

EVENING
05 MAR 2021

Please check that this question paper contains 9 questions and 2 printed pages within first ten minutes.

[Total No. of Questions: 09]

[Total No. of Pages: 02]

Uni. Roll No.

Program: B.Tech. (Batch 2018 onward)

Semester: 3rd

Name of Subject: Surveying & Geomatics

Subject Code: PCCE-101

Paper ID: 16020

Time Allowed: 03 Hours

Max. Marks: 60

NOTE:

- 1) Parts A and B are compulsory
- 2) Part-C has Two Questions Q8 and Q9. Both are compulsory, but with internal choice
- 3) Any missing data may be assumed appropriately

Part – A

[Marks: 02 each]

Q1.

- a) What is contour interval and horizontal equivalent?
- b) What is remote sensing? Give some applications.
- c) The upper and lower stadia readings with horizontal sight on a vertical staff held 50m from a tacheometer were 1.285m & 1.780m respectively. The focal length of the object glass was 25cm. The distance between the object glass & vertical axis of the tacheometer was 15cm. Calculate the stadia interval.
- d) Why ranging is important before chaining?
- e) A 50 m tape is suspended between the ends under a pull of 100 N. The weight of the tape is 15 N. Find the correct distance between the tape ends.
- f) Explain briefly Crab & Drift with neat sketch.

Part – B

[Marks: 04 each]

- Q2. Explain the working principal of EDM. Highlight the features of Total Station.
- Q3. What is a transition curve? State the various elements of transition curve with the help of neat sketch.
- Q4. (a) What are sensors & their different types used in remote sensing?
(b) How a mosaic is different from a photomap?
- Q5. The following successive staff readings were taken with a level using a 5 m levelling staff on a continuously sloping ground at interval of 25m:
0.405, 1.035, 1.930, 2.895, 3.805, 4.760, 0.715, 2.060, 3.160, 4.415.

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The reduced level of the first point is 62.980 m. Enter the staff readings in a page of the level book and work out the reduced levels of all the points by the collimation method. Find also the gradient of the line joining the first and the last point.

- Q6. Define electromagnetic radiation. Explain in briefly the interaction of EMR with the atmosphere.
- Q7. State the three-point problem. Explain how it is solved by the graphical method.

Part – C

[Marks: 12 each]

- Q8. The lengths, bearings & included angles of a closed traverse ABCDA, as observed with a transit theodolite, are given below. Prepare a Gale's traverse table.

Line	Length	Included Angle	W.C.B.
AB	255 m	$\angle A = 93^\circ 18' 16''$	$140^\circ 42'$
BC	656 m	$\angle B = 74^\circ 16' 25''$	
CD	120 m	$\angle C = 123^\circ 42' 00''$	
DA	668 m	$\angle D = 68^\circ 41' 16''$	

OR

Give the corrected bearing of the following traverse taken from a compass survey.

Line	Fore Bearing	Back Bearing
AB	$191^\circ 30'$	$13^\circ 00'$
BC	$69^\circ 30'$	$246^\circ 30'$
CD	$32^\circ 15'$	$210^\circ 30'$
DE	$262^\circ 45'$	$80^\circ 45'$
EA	$230^\circ 15'$	$53^\circ 00'$

- Q9. An area 30 km long in the N-S direction and 24 km in the E-W direction is to be photographed with a lens having 30 cm focal length for the purpose of constructing a mosaic. The photograph size is 20cm X 20cm. The average scale is 1:12,000 at an elevation of 400 m above datum. Overlap is 60% & side lap is 30%. The ground speed of aircraft will be 200 km/hr. The flight lines are to be laid out in a N-S direction on an existing map having a scale of 1:60,000. The two outer flight lines coincide with east & west boundaries of area. Determine the data for the flight plan.

OR

What is Global Positioning System? Describe the major components of GPS system. Also discuss various sources of errors associated in GPS survey.
