VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD
B.E. (Civil Engg.) II Year II-Semester Advanced Supplementary Examinations, June/July-2017

Surveying-II

Time: **3** hours

Max. Marks: **70**

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Part-A (10 × 2 = 20 Marks)

1. Differentiate between single and reciprocal observations for determination of difference in elevation.

2. Draw a schematic diagram for determination of axis signal correction and write the formulae for its determination.

3. List different linear and angular methods for setting out a simple curve.

4. What is a reverse curve? When it is used?

5. Give the principle of stadia method.

6. What is a subtense bar? Give the distance equation for a subtense bar.

7. What are the advantages of a total station over conventional surveying instruments?

8. List the errors in GPS.

9. What are the different types of sensors used for remote sensing in India?

10. What is attribute data and how is it defined in GIS?

Part-B (5 × 10 = 50 Marks)

11. a) Derive an expression for determination of the height of the object when the two instrument stations are not in the same vertical plane. [5]

    b) The following reciprocal observations were made from two points P and Q. [5]
    Angle of elevation of Q at P = $1^0 43' 34''$
    Angle of depression of P at Q = $1^0 44' 12''$
    Height of instrument at P = 1.15 m
    Height of instrument at Q = 1.35 m
    Height of signal at P = 4.32 m
    Height of signal at Q = 3.95m
    Horizontal distance between P and Q = 7132 m.
    Find the difference in levels between P and Q, and the refraction correction.
    Take R sin 1'' = 30.88 m.

12. a) Discuss the method of setting of circular curve by Rankines method with a neat sketch. [4]

    b) Two tangents of a simple circular curve intersect at chainage of 1180 m, the deflection angle being $50^0 30'$. It is proposed to set out the curve by offsets from chords by taking intervals equal to 100 links. The length of the chain consisting of 100m links is 20m. Determine the lengths of all offsets to set out a curve of 15 chains radius. [6]

13. a) Briefly explain the instruments used in sounding. [4]

b) A traverse ABCD was run by a tacheometer fitted with an anallactic lens and having a multiplicative constant as 100. The following readings were taken with the staff held normal: [6]

Line	Bearing	Vertical angle	Staff intercept
AB	27°38'	+07°04'	1.90m
BC	300°24'	+04°32'	1.47m
CD	236°45'	– 02°10'	1.75m

Find the length and bearing of DA.

14. a) What are the major components of a total station system? Discuss the function of each of these components. [5]

b) Explain the principle of positioning using GPS. [5]

15. a) Explain with the help of a neat sketch, an idealized remote sensing system. [5]

b) What is Geographical Information System? What are its functions? [5]

16. a) Obtain an expression for the difference of level between two points A and B, a considerable distance apart, B being higher, by vertical angle readings from the point A. Take into account the heights of the instrument at A and the height of the target at B. [7]

b) What are the different types of vertical curves? Brief them with figures. [3]

17. Write short notes on any *two* of the following:

a) Field procedure to determine the constants of a Tacheometer. [5]

b) Principle of DGPS with a neat sketch. [5]

c) Active and Passive Remote Sensing system. [5]

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