Hall Ticket No | | | | | | | | | | |

Question Paper Code: ACEC01

INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)
Dundigal-500043, Hyderabad

B.Tech III SEMESTER END EXAMINATIONS (REGULAR/ SUPPLEMENTARY) - FEBRUARY 2024
Regulation: UG20
SURVEYING AND GEOMATICS
Time: 3 Hours **(CIVIL ENGINEERING)** **Max Marks: 70**

Answer ALL questions in Module I and II
Answer ONE out of two questions in Modules III, IV and V
All Questions Carry Equal Marks
All parts of the question must be answered in one place only

MODULE – I

1. (a) State the principles of surveying. Explain the equipment and accessories used for chain surveying. [BL: Understand| CO: 1|Marks: 7]

   (b) The following consecutive readings were taken with a dumpy level and 5 meter leveling staff on continuously sloping ground at a common interval of 20 meters: 0.385m, 1.030m, 1.925m, 2.825m, 3.730m, 4.685m, 0.625m, 2.005m, 3.110m, 4.485m. The reduced level of the first point was 208.125 m. Determine the RL of the points by rise and fall method. [BL: Apply| CO: 1|Marks: 7]

MODULE – II

2. (a) Classify different types of curves. Discuss the necessity of curves in road alignment. [BL: Understand| CO: 2|Marks: 7]

   (b) Two observations as shown in Table 1 are taken by a transit theodolite from station A. Find R.L of B and distance between B.M and B. [BL: Apply| CO: 2|Marks: 7]

Table 1

Inst Station	Staff Station	Target	Angle	Staff Reading(m)	Remarks
A	B.M	Lower	-10^{0}00’	0.655	R.L of BM 510.500 m
		Upper	−7^{0}00’	2.655	
	B	Lower	−5^{0}00’	1.250	
		Upper	+4^{0}00’	3.200	

MODULE – III

3. (a) Discuss the working principle of total station and mention its parts with neat sketch. [BL: Understand| CO: 3|Marks: 7]

   (b) Explain the different segments of GPS in detail. Mention the advantages and disadvantages of it. [BL: Understand| CO: 3|Marks: 7]

4. (a) Describe the merits and demerits of total station and discuss the applications. [BL: Understand| CO: 4|Marks: 7]

   (b) Outline about electronic distance measurement. Elucidate the orbit determination and orbit representation of GPS. [BL: Understand| CO: 4|Marks: 7]

MODULE – IV

5. (a) Compare aerial and terrestrial photographs and also mention the types of terrestrial photogrammetry. [BL: Understand| CO: 5|Marks: 7]

   (b) Summarize the following terms involved in Aerial photographic surveying:
   i) Focal Length
   ii) Principal point
   iii) Isocentre
   iv) Swing
   v) Tilt
   vi) Principle line
   vii) Optical axis [BL: Understand| CO: 5|Marks: 7].

6. (a) Differentiate aerial triangulation and radial triangulation. Explain the fundamentals of stereoscopy. [BL: Understand| CO: 5|Marks: 7]

   (b) The scale of an aerial photograph is 1cm = 100cm and photograph size is 15cm×15cm. Determine the number of photographs required to cover an area of 15km×15km if longitudinal lap is 60% and side lap is 30% . [BL: Apply| CO: 5|Marks: 7]

MODULE – V

7. (a) State the key components of remote sensing? How do they contribute to our understanding of Earth's surface and atmosphere? [BL: Understand| CO: 6|Marks: 7]

   (b) How does electromagnetic radiation interact with the Earth's atmosphere and surface? What impact does this have on remote sensing data acquisition and interpretation? [BL: Understand| CO: 6|Marks: 7]

8. (a) Discuss the various platforms and sensors used in remote sensing data acquisition. How do they differ in their capabilities and applications? [BL: Understand| CO: 6|Marks: 7]

   (b) Elucidate visual image interpretation differ from digital image processing in remote sensing. Write the advantages and limitations of each approach. [BL: Understand| CO: 6|Marks: 7]

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