Reg. No. : | | | | | | | | | | |

Question Paper Code: 43106

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2022

Third Semester

Civil Engineering

14UCE306 - SURVEYING - I

(Regulation 2014)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. In chain surveying field work is limited to

   (a) linear measurements only (b) angular measurements only
   (c) both (a) and (b) (d) all the above

2. In chain surveying tie lines are primarily provided

   (a) to check the accuracy of the survey
   (b) to take offsets for detail survey
   (c) to avoid long offsets from chain lines
   (d) to increase the number of chain lines

3. ABCD is a regular parallelogram plot of land whose angle BAD is 60°. If the bearing of the line AB is 30°, the bearing of CD, is

   (a) 180° (b) 210° (c) 90° (d) 270°

4. The bearing of a line measured in the direction of the progress of the survey is called

   (a) Back bearing (b) Whole Circle bearing
   (c) Fore bearing (d) Quadrantal bearing

5. A plumb line is a line

(a) lying on a level surface (b) lying on a horizontal plane

(c) perpendicular to a level surface (d) that joints two points on ground

6. Reciprocal leveling is a method of leveling that eliminates the error due to

(a) curvature
(b) inclination of line of collimation
(c) curvature and refraction
(d) curvature and refraction and inclination of line of collimation

7. The bench mark established by Survey of India through out the country is called

(a) Permanent bench mark (b) GTS bench mark
(c) Temporary bench mark (d) Arbitrary bench mark

8. The total volume of excavation multiplied by average haul distance is said to be

(a) Mass haul (b) Free haul
(c) Haul (d) Over haul

9. If the departure and latitude of a line are +78.0m and -135.1m, respectively, the whole circle bearing of the line is

(a) 150° (b) 30° (c) 60° (d) 120°

10. When you transit the telescope, you rotate the telescope about

(a) the vertical axis (b) the trunion axis
(c) the optical axis of the telescope (d) the line of collimation

PART - B (5 x 2 = 10 Marks)

11. What are the errors in chaining?

12. Define Magnetic Declination.

13. What are the different kinds of bench marks?

14. State contour interval.

15. List out the uses of Anallactic lens.

PART - C (5 x 16 = 80 Marks)

16. (a) A survey line ABC crossing a river at right angles cuts its banks at B and C. To determine the width BC of the river, the following operation was carried out. A point E was established on the perpendicular BE such that angle CEF is a right angle where F is a point on the survey line. If the chainage of F and B are respectively 1200 m and 1320 m, and also the distance EB is 90 m, calculate the width of the river and the chainage of C. (16)

Or

(b) *AB* is a chain line crossing a lake. *A* and *B* are on the opposite sides of the lake. *A* line *AC* , 800*m* long is ranged to the right of *AB* clear of the lake. Similarly another line *AD*, 1000*m* long is ranged to the left of *AB* such that the points *C,B* and *D* are collinear. The lengths *BC* and *BD* are 400*m* and 600m respectively. If the chainage at *A* is 1262.44*m*, calculate the chainage of *B*. (16)

17. (a) The following fore-bearings and back-bearings were observed while traversing with compass. Calculate the interior angles and correct for observational errors. (16)

Or

(b) (i) With neat sketches, explain the method of intersection in plane tabling. (10)

(ii) List the common errors in plane tabling and the precautions to be taken. (6)

18. (a) Determine the corrections due to (a) curvature and (b) refraction if the length of sight is (i) 1200m and (ii) 1800m. (16)

Or

(b) The following observations were made to determine the sensitivity of two bubble tubes. Determine which bubble tube is more sensitive. The distance of the staff from the instrument was 80*m* and the length of one division of both bubble tubes is 2 *mm*. (16)

Bubble tube		Bubble Reading		Staff reading
		L.H.S	R.H.S	
A	(i)	13	5	1.618
	(ii)	18	12	1.767
B	(i)	15	3	1.635
	(ii)	6	14	1.788

19. (a) (i) Define contours and give characteristics of contours. (8)

(ii) Name the methods of contouring and explain the procedure of any one method. (8)

Or

(b) What is meant by interpolation of contours? Describe the various methods used (16)

20. (a) (i) To find out the distance between two inaccessible points P and Q, the theodolite is set up at two stations A and B, 1000 m apart and the following angles were observed: PAQ = 45°, QAB = 57°, PBA = 56° and PBQ = 50°. Calculate the distance PQ. (6)

(ii) What are the possible sources of errors while using a theodolite? (10)

Or

(b) What are the possible sources of errors while using a theodolite? (16)