

**EK-327**

UITians

**B.E. IV<sup>th</sup> Semester (CGPA) Examination, 2016**

**Civil Engg.**

**Paper - CE-402**

**Surveying-I**

**Time : 3 Hours] [Maximum Marks : 60**

**Note :- All questions are compulsory.**

1. (a) What is meant by working from whole to part in surveying ? 4  
(b) What are various instruments available for setting out right angles on field ? 4  
(c) What is ranging ? What is its use ? 4

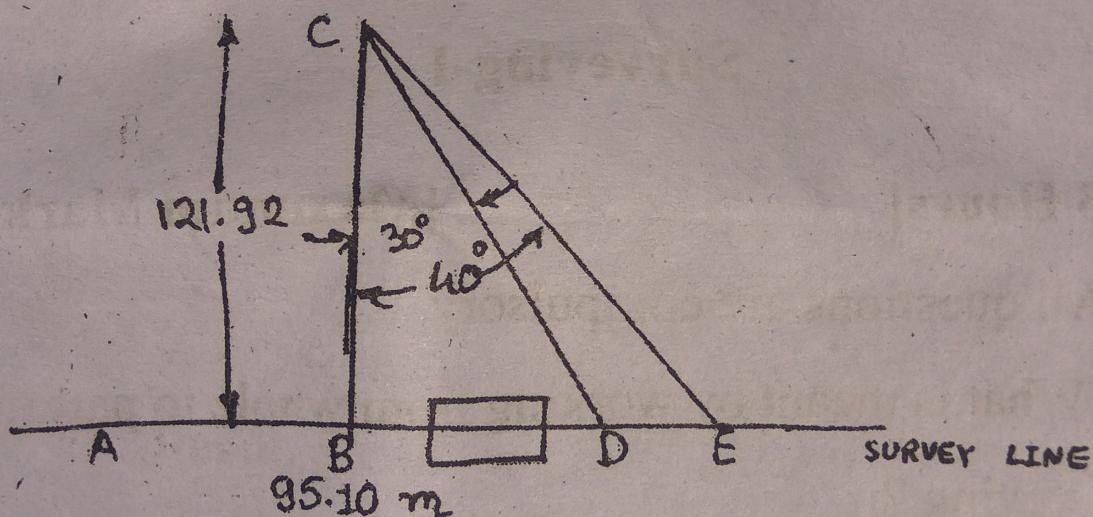
**OR**

- (a) What are systematic errors in linear measurements in surveying ? Explain each. 8  
(b) A survey line AB is obstructed by a high building. To

**P.T.O.**

(2)

prolong the line beyond the building, a perpendicular BC 121.92 m long is set at B. From C two lines CD and CE are set out at angles of  $30^\circ$  and  $40^\circ$  with CB respectively. Determine the lengths CD and CE so that D and E may be on the prolongation of AB. If the chainage of B is 95.10 m find the chainage of D. 4



2. (a) What is meant by traversing ? What instruments are used in traverse survey 4
- (b) What is azimuth ? Explain its significance in surveying ? 4

OR

- (a) Explain advantages and disadvantages of plane table surveying. 4

(3)

- (b) Following are the data regarding a closed compass traverse PQRS taken in clockwise direction. 8
- (i) Forebearing and back bearing at station  $P = 55^\circ$  and  $135^\circ$  respectively
- (ii) Forebearing and backbearing of line  $RS = 211^\circ$  and  $31^\circ$  respectively.
- (iii) Included angles  $\angle Q = 100^\circ, \angle R = 105^\circ$
- (iv) Local attraction at station  $R = 2^W$
- (v) All the observations were free from all the errors except local attraction

From above data calculate (i) local attraction (ii) corrected bearings in tabular form

3. (a) Explain consecutive coordinates and independent coordinate system with neat sketches. 4
- (b) The coordinates of the three points C, D and P are given below 8

Point	x	y
C	402.34 m	595.06 m
D	361.50 m	571.46 m
E	375.20 m	580.22 m

(4)

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Find

- (i) The length of the line CD
- (ii) Equation of the line CD and points at which it cuts the axis.
- (iii) The length of the perpendicular from P on the straight line CD.

OR

- (a) What are various methods of balancing the traverse. 3
- (b) In a traverse the following lengths and bearings were measured 9

Side	Length (m)	Bearing
AB	130	N $38^{\circ}42'W$
BC	180	N $45^{\circ}30'E$
CD	163	N $62^{\circ}34'E$
DE	180	-
EA	-	S $75^{\circ}00W$

Compute the missing length and bearing. 4

4. (a) Write about uses of levelling in civil engineering. 4

- (b) The following readings were taken with a level and 4 m staff. Draw up a level book page and reduce the levels by the height of instrument method.

0.578 B.M. (=58.250 m), 0.933, 1.768, 2.450, (2.005 and 0.567) C.P., 1.888, 1.181 (3.679 and 0.612) C.P., 0.705, 1.810

8

**OR**

- (a) What are various sources of error in leveling processes ?
- (b) What is profile levelling ? Explain its procedure.
- (c) What is the effect of sensitivity of bubble in measurements of levelling.
5. (a) Explain field methods of obtaining contour data (topography)
- (b) The coordinates of traverse stations of a closed traverse ABCDE are given :

4

8

(6)

Station	x(m)	y(m)
A	0	0
B	+170	+320
C	+470	+90
D	+340	-110
E	-40	-220

Calculate the area enclosed by traverse.

OR

- (a) Explain principle of planimeter in calculating areas. 4
- (b) Write about methods of reducing and enlarging maps. 4
- (c) Explain various methods of computing volume from contour plans. 4

