USN ☐☐☐☐☐☐☐☐☐☐ **18MN33**

Third Semester B.E. Degree Examination, July/August 2021
Mine Surveying – I

Time: 3 hrs.   Max. Marks: 100

Note: *Answer any FIVE full questions.*

1   a.   Explain the procedure to measure the liner distance between two points when there is obstacle to chaining but not ranging and when it is possible to chain around the obstacle (minimum five cases). **(10 Marks)**

    b.   An 20m chain was tested before the commencement of the day's work and found to be correct. After chaining a distance of 840m, the chain was found to be 0.08m too long. At the end day's work, after chaining a total distance of 1376m the chain was found to be 0.12m too long. Determine the true distance chained. **(10 Marks)**

2   a.   An old map was plotted to a scale of 40m to 1cm. Over the years, this map has been Shrinking and a line originally 20cm long is only 19.5cm long at present. Again the 20m chain was 5cm too long. If the present area of the map measured by planimeter is 125.50cm^2, Find the true distance chained. **(10 Marks)**

    b.   Discuss about chaining in uneven ground/sloping ground. **(10 Marks)**

3   a.   Find the intercepts and distance of the equation and sketch the graph : $y = -34x + 3$ using rectangular co-ordinate system. **(10 Marks)**

    b.   A polygon of ABCDEF was surveyed starting from the point 'B' and the bearing of AB was found to be 52º45'. Compute the bearing of other sides. **(10 Marks)**

4   a.   The following bearings were observed with a theodolite.

Line	Length	F.B
AB	10	N 30E
BC	6	S 25 E
CD	8	S 20 W
DA	7	N 30 W

       Calculate and correct the dependent co-ordinate and determine the independent co-ordinate. (Assume co-ordinate A is (0, 0)). **(14 Marks)**

    b.   Explain the method to determine the horizontal for high rate of accuracy. **(06 Marks)**

5   a.   The following staffs readings were observed successively with a leveling instrument. Level was moved by third, sixth and eight readings. 2.228 ; 1.606 ; 0.988 ; 2.090 ; 2.864 ; 1.262 ; 0.602 ; 1.982 ; 1.044 ; 2.684. Determine R.L of the stations, if the first reading was taken on a Benchmark of 432.383m. **(10 Marks)**

    b.   Determine the effect of curvature, refraction and combined correction for a leveling work carried out at long sight. **(10 Marks)**

6   a.   Determine the curvature, refraction and combined corrections for 3400m, 1200m, 1500m, 1.7km and 1km? **(10 Marks)**

b. The following staff's readings were observed with a dumpy level and 4m leveling staff. The instrument was shifted after 3rd and 6th readings. The readings are 2.665, 3.225, 2.905, 1.85, 0.98, 2.62, 1.585, 0.96 and 0.425m. If the Benchmark 240m, Use H.I method to determine the reduced levels and apply the arithmetic check. **(10 Marks)**

7 a. Explain the characteristics of a contour. **(10 Marks)**
   b. Explain radiation method of plane table surveying. **(10 Marks)**

8 a. Explain the indirect methods of determining contour for a given land. **(10 Marks)**
   b. Explain intersection method of plane table surveying. **(10 Marks)**

9 a. Compute the cost of earth work involved in cutting open a trench of following size length 200m, side slope 2:1, depth of trench 4m, bottom, and width of trench is 1.5m, cost of earth work Rs.50/m^3. **(10 Marks)**
   b. Calculate are the volume of earth work to be excavated by spot level(excavated level = 10m) for the given rectangular plot in Fig Q9(b).
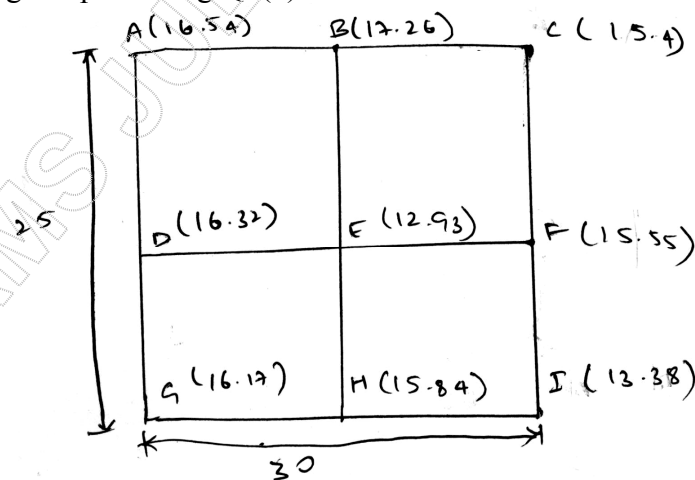
A(16.54)   B(17.26)   C(15.4)

25

D(16.32)   E(12.93)   F(15.55)

G(16.17)   H(15.84)   I(13.38)

30

Fig Q9(b) **(10 Marks)**

10 a. Draw neat sketches of various cross-sections. **(10 Marks)**
    b. The following offsets were taken from a chain line to an irregular boundary line at an interval of 10m, 0, 2.5, 3.5, 5, 4.6, 3.2, 0m. Compute the area between the chain lines the irregular boundary line and the end offsets by :
       i) Trapezoidal rule
       ii) Simpson's rule
       iii) Mid-ordinate rule. **(10 Marks)**

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