Graphic Era HILL UNIVERSITY

End Term (Odd) Semester Examination November 2025

Roll no.....

Name of the Course and semester: B.Tech (CE), III[rd] Semester
Name of the Paper: Geomatics Engineering
Paper Code: TCE-302
Time: 3 hours Maximum Marks: 100

Note:

(i) All the questions are compulsory.
(ii) Answer any two sub questions from a, b and c in each main question.
(iii) Total marks for each question is 20 (twenty).
(iv) Each sub-question carries 10 marks.

Q1. (2X10=20 Marks) CO1

a. Examine the difference between surveyor's compass and prismatic compass in terms of construction, observation, and use.
b. Describe with examples how main survey stations, base line, and check lines contribute to the layout and accuracy of chain surveying.
c. Compute the whole circle bearing of a line whose latitude and departure are given as +78 m and –45.1 m respectively.

Q2. (2X10=20 Marks) CO2

a. Discuss trilateration method in surveying. Analyze its advantages and disadvantages.
b. Compute the true length of a 250 m line measured with a 20 m chain that was 10 cm too long
c. Differentiate between triangulation and trilateration, highlighting their applications in modern surveying.

Q3. (2X10=20 Marks) CO3

a. Explain different sources of errors in levelling? How are they eliminated?
b. RL of a factory floor is 100.00'. Staff reading on floor is 4.62 ft. and the staff reading when staff is held inverted with bottom touching the tie beam of the roof truss is 12.16 ft. Find the height of the tie beam above the floor.
c. Explain Contour and describe characteristics of contours with the help of sketches.

Q4. (2X10=20 Marks) CO4

a. Discuss two-point problem. How is it solved?
b. Illustrate and explain Lehmann`s rules, supporting your explanation with suitable diagrams
c. Define a Digital Elevation Model (DEM) and explain various techniques used for its generation. Highlight its major applications in geospatial studies

Q5. (2X10=20 Marks) CO5

a. Describe how random errors vary from systematic errors in surveying, supporting your explanation with practical examples.
b. Describe the basic concept of the least squares method and discuss its significance in the adjustment of surveying data
c. A horizontal angle θ is measured by four different surveyors with varying quality of instruments and procedures. The recorded values and their assigned weights (based on the number of observations or instrument quality) are:
36°30′ (Weight 2)
36°00′ (Weight 1)
35°30′ (Weight 4)
36°30′ (Weight 2)
Calculate the most probable value of the angle θ.