

Enrollment No: \_\_\_\_\_ Exam Seat No: \_\_\_\_\_

# C.U.SHAH UNIVERSITY

## Summer Examination-2016

Subject Name : Basics of Civil & Structural Engineering

Subject Code : 4TE02BCS1

Branch: B.Tech (All)

Semester :2

Date :19/05/2016

Time : 10:30 To 01:30

Marks : 70

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
  - (2) Instructions written on main answer book are strictly to be obeyed.
  - (3) Draw neat diagrams and figures (if necessary) at right places.
  - (4) Assume suitable data if needed.
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Q-1

Attempt the following questions:

(14)

- a) Define : moment (1)
- b) Define : couple (1)
- c) State parallelogram law of force (1)
- d) Define : force (1)
- e) Give the differences between mass and weight (1)
- f) States papuus - guldinus theorem (1)
- g) Enlist various types of force (1)
- h) Enlist various types of aggregate (1)
- i) Give the name of this instrument (1)



- j) Give the name of this instrument (1)





k) Give the name of this instrument :

(1)



l) Give the name of this instrument :

(1)



m) Define : surveying.

(1)

n) Define : Leveling.

(1)

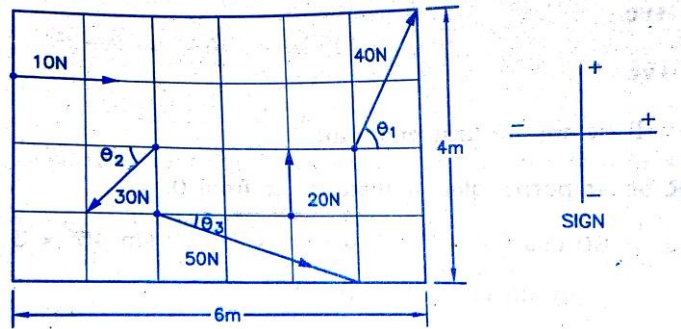
**Attempt any four questions from Q-2 to Q-8**



- Q-2 Attempt all questions (14)**
- (A) Explain Lami's theorem. (7)
- (B) Six forces 2kN, 3kN, 4kN, 5kN, 6kN and 7kN respectively act outwards from the centre of regular hexagon towards its corner. Determine the magnitude and direction of the resultant. (7)

- Q-3 Attempt all questions (14)**
- (A) Find  $I_{xx}$  and  $I_{yy}$  for symmetrical I-section with flanges 100mm wide and 10mm thick, web 280mm deep and 10mm thick. (7)
- (B) Calculate moment of inertia of a triangular section with base  $b$  and height  $h$ , about base and about axis passing through centroid. (7)

- Q-4 Attempt all questions (14)**
- (A) Determine resultant of the force system shown in following figure. The sides of each small square is 1 m. The small overall size of body is 6 m x 4 m. (7)



- (B) Find centroid of dam section with top width 3m, bottom width 6m and height 9m with one face vertical. (7)

- Q-5 Attempt all questions (14)**
- (A) Explain the role of civil engineers. (7)
- (B) Explain the various type of tape. (7)

- Q-6 Attempt all questions (14)**
- (A) Enlist various types of cement explain any one. (7)
- (B) Enlist various types of brick. Give requirement of bricks. (7)

- Q-7 Attempt all questions (14)**
- (A) Write objective and uses of leveling. (7)
- (B) The following staff reading were observed successively with a level. The instrument has been shifted after the second and fifth reading : 0.675, 1.230, 0.750, 2.565, 2.225, 1.935, 1.835, 3.220. The first reading was with staff held on bench mark of RL 100.00 m enter the reading in a page of level book format and calculate the RL of all points. (7)



Q-8

Attempt all questions

(14)

Determine forces in the member of the plane truss show in following figure.

