

JK LAKSHMIPAT UNIVERSITY, JAIPUR

INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination (Regular), Nov. 2017

B. Tech in Civil Engineering, Semester III

Roll No.....

CE308 : SURVEYING

Time: 3 hours

Max. Marks: 100

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.

Q.1A	Objective type multiple choice questions (10 questions @ 1 mark)	10
i.	Pick up the correct statement from the following: (A) The directions of plumb lines suspended at different points in a survey are not strictly parallel (B) In surveys of small extent, the effect of curvature may be ignored and the level surface of the earth is assumed as horizontal (C) In surveys of large extent, the effect of curvature of the earth must be considered (D) All the above	
ii.	The vertical angle between longitudinal axis of a freely suspended magnetic needle and a horizontal line at its pivot, is known (A) Declination (B) Azimuth (C) Dip (D) Bearing	
iii.	A series of closely spaced contour lines represents a (A) Steep slope (B) Gentle slope (C) Uniform slope (D) Plane surface	
iv.	Locating the position of a plane table station with reference to three known points, is known as (A) Intersection method (B) Radiation method (C) Resection method (D) Three point problem	
v.	Planimeter is used for measuring (A) Volume (B) Area (C) Contour gradient (D) Slope angle	
vi.	The magnetic meridian at any point, is the direction indicated by a freely suspended	

- (A) Magnetic needle
 - (B) And properly balanced magnetic needle
 - (C) Properly balanced and uninfluenced by local attractive force
 - (D) Magnetic needle over an iron pivot
- vii. In a theodolite, revolving the telescope by 180° in vertical plane about horizontal axis is known as:
- (A) Face right
 - (B) Changing face
 - (C) Face left
 - (D) Telescope inverted
- viii. Which of the following methods of theodolite traversing is suitable for locating the details which are far away from transit stations?
- (A) Measuring angle and distance from one transit station
 - (B) Measuring angles to the point from at least two stations
 - (C) Measuring angle at one station and distance from other
 - (D) Measuring distance from two points on traverse line
- ix. With the rise of temperature, the sensitivity of a bubble tube:
- (A) Decreases
 - (B) Increases
 - (C) Remains unaffected
 - (D) None of the above
- x. Profile levelling is usually done for determining:
- (A) Contours of an area
 - (B) Capacity of a reservoir
 - (C) Elevations along a straight line
 - (D) Boundaries of property

Q.2 Short answer type questions (4 questions @ 2.5 marks)

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- i. Differentiate between the following:
 - a. Spirit levelling
 - b. Trigonometric levelling
- ii. Differentiate between the following
 - a. True meridian
 - b. Magnetic meridian

Q.3A Write an explanatory note on "Fundamental Principles of Plane surveying".

05

Q.3B Define cumulative and compensating Error. Enlist the various sources of error that may arise during chain surveying.

05

Q.4A A 20 m chain used for survey was found to be 20.10 m at the beginning and 20.30 m at the end of the work. The area of the plan drawn to a scale of 1cm= 8 m was measured with the help planimeter and was found to be 32.56 sq. cm. Find the true area of the field.

05

Q.4B i. The length of a line measured with a 20 m chain was found to be 250 m. Calculate the true length of line if the chain was 10 cm too long.

05

ii. In an old map, a line AB was drawn to a magnetic bearing of $5^{\circ} 30'$ the magnetic declination at the time being 1° East. To what magnetic bearing should the line be set now if the present magnetic declination is $8^{\circ} 30'$ East.

Q.5A Explain how contouring indicates the elevations directly? Write about contour interval, characteristics of contour, and the value of contour interval for various purposes like building site, town planning and location survey etc. 05

Q.5B Explain the "Radiation Method" for locating the details of points during plane table survey. 05

Q.6A Write the short note on the following: 05
i. Tacheometric Survey
ii. EDM Survey

Q.6B How will you eliminate the local attraction in case of compass surveying? Explain the methods of elimination. 05

OR

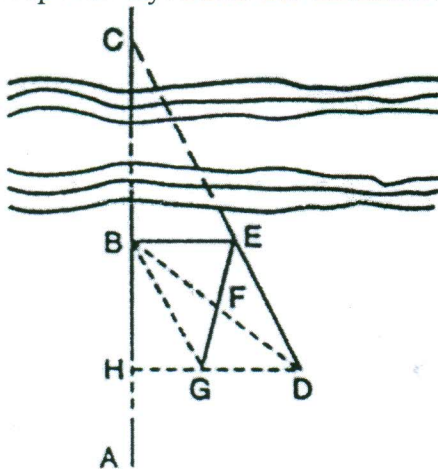
Q.6B Explain in details how you will proceed in the field for: 05
i. Profile levelling
ii. Cross sectioning

Q.7A Define Orientation in Plane Table Surveying. Explain "Resection "after orientation by compass and back sighting. 05

Q.7B Define Reciprocal Ranging. Explain the Reciprocal Ranging with the help of suitable example. 05

OR

Q.7B A survey line ABC cuts the Banks of a river at B and C, and to determine the distance BC, a line BE, 60m long was set out roughly parallel to the river. A point D was then found in CE produced and middle point F of DB determined. EF was then produced to G, making FG equal to EF, and DG produced to cut the survey line in H. GH and HB were found to be 40 and 80 meters long respectively. Find the distance from B to C. 05



Q.8A i. Write brief note on the following: 10
a. WCB system and
b. RB System

ii. Write the choice of scale and Representative fraction (RF) for different types of survey purpose in tabular form.

Q.9A Discuss the following :

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(i) Major components of Global Positioning System (GPS)

(ii) Types of GPS Positioning

Q.9B It was require to ascertain the elevation of two points P and Q and a line of levels was run from P to Q. The levelling was then continued to a B.M. of 83.500, the reading obtained being as shown below: Obtain the R.L. of P and Q.

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S.N.	B.S.	I.S.	F.S.	R.L.	Remarks
1	1.622				P
2	1.874		0.354		
3	2.032		1.780		
4		2.362			Q
5	0.984		1.122		
6	1.906		2.824		
7			2.036	83.500	B.M.

OR

Q.9B Data from a differential levelling have been found in order of B.S. and F.S ...etc. starting with a initial reading on B.M. (Elevation 150.485 m) are as follows:

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1.205, 1.860, 0.125, 1.915, 0.395, 2.615, 0.880, 1.760, 1.960, 0.920, 2.595, 0.915, 2.255, 0.515, 2.305, 1.170.

Final reading closes on B.M. Put the data in complete field note form and carry out reduction of level by Rise and Fall method