

ANNA UNIVERSITY COIMBATORE

B.E. / B.TECH. DEGREE EXAMINATIONS : JAN – FEB 2009

REGULATIONS : 2007

SECOND SEMESTER – CIVIL ENGINEERING

070100002 / 4CV1203 - BASICS OF SURVEYING

Time : 3 Hours

Max: 100 Marks

PART - A

(20 x 2 = 40 Marks)

ANSWER ALL QUESTIONS

1. What are the main divisions of surveying?
2. Mention the basic principles of surveying
3. Define : Ranging and mention its type
4. What is Isogonic line?
5. Convert the following WCB to RB (i)  $255^{\circ}10'$  (ii)  $336^{\circ}40'$
6. Mention any two advantages and disadvantages of a plane table surveying
7. What is meant by Bench Mark? Mention its classifications
8. The length of a line measured with a 20m chain was found to be 250m. Calculate the true length of the line if the chain was 100 mm too long.
9. What is meant by face left and face right in theodolite surveying?
10. What are the fundamental lines of a transit theodolite?
11. What is meant by closing error?
12. Define Contour and Contouring
13. If the true bearing of a line is  $142^{\circ}30'$  and declination is  $1^{\circ}45' W$ , find the magnetic bearing.
14. What are the surveys to be conducted for locating the high way?

15. Define : Curve and mention its type
16. What is meant by Gale's traverse table?
17. Define the term Meridian. State its type.
18. What is meant by reciprocal leveling and where it is used?
19. Differentiate DiP and Declination.
20. List the two methods available for measuring the horizontal angle using a theodolite. Which is the most accurate method and why?

PART - B

(5 x 12 = 60 Marks)

ANSWER ANY FIVE QUESTIONS

21. (i) What are the classification of surveying based on the various aspects such as field, object, methods and instruments? (8)
- (ii) List out the instruments required for conducting chain surveying. (4)
22. (i) Explain the indirect method of reciprocal ranging and when it is used? (6)
- (ii) A and B are two points 200 m apart on the nearer bank of a river, which flows east to west. The bearings of a tree on the other bank of the river was observed from A and B were  $N 30^{\circ} E$  and  $N 40^{\circ} W$  Find the width of the river (6)
23. (i) What is meant by offset? Give its different types (4)
- (ii) What are the different methods available to overcome the obstacle in chain surveying? (8)
24. (i) Discuss the difference between the prismatic compass and surveyor's compass (6)

- 24.(ii) Calculate the included angles in a closed compass traverse ABCD run in the clockwise direction. The following are the observed fore bearings of the lines (6)

LINE	F.B
AB	60°
BC	140°
CD	250°
DA	320°

- 25.(i) Compare the Height of collimation and Rise and fall method of reducing the levels (4)

- (ii) The following consecutive readings were taken with an dumpy level and a 4 m staff on a continuously sloping ground at a common interval of 30 m

0.680; 1.455; 1.855; 2.330; 2.885; 3.380; 1.005; 1.860;

2.265; 3.540; 0.835; 0.945; 1.530 and 2.445 (8)

The R.L of the first point was 80.750m. Rule out a page of a level book and enter the above readings. Calculate the R.Ls of the points by height of collimation method, and also the gradient of the joining the first and last points.

- 26.(i) Describe various characteristics of contour with sketches (6)

- (ii) What is local attraction? How it is detected? (6)

- 27.(i) Explain the radiation method of plane table surveying (4)

- (ii) The following bearings were observed to running a closed compass traverse ABCDE (8)

LINE	FB	B.B
AB	75° 05'	254° 20'
BC	115° 20'	296° 35'
CD	165° 35'	345° 35'
DE	224° 50'	44° 05'
EA	304° 50'	125° 05'

At what stations do you suspect local attractions? Find the corrected bearings.

- 28.(i) An Embankment 400m long with a formation width of 15 m is to be provided for a railway, the side slope of the embankment being 2 horizontal to 1 vertical. The reduced levels of the ground at 100 m intervals are as follows. (8)

Chainage (m)	R.L(m)
0	178.50
100	181.50
200	182.10
300	181.95
400	182.25

The R.L of the formation level at zero chainage is 181.50m. It is proposed to provide a rising gradient of 1 in 100 for the embankment. Assuming the ground to be level across the centre line calculate the volume of earth work.

- (ii) List out the elements of simple curve (4)

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