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Third Semester B.E. Degree Examination, Jan./Feb. 2021
Mine Surveying - I

Time: 3 hrs.   Max. Marks: 100

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

#### Module-1

1   a.   Define Surveying. What is the object of surveying?   **(10 Marks)**
    b.   Classify the surveying based on :
      i)   Nature of field survey   ii)   Objectives (or) Purpose of survey.   **(10 Marks)**

OR

2   a.   Explain the Reciprocal Ranging, with a neat sketch.   **(10 Marks)**
    b.   The length of a survey line was measured with a 20m chain and was found to be equal to 1200m. The length was again measured with a 25m chain and was found to be 1212m. On comparing the 20m chain with the test gauge, it was found to be 10cm too long. Find the actual length of 25m chain used.   **(10 Marks)**

Module-2

3   a.   The following bearings were observed with a closed compass traverse.
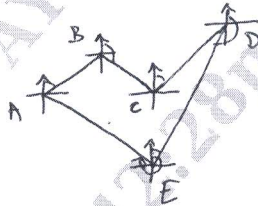
Line	Fore bearing
AB	60^0 30 minutes
BC	122^0 0 minutes
CD	46^0 0 minutes
DE	205^0 30 minutes
EA	300^0 0 minutes

      Calculate the Interior angles.   **(10 Marks)**
    b.   Define Local Attraction. Explain the detection and elimination of local attraction.   **(10 Marks)**

OR

4   a.   Explain the method of repetition to measure horizontal angle between two points.   **(05 Marks)**
    b.   What are the Permanent adjustments of a theodolite?   **(05 Marks)**
    c.   Following are the latitudes and departures of lines AB, BC, CD, DE and EA found in a theodolite traverse.

Line	Latitude	Departure
AB	62.967	63.335
BC	67.605	209.102
CD	-143.671	47.051
DE	-104.917	-119.556
EA	118.578	-199.709

     Adjust the traverse using Bowditch's rule.   **(10 Marks)**

Module-3

5 a. Define the following terms : Height of instrument (H.I) ; Back sight ; Fore sight ; Permanent bench mark. **(05 Marks)**

b. The following consecutive readings were taken with a level and 4.0m staff on a continuously sloping ground at a common interval of 30m ; 0.780 , 1.535 , 1.955 , 2.430 , 2.985 , 3.480 , 1.155 , 1.960 , 2.365 , 3.640 , 0.935 , 1.045 , 1.630 and 2.545.
The reduced level of the first point A was 180.750m. Calculate the reduced levels of the points by H.I method and Rise and Fall method. Also calculate the gradient of the line joining the first and the last points. **(15 Marks)**

OR

6 a. The reduced level of a factory floor is 100m and the staff reading on the floor is 1.40m. The staff reading when held inverted with the bottom touching the beam of the roof is 3.67m. Find the height of the beam above the floor. **(05 Marks)**

b. Following is the page of a level field book. The readings in the level book were written with pencil and some of these got erased. The erased readings are marked with Question marks. Calculate the missing readings. Apply the checks.

Station	B.S	I.S	F.S	Rise	Fall	H.I	R.L	Remark
1	?						150	B.M
2		2.457			0.827		?	
3		2.400		0.057			?	
4	2.697		?		?		148.07	C.P
5	?		2.051	0.646			148.716	C.P
6		2.500		1.068			149.784	
7		2.896			?		149.388	
8		?			0.124		?	
9			2.672	0.348			149.612	
Check	ΣBS = ?		ΣF.S = ?	ΣRise = ?	ΣFall = ?			

(15 Marks)

Module-4

7 a. Define Contour and Contour Interval. **(04 Marks)**

b. Explain the characteristics of Contour lines. **(10 Marks)**

c. What are the methods of contouring? Explain any one. **(06 Marks)**

OR

8 a. Explain the Interpolation of Contours by Estimation , Arithmetic calculations and Graphical method. **(06 Marks)**

b. Explain the uses of Contours. **(06 Marks)**

c. Explain the Intersection method of plane tabling with a neat sketch. **(08 Marks)**

Module-5

9 a. The following perpendicular offsets were taken from a chain line to an irregular boundary :

Chainage (m)	0	30	60	90	120	150	180	210
Off set length (m)	0	2.65	3.80	3.75	4.65	3.60	5.00	5.80

Calculate the area between the chain line and the irregular boundary by
i) Average ordinate rule   ii) Mid ordinate rule   iii) Trapezoidal rule
iv) Simpson's rule. **(12 Marks)**

b. Explain the area computed from Map measurements using a plain meter. **(08 Marks)**

OR

10 a. A road at the formation level is 6m wide and has a side slope of 2:1. The road is to have a constant R.L. of 200m. The ground is level across the centre line of the road. The following observations were made :

Chainage (M)	0	20	40	60	80	100
Surface level along centre line of road	204.6	203.0	200.8	201.6	202.0	200.2

Estimate the volume of earthwork. **(10 Marks)**

b. The areas within the contour line at the site of reservoir and the pace of the proposed dam are as follows :

Contour	Area (m^2)
101	1000
102	12,800
103	95,200
104	147,600
105	872,500
106	1350,000
107	1985,000
108	2286,000
109	2512,000

Taking 101 as bottom level of reservoir and 109 as the top level, calculate the capacity of reservoir. **(10 Marks)**

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