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**Fourth Semester B.E. Degree Examination,
Advanced Surveying**

15C\46
-Or an.2020

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° 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°42' N ; longitude of A 31°12' W
 Latitude of B 28°42' N ; longitude of B 47°24' W
 (ii) Latitude of A 12°36' S ; longitude of A 115°6' W
 Latitude of B 12°36' S ; longitude of B 150°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°30' N, when its declination is 22°12' N (08 Marks)

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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
 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 0. (08 Marks)

OR

- 8 a. Define the following terms :
 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
 a X(cm) Y(cm)
 b + 2.65 + 1.36
 —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)