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Code No. : 22012

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
B.E. (Civil Engg.) II Year II-Semester Main & Backlog Examinations, May-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. How do you determine coefficient of refraction when D is small but H is very large
2. State how you would determine the difference of elevation of two stations by reciprocal observations.
3. If the chainage of point of commencement of a circular curve for a normal chord of 20m is 2002.48m, what is the length of the first sub-chord?
4. Distinguish summit curve and valley curve.
5. Describe the conditions under which tacheometric surveying is advantageous.
6. What is the advantage of an anallactic lens used in a tacheometer?
7. State the purpose and uses of a total station.
8. Explain the space segment of the GPS.
9. Define spectral reflectance.
10. What is GIS? What are its functions?

Part-B (5 × 10 = 50 Marks)

11. a) What is axis-signal correction? When and where it is applied? Derive an expression for the same. [4]
b) In a geodetic levelling, the following data are available. [6]
Observed angle of depression from A to B = $3^{\circ}43'$
Height of instrument at A = 1.36m
Height of signal at B = 3.53m
RL of A = 503.280m
Distance AB = 2469.20m
Take Radius of the earth as 6370 km and coefficient of refraction as 0.072.
Determine the RL of B.
12. a) What is a reverse curve? Give the elements of a reverse curve with a neat sketch. [4]
b) A compound curve is to connect two straights AB and BC meeting at chainage of 164 + 15m. The common tangent intersects AB at 120° and BC at 150° . If the radii of the two curves are 300m and 480m, determine the chainages of the tangent points of the curve. [6]

13. a) Describe briefly the location of a sounding stations in hydrographic surveying. [4]
 b) In order to determine the value of multiplying constant of a tacheometer, the following observations were made on a vertically held staff. [6]

Sl. No.	Horizontal distance from the instrument	Vertical angle	Staff intercept
1	50.35m	3°43'	0.505m
2	100.35m	3°43'	1.000m
3	150.35m	3°43'	1.495m

The focal length of the objective was 0.2m and the distance from the objective to the centre of the instrument 0.15m. Determine the multiplying constant of the tacheometer.

14. a) Draw a neat sketch of a total station labelling its parts. Also, present the functions and capabilities of total station. [5]
 b) Describe briefly the functional segments of GPS. Also, explain the errors in GPS. [5]
15. a) Differentiate between active and passive remote sensing systems. [5]
 b) Explain the use of Geographical information system in road planning. [5]
16. a) In order to determine the elevation of the top Q of a signal, observations were made from two instrument stations A and B which are in line with the signal. The stations A and B are 80 m apart. The vertical angles of Q as observed at A and B were, respectively, 30°45' and 16°10'. The staff reading on the bench mark of elevation 178.450 was 2.850 m when the instrument was at A, and 3.580 m when the instrument was at B. Determine the elevations of the top and foot of the signal if the height of the signal above the base is 5m. [5]
 b) Discuss the method of setting out a circular curve with Rankine's method. Also, derive the equations for the same. [5]
17. Write short notes on any *two* of the following: [5]
 a) Principle of stadia method [5]
 b) Principle of DGPS [5]
 c) Components of GIS. [5]