

JK LAKSHMIPAT UNIVERSITY, JAIPUR

INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination (Regular), November 2016

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)

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- i. During Plane table surveying the Intersection method is used when :
 - (a) The distance between the points and instrument station are small (with in tape length)
 - (b) The distance between the points and instrument station are too large.
 - (c) both of above
 - (d) None of these
- ii. The surveyor's compass graduated on :
 - (a) W.C.B. system
 - (b) Reduced Bearing system
 - (c) Both
 - (d) None of above
- iii. Isogonic lines are :
 - (a) lines on the Earth's surface along which the declination has the same constant value
 - (b) Lines along which the declination is zero.
 - (c) a line on a map or chart joining points on the earth's surface at which a dip needle has the same inclination to the plumb line
 - (d) None of these
- iv. The process of putting the plane table in to some fixed direction is known as:
 - (a) Centering
 - (b) levelling the table
 - (c) Orientation
 - (d) Sighting
- v. Hydrographic surveys deal with the mapping of
 - (a) large water bodies
 - (b) heavenly bodies
 - (c) mountainous region
 - (d) canal system
 - (e) movement of clouds
- vi. Both horizontal and vertical scales are kept equal in:
 - (a) Leveling by Cross sectioning

- (b) Profile levelling
- (c) Both of the above
- (d) None of above
- 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. In a survey line the co-ordinate length measured parallel to an assumed meridian direction is known as:
 - (a) Latitude
 - (b) Departure
 - (c) Both are correct
 - (d) Both are incorrect
- ix. Scale of a map used in small scale topographic survey:
 - (a) 1 cm = 0.25 to 2.5 Km
 - (b) 1 cm = 10 m or less
 - (c) 1 cm = 50 m to 100 m
 - (d) 1 cm = 50 m to 200 m
- x. EDM Survey enables accuracy up to :
 - (a) 1 in 10^6 , over the ranges up to 50 Km
 - (b) 1 in 10^5 , over the ranges up to 100 Km
 - (c) 1 in 10^7 , over the ranges up to 1000 m
 - (d) 1 in 10^3 , over the ranges up to 10 Km

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

10

Explain the difference between the following:

- (a) Plan and Map
- (b) Metric Chain and Engineer's Chain

Write short note on the following:

- (a) Tacheometric Survey
- (b) EDM Survey

Q.3A Define Indirect Ranging. Explain the Indirect Ranging with the help of suitable example.

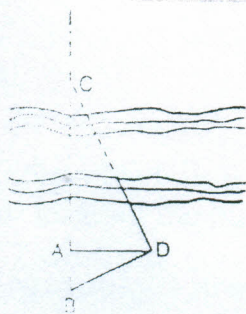
05

Q.3B The area of the plan of an old survey plotted to a scale of 10 meters to 1 cm measures now as 100.2 cm^2 as found by planimeter. The plan is found to have shrunk so that a line originally 10 cm long now measures 9.7 cm only. There was also a note on the plan that 20 m chain used was 8 cm too short. Find the true area of survey.

05

Q.4A A survey line BAC crosses a river, A and C being on near and distant banks respectively. Standing at D, a point 50 m measured perpendicularly to AB from A, the bearings of C and B are 320° and 230° respectively, AB being 25 m. Find the width of river.

05



Q.4B Write brief note on the following: 05
 i. Geodetic Surveying
 ii. Level line

Q.5A How will you eliminate the local attraction, if detect during compass surveying? 05

Q.5B (a) Define Magnetic Declination. 05

(b) The magnetic bearing of a line AB is S 280 30' E. Calculate the true bearing, if the declination is 70 30' West.

Q.6A Define the scale. Explain the various types of scales used in surveying. 05

Q.6B Explain the Cross Sectioning (In case of levelling) with reference to the following: 05

- (i) Field procedure and
- (ii) Plan & Plotting of profile

OR

Q.6B Explain the common systems of notation of bearings. 05

Q.7A Write brief note on the following 05

- (i) Barometric leveling
- (ii) Trigonometric leveling

Q.7B Write the short note on the following: 05

- (a) Prismatic Compass
- (b) Surveyor Compass

OR

Q.7B Define Traversing and explain the traversing by direct observation of angles by total station. 05

Q.8A The following staff readings were observed successively with a level, the instrument having been moved after third, sixth, and eighth reading: 10
 2.228 ; 1.606 ; 0.988 ; 2.090 ; 2.864 ; 1.262 ; 0.602 ; 1.982 ; 1.044 ; 2.684 meters .

Enter the above readings in a page of a level book and calculate the R.L. of points if the first reading was taken with a staff held on a bench mark of 432.384 m.

Q.9A What do you mean by Contouring? Write about contour, contour interval and the value of contour interval for various purposes like building site, location survey etc. 10

- Q.9B Explain the following methods of plane tabling in detail which are widely used for locating the plane table stations: 10
- i. Traversing
 - ii. Resection

OR

- Q.9B The following consecutive readings were taken with a level and 5 metre levelling staff on continuously sloping ground at a common interval of 20 meters : 10
- 0.385; 1.030; 1.925; 2.825; 3.730; 4.685; 0.625; 2.005; 3.110; 4.485.

The reduced level of first point was 208.125 m. Rule out a page of a level field book and enter the above readings. Calculate the reduced levels of the points by rise and fall method and also the gradient of the line joining the first and last point.