Roll No: | | | | | | | | | | | |

GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

PRESIDENCY UNIVERSITY

Presidency University Act, 2013 of the Karnataka Act No. 41 of 2013 | Established under Section 2(f) of UGC Act, 1956
Approved by AICTE, New Delhi | Approved By BCI
Bengaluru

Mid Term Examinations - October 2026

Date: 05/10/2026 **Time:** 09:30 AM - 11:00 AM

Course Code: PET3110 **Course Name:** Directional Drilling Technology

Semester: Fifth Semester **Max. Marks:** 50 **Weightage:** 50%

CO - Levels	CO1	CO2
Marks	46	44

PART A: Answer Following Questions. 10 M

Q.N.	Questions	M	CO	BT
1	State the term "**Slots**".	2	CO1	BT1
2	Explain Grid Convergence.	2	CO1	BT2
3	Describe Magnetic Declination.	2	CO1	BT2
4	State the meaning of EOC**.**	2	CO2	BT1
5	Define the term "**KOP**".	2	CO2	BT1

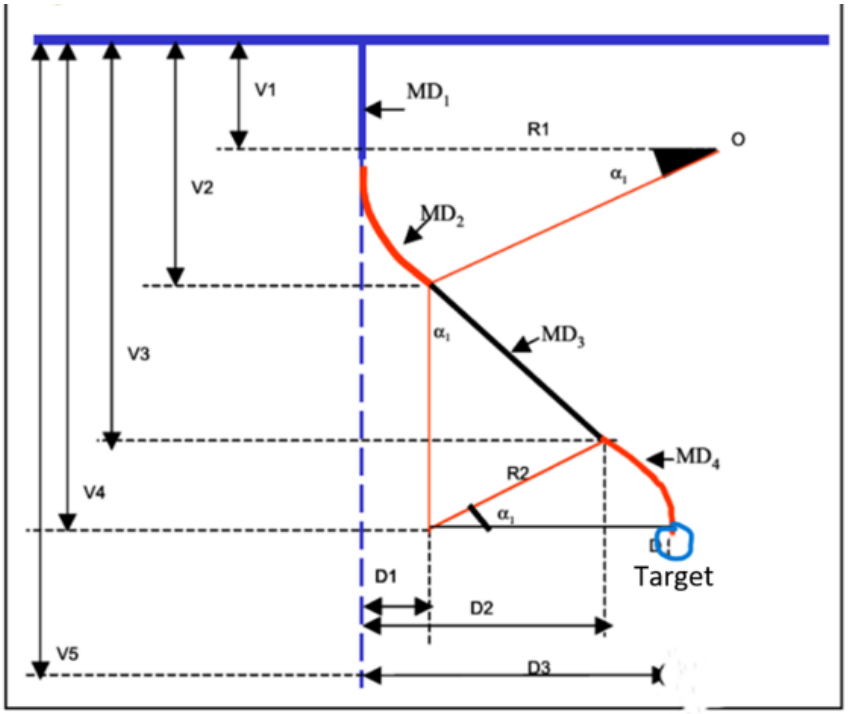
PARTB: Answer Any 1 Following Questions. 20 M

Q.N.	Questions	M	CO	BT
06.A	Explain four applications of directional drilling in the petroleum industry.	10	CO1	BT2
06.B	Describe the different components of Positive Displacement Motor (PDM).	10	CO1	BT2
07.A	Explain Azimuth, True Vertical Depth, Hold Angle, End of drop.	10	CO1	BT2
07.B	Describe the mechanism of a whipstock.	10	CO1	BT2

PARTC: Answer Any 1 Following Questions. 20 M

Q.N.	Questions	M	CO	BT
08.A	Apply the appropriate geometric relations to derive the expression for α_{max} in the Type 1 profile for the condition $R > D_2$, and illustrate your derivation with a neat, labeled sketch diagram.	10	CO2	BT3
08.B	A directional drilling engineer is planning a slant-type (build-and-hold) well with the following given data: **Given Parameter** — **Value** Kick-off Point (KOP) — 1600 ft Build-up Rate (BUR) — 2°/100 ft Target Vertical Depth (TVD) — 8500 ft Horizontal Departure (Target Displacement) — 3200 ft Prepare the trajectory of the well based on the above conditions and also determine the following: R, α_{max}, MD1, MD2, V2 Based on the above results, sketch the complete well trajectory (vertical, build, and tangent sections), clearly labeling each section and the calculated parameters.	10	CO2	BT3

PTO (Please Turn Over)

09.A	Examine the Radius of Curvature Method mathematically.	10	CO2	BT3
09.B	Calculate the measured lengths, vertical depths and horizontal displacements of each section of the following S-shaped well designed to avoid a salt dome, using the following data and Figure, with the target located at the end of the drop-off section. Given Parameter Value Kick-off Depth (KOP) 1,200 ft Build-up Rate (BUR) 2.5°/100 ft Drop-off Rate (DOR) 3.5°/100 ft TVD at end of drop-off section (V_4) 8,157 ft Total Horizontal Displacement (D_3) 2,136 ft Final inclination angle in reservoir 0° 	10	CO2	BT3