



# CBCS SCHEME

15CV46

## Fourth Semester B.E. Degree Examination, Dec.2019/Jan.2020 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. Define the following terms with a neat sketch  
i) Back Tangent ii) Point of Tangency iii) Compound curve iv) Transition curve. (08 Marks)
- b. Two tangents AB and BC intersect at point B at chainage 150.50m. Calculate all the necessary data for setting out a circular curve of radius 100m and deflection angle of  $30^\circ$  by the method of offsets from the longchord. (08 Marks)

OR

- 2 a. Explain the linear method of setting out simple curve by the method of taking offsets from chord produced. (08 Marks)
- b. Explain condition of an ideal transition curve. (04 Marks)
- c. Calculate the length of transition curve required in order to attain a maximum super elevation of 15cm. Assuming a rate of super elevation of 3cm/s and speed of vehicle 50km/h. (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) The celestial Horizon ii) Hour angle  
iii) The Right Ascension iv) The Ecliptic. (04 Marks)
- b. Explain the Horizon system. (04 Marks)
- c. Calculate the distance in kilometers between two points A and B along the parallel of Latitude, given that  
(i) Latitude of A  $28^\circ 42' N$  ; longitude of A  $31^\circ 12' W$   
Latitude of B  $28^\circ 42' N$  ; longitude of B  $47^\circ 24' W$   
(ii) Latitude of A  $12^\circ 36' S$  ; longitude of A  $115^\circ 6' W$   
Latitude of B  $12^\circ 36' S$  ; longitude of B  $150^\circ 24' E$  (08 Marks)

OR

- 6 a. Explain Dependent Educational system. (04 Marks)
- b. Explain with a neat sketch zones of the Earth. (04 Marks)
- c. Calculate the Sun's azimuth and hour angle at sunset at a place in latitude  $42^\circ 30' N$ , when its declination is  $22^\circ 12' N$  (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  $354^{\circ}30'$ . 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 X(cm)	Co-ordinate 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. Explain Electromagnetic energy. (04 Marks)  
 b. Explain Energy interaction with earth surface features. (04 Marks)  
 c. Explain Applications of Remote sensing. (08 Marks)

**OR**

- 10 a. Explain components GIS. (08 Marks)  
 b. Explain the applications of total station. (04 Marks)  
 c. Give a brief description of GPS. (04 Marks)

\*\*\*\*\*