INSTITUTE OF AERONAUTICAL ENGINEERING
(Autonomous)
(Dundigal-500043, Hyderabad)

B.Tech III SEMESTER END EXAMINATIONS (REGULAR) - FEBRUARY 2022
Regulation:UG-20
SURVEYING AND GEOMATICS

Time: 3 Hours   (CE)   Max Marks: 70

Answer ALL questions in Module I and II
Answer ONE out of two questions in Modules III, IV and V
NOTE: Provision is given to answer TWO questions from among one of the Modules III / IV / V
All Questions Carry Equal Marks
All parts of the question must be answered in one place only

MODULE – I

1. (a) The bearings observed in a traverse survey conducted with a prismatic compass at a place where local attraction was suspected is shown in Table 1. At what stations do you suspect local attraction? Find the corrected bearings of the lines.

Table 1

Line	FB	BB
PQ	$74^\circ 20^1$	$256^\circ 0^1$
QR	$107^\circ 20^1$	$286^\circ 20^1$
RS	$224^\circ 50^1$	$44^\circ 50^1$
SP	$306^\circ 40^1$	$126^\circ 0^1$

[7M]

(b) The following perpendicular offsets were taken at 10 m intervals from a survey line to an irregular boundary line. 2.30, 3.75, 4.50, 6.75, 5.25, 7.30, 8.95, 8.25, 5.55m. Calculate the area included between the survey line, the irregular boundary line, and the first and last offsets by trapezoidal rule and Simpsons rule. **[7M]**

MODULE – II

2. (a) Explain the method of setting out a circular curve with two theodolites method. What are its advantages and disadvantages over Rankines method. **[7M]**

(b) A reverse curve is to be set out between two parallel tangents 10 m apart. The distance between the tangent points measured parallel to the tangent is 80 m. If the radius of the first branch is 150 m, calculate the radius of the second branch. Also calculate the lengths of the two branches. What would be the equal radius of the branches of the two reverse curve. **[7M]**

MODULE – III

3. (a) Explain the components of total station. Discuss the advantages and disadvantages of total station in detail. **[7M]**

(b) List out the applications of Global Positioning System (GPS) in civil engineering. Discuss about space and user segments. **[7M]**

4. (a) Describe the principle and working of electronic distance measurement. **[7M]**

(b) Explain about the coordinate transformation and accuracy consideration in GPS. **[7M]**

MODULE – IV

5. (a) Examine in detail how the height of an object on the terrain can be determined using stereo parallax measurements. Explain in detail. **[7M]**

(b) The distance of an image of a triangulation station 150 m above mean sea level from the principal point is 2.20 cm. Calculate the height displacement if the flying height of the camera is 1500. **[7M]**.

6. (a) List out different types of photographs. Discuss the radial line method of plotting from aerial photographs. **[7M]**

(b) Explain about the basic concepts of photogrammetric surveying. A vertical photograph of a flat area having an average elevation of 350m above mean sea level was taken with a camera having focal length of 25cm a section line AB 350m long in the area measures 10.50cm on the photograph. A tower TB in the area also appears on the photograph the distance between the images of top and bottom of the tower is 0.46cm on the photograph. The distance of the image of top of the tower is 6.46cm determine the height of tower. **[7M]**

MODULE – V

7. (a) Explain elements or processes involved in earth remote sensing with a neat diagram. **[7M]**

(b) What is an electromagnetic sensor? Explain about electromagnetic spectrum with emphasis on optical visible spectral bands. **[7M]**

8. (a) List various applications and advantages of aerial and satellite remote sensing. Explain about different types of plotting instruments in remote sensing. **[7M]**

(b) What are the advantages of using remote sensing techniques compared to other ground investigations. **[7M]**

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