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.

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)

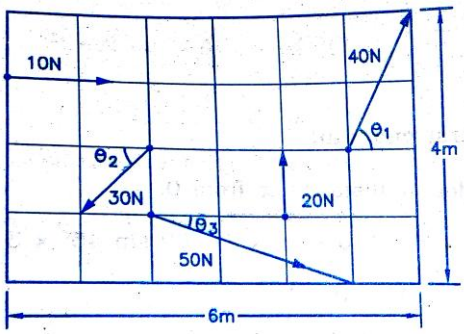
Q-3 **Attempt all questions** **(14)**

(A) Find Ixx and Iyy 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.