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Register No.:

October 2018

Time – Three hours
(Maximum Marks: 75)

- [N.B: (1) Q.No. 8 in PART – A and Q.No. 16 in PART – B are compulsory. Answer any FOUR questions from the remaining in each PART – A and PART – B*
- (2) Answer division (a) or division (b) of each question in PART – C.*
- (3) Each question carries 2 marks in PART – A, 3 marks in Part – B and 10 marks in PART – C.]*

PART – A

1. What is meant by offset?
2. What is meant by consecutive co-ordinate?
3. State the methods used to find the elevation of the object when the base is inaccessible.
4. Mention the system of tacheometry.
5. What are the applications of total station?
6. Name any four methods used for calculating the volume of an irregular field.
7. What is meant by land information system?
8. Find the back bearing of the following lines: (i) $AB=125^{\circ}40'$
(ii) $BC=N 81^{\circ}00'W$.

PART – B

9. What is meant by dip and declination of the magnetic needle?
10. Define the following terms: (i) Reduced level (ii) Back sight (iii) Change point.
11. Explain the method of measuring horizontal angle by repetition.
12. How will you determine the constants of a tacheometer in the field?
13. Explain any three characteristics of contour with neat sketch.
14. GPS is used in navigation, why?
15. List out the components of GIS.

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16. A transit theodolite was set up 90m away from a lightning conductor and the vertical angles observed to its top and bottom were $9^{\circ}18'$ and $3^{\circ}21'$ respectively. Calculate the total height of the lightning conductor.

PART - C

17. (a) The following bearings were observed in running a compass traverse, calculate the interior angles of the traverse. Apply the required check.

Line	FB	BB
AB	$45^{\circ}15'$	$225^{\circ}15'$
BC	$123^{\circ}15'$	$303^{\circ}15'$
CD	$181^{\circ}00'$	$1^{\circ}00'$
DA	$289^{\circ}30'$	$109^{\circ}30'$

(Or)

- (b) The following staff readings were observed with a level. The first reading was taken with the staff held upon a B.M of elevation 132.135.
0.875, 1.235, 2.310, 1.385, 2.930, 3.125, 4.125, 0.120, 1.875, 2.030 and 2.765.

The instruments have been moved after the second, fifth and eighth readings. Enter the readings in a field book form and reduce the level by HOC method. Apply usual check.

18. (a) The following details relate to a closed traverse. Find the area enclosed.

Line	Latitude (m)	Departure (m)
AB	-298	+169
BC	-151	+362
CD	+630	+383
DE	+301	-560
EA	-482	-354

(Or)

- (b) A theodolite is setup in two station apart 25m 'P' and 'R' to determine reduced level of top of a temple tower. The vertical angles measured from 'P' and 'R' is 15° and $8^{\circ}20'$ respectively. The staff reading taken at benchmark 100.000 is 1.570m and 2.125m respectively from 'P' and 'R'. If the base is inaccessible and 'P' and 'R' in the same vertical plane on the elevation object. Find the RL of top of tower.

19. (a) A tacheometer fitted with anallatic lens was set up over a BM 250.000 above datum and the following readings were taken. Calculate the distance of the points from the instrument station and their elevations. The height of the instrument is 1.500m.

Staff station	Stadia readings	Vertical angle
1	0.450, 1.035, 1.620	$+5^{\circ} 14'$
2	0.860, 1.270, 1.680	$-7^{\circ} 33'$

(Or)

- (b) Explain in detail the components, accessories, instruments and setting of total station.

20. (a) The following figures refer to the offsets taken from a chain line of a land survey to a hedge. Calculate the area impounded between the chain line and hedge by using (i)Trapezoidal rule (ii)Simpson's rule.

Chainage (m)	0	25	50	100	150	200	250	275	300
Offset (m)	5.0	3.5	2.0	3.0	3.6	3.8	3.5	4.0	3.0

(Or)

- (b) Describe the various methods of interpolation of contours.

21. (a) Write short notes on (i)Differential GPS. (ii)Receivers.

(Or)

- (b) (i) Explain the different types of maps.
(ii) Explain the application of GIS in the field of natural and water resources.
