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INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Four Year B.Tech III Semester End Examinations(Regular) - November, 2019

Regulation: IARE – R18

SURVEYING AND GEOMATICS

Time: 3 Hours

(CE)

Max Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the question must be answered in one place only

UNIT – I

1. (a) Explain in detail about any three methods of plane table surveying methods. [7M]
- (b) A 20m chain was found to be 10cm too long after chaining a distance of 1500m. It was found to be 18 cm too long at the end of the day's work after chaining a total distance of 2900m. Find the true distance if the chain was corrected before the commencement of the work. [7M]
2. (a) Define surveying and describe the classification of surveying in brief based up on Nature of field. [7M]
- (b) A steel tape 20 m long standardized at 55⁰F with a pull of 10Kg was used for measuring a base line. Find the correction per tape length, if the temperature at the time of measurement was 80⁰ F and the pull exerted was 16Kg Take weight of tape as 0.8 Kg and $E = 2.109 \times 10^6 \text{ Kg/cm}^2$ coefficient of thermal expansion per 1⁰ F = 6.2×10^{-6} and area of tape was 0.051sq cm. [7M]

UNIT – II

3. (a) Define the following terms of a simple circular curve i) Point of curvature ii) Point of tangency iii) External Distance with neat diagrams. [7M]
- (b) Two straight AC and CB intersect at C, at a chainage of 86.22 chains at a deflection angle of 62⁰. They are to smoothly connected by a simple curve of radius 12 chains. Find the target length, Length of curve and the chainages of the starting and end points of the curve. Find also the length of the long chord. Assume the length of chain as 20m. [7M]
4. (a) Explain in detail out elements of reverse curve with neat diagram. [7M]
- (b) Two tangents of a circular curve of radius 300 meters have a deflection angle of 90⁰. It is proposed to change the position of the forward tangent by rotating it through 20⁰, thus making the deflection equal to 110⁰. Calculate the radius of the new curve if P.C is unchanged. If the chainage of original P.I is 3240.8 meters, Calculate the chainage of new P.I and new P.T. [7M]

UNIT – III

5. (a) Explain the importance of total station as civil engineer.State the advantages and disadvantages of EDM. [7M]
- (b) What are the preventive measures to be followed in total station surveying to minimize the errors? [7M]

6. (a) What is the principle of total station and list the applications of total station in civil engineering? [7M]
- (b) Write a short note on co-ordinate transformation and accuracy consideration in Global Positioning System? [7M]

UNIT – IV

7. (a) Explain in detail about basic principles of aerial and terrestrial photogrammetry. [7M]
- (b) A camera having focal length of 20 cm is used to make a vertical photograph to a terrain having an average elevation of 1500 meters. What is the height above sea level at which an air craft must fly in order to get the scale of 1:8000. [7M]
8. (a) What is photogrammetry ? Explain briefly about the vertical aerial photography. [7M]
- (b) What are factors effecting in aerial photographs and list the preventive measures to minimize them in photogrammetric surveying? [7M]

UNIT – V

9. (a) Write a note on various types of sensors used for remote sensing in India. [7M]
- (b) Is RADAR Imaging Satellite (RISAT) of India is a platform for active sensor or passive sensor? Why? [7M]
10. (a) What are the different types of remote sensing platforms. Explain briefly types of resolution and their definition in remote sensing. [7M]
- (b) Explain about two energy sources available for earth passive remote sensing and elucidate with their spectral characteristic curves. [7M]