CBCS SCHEME

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15CV46

Fourth Semester B.E. Degree Examination, Dec.2023/Jan.2024
Advanced Surveying

Time: 3 hrs. Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Explain the following along with a neat sketch : **(08 Marks)**
i) Forward tangent ii) Point of curve iii) Deflection angle iv) Apex distance.

b. Two tangents intersect at a chainage of 1190m, the deflection angle 36^0. Compute all the data necessary to set out a curve of radius 300m by deflection angle method. The peg interval is 30m. Tabulate the results. **(08 Marks)**

OR

2 a. A reverse curve is to be set out to connect two parallel railway line 30m apart. The distance between the tangent points is 150m. Both the arcs have the same radius. The curve is set out by method of ordinates from long chord taking a peg interval of 10m. Calculate the necessary data for setting the curve. **(08 Marks)**

b. List the requirements of a transition curve (any four). **(04 Marks)**

c. With a neat sketch, list any four vertical curves. **(04 Marks)**

Module-2

3 a. Explain briefly the various types of signals. **(08 Marks)**

b. Write short notes on the following :
i) Field checks in triangulation
ii) Indivisibility of stations. **(08 Marks)**

OR

4 a. Define the following terms :
i) Systematic error ii) Conditioned quantity iii) Residual error iv) Weight. **(04 Marks)**

b. Explain principle of least squares **(04 Marks)**

c. Explain laws of accidental errors. **(08 Marks)**

Module-3

5 a. Define the following terms :
i) Zenith and Nadir ii) Prime vertical iii) Hour angle. **(03 Marks)**

b. Mention the properties of a spherical triangle. **(05 Marks)**

c. Find the shortest distance between two points A & B, given
A latitude – 18^0 24' N longitude 36^0 18 E
B latitude – 68^0 32' N longitude 126^0 34 E. **(08 Marks)**

OR

6 a. Define the following : i) Vertical circle ii) Azimuth iii) Altitude. **(03 Marks)**

b. Explain Ecliptic and Solstices. **(05 Marks)**

c. Find the shortest distance between two places A & B given that the longitudes of A and B are 15^0 0' N and 12^0 6' N and longitudes are 50^0 12' E and 54^0 0' E respectively. **(08 Marks)**

Module-4

7 a. Define the following terms :
i) Camera axis ii) Nodart point iii) Print iv) Film base. **(04 Marks)**

b. Explain camera position by Resection. **(04 Marks)**

c. Three point A, B and C were photographed and their coordinates with respect to the lines joining the collimation marks on the photograph are :

Point	X	Y
a	−35.52mm	+ 21.43mm
b	−8.48mm	−16.38 mm
c	+ 48.26mm	+ 36.72 mm

The focal length of the lens is 120.80mm determine the azimuths of the lines OB and OC if that of OA is 354°30′. The axis of the camera was level at the time of the exposure at the station O. **(08 Marks)**

OR

8 a. Define the following terms :
i) Tilted photograph ii) Flight line iii) Ground nadir point iv) Isocentre. **(04 Marks)**

b. Explain scale of a vertical photograph. **(04 Marks)**

c. Two point A and B having elevations of 500m and 300m respectively above datum appear on the vertical photograph having focal length of 20cm and flying altitude of 2500m above datum. Their corrected photographic co-ordinates are as follows :

Point	Photographic	Co-ordinate
	X(cm)	Y(cm)
a	+ 2.65	+ 1.36
b	−1.92	+ 3.65

Determine the length of the ground AB. **(08 Marks)**

Module-5

9 a. Enumerate three types of measurement of distance with instruments used. **(06 Marks)**

b. With sketches explain properties of electromagnetic waves and electromagnetic spectrum. **(10 Marks)**

OR

10 a. Explain the components of GIS. **(08 Marks)**

b. Explain the applications of remote sensing in civil engineering. **(08 Marks)**

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