





## PART – B

(5×13=65 Marks)

11. a) Explain the principles adopted in the construction of vernier scales. (13)  
(OR)
- b) A distance of 2000 m was measured by 30 m chain, later on it was detected that the chain was 0.1 m too long. Another 500 m (i.e., total 2500 m) was measured and it was detected that the chain was 0.15m too long. If the length of the chain in the initial stage was correct, determine the exact length that was measured. (13)
12. a) A closed traverse with sides is almost that of a regular pentagon. One line of the pentagon has a bearing of  $54^\circ 30'$ . Compute the bearing of the remaining sides, taking the side in a clockwise order. (13)  
(OR)
- b) Describe the various accessories used in plane table surveying? Explain their functions. (13)
13. a) In a fly level surveying, starting from bench mark A (R.L= 400.00) and ending with staff station, the following consecutive sights are taken 0.925, 1.205, 2.045, 1.625, 2.215, 2.415, 2.105 and 1.405. Find the R.Ls of point B. (13)  
(OR)
- b) A level was set up at a point 'O' and the distance to two staff stations A and B were 60 m and 200 m. The observed staff readings, On A and B were 2.25 and 1.815. Find the correct difference of levels between stations A and B. (13)
14. a) Explain how will you determine the capacity of a reservoir using a contour map. (13)  
(OR)
- b) A reservoir of bottom size 35 m × 25m is planned with a depth of 4m. The side slope is 1.5 : 1. Calculate the quantity of earth to be excavated. Assume the surface of the ground to be level before excavation. (13)
15. a) 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 :  $\angle PAQ = 45^\circ$ ,  $\angle QAB = 57^\circ$ ,  $\angle PBA = 56^\circ$ ,  $\angle PBQ = 50^\circ$ . Calculate the distance PQ. (13)  
(OR)



- b) A theodolite was set up at a distance of 150 m from a tower. The angle of elevation to the top of the tower was  $10^\circ 08'$ , while the angle of depression to the foot of the tower was  $03^\circ 12'$ . The staff reading on the B.M. of R.L. 50.217 with the telescope horizontal was 0.880. Find the height of the tower and reduced level of the top and foot of the tower. (13)

## PART – C

(1×15=15 Marks)

16. a) Explain how a point can be plotted on a plan using two known points on plan and their corresponding ground stations. (15)  
(OR)
- b) The following consequent readings were taken in a level and a 4m leveling staff on a continuously sloping ground at common interval of 30m the readings are 0.855, 1.545, 2.335, 3.115, 3.825, 0.455, 1.380, 2.055, 2.855, 3.455, 0.585, 1.015, 1.850, 2.755, 3.845. R.L. of A is 380.500 m the last reading taken point is B. Find the gradient between A and B. (15)