinates of station 81 in the following example. The target bearing is 220°.

No	MD (ft)	Inclination (degree)	Azimuth (degree)	Northing (ft)	Easting (ft)	Vertical section (ft)
80	7000	35	241	-3500	-500	3002.85
81	7200	40	225			

b) Calculate the dog-leg severity between these two survey stations.

MD	Inclination (Degree)	Azimuth (Degree)
2000	4.5	148
2031	5.5	145