Enrollment No: Exam Seat No: $\qquad$

## 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.

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

j) Give the name of this instrument

k) Give the name of this instrument :

I) Give the name of this instrument :

m) Define : surveying.
n) Define : Leveling.

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

(A) Explain Lami's theorem.
(B) Six forces $2 \mathrm{kN}, 3 \mathrm{kN}, 4 \mathrm{kN}, 5 \mathrm{kN}, 6 \mathrm{kN}$ and 7 kN respectively act outwards from the centre of regular hexagon towards its corner. Determine the magnitude and direction of the resultant.

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

Q-4 Attempt all questions
(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 $6 \mathrm{mx4m}$.

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

## Q-5

Attempt all questions
(A) Explain the role of civil engineers.
(B) Explain the various type of tape.

## Q-6 Attempt all questions

(A) Enlist various types of cement explain any one
(B) Enlist various types of brick. Give requirement of bricks

## Q-7 Attempt all questions

(A) Write objective and uses of leveling.
(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.


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



