Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY

Winter Examination-2019

Subject Name : Basics of Civil & Structural Engineering

Subject Code : 4TE02BCS1 **Branch: B.Tech (All)**

Semester: 2 **Date: 23/09/2019** **Time: 02:30 To 05:30** **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 geodetic surveying.

b) Expand GPS.

c) Differentiate between prismatic compass and surveyors compass.

d) Enlist the types of rocks.

e) Write the functions of ceramic materials.

f) List out the various properties of steel.

g) What is meant by reduced bearing?

h) Define Pappus– Guldinus theorem.

i) What is perpendicular axis theorem?

j) State the concurrent forces.

k) What is rigid body in statics?

l) What is the center of gravity of a circle?

m) Define radius of gyration?

n) Why is it important to create free body diagrams?

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

Q-2 **Attempt all questions**

(a) Discuss the various classification of survey in detail. **(07)**

(b) Explain the various methods of ranging with a neat sketch. **(07)**

Q-3 **Attempt all questions**

(b) Discuss the different types of conventional symbols used in surveying with a neat sketch. **(07)**

(c) Determine the value of included angle in the closed traverse ABCD in clockwise direction for the given below bearings. **(07)**

Line	AB	BC	CD	DA
Fore Bearing	40°	70°	210°	280°

Q-4 **Attempt all questions**

(a) Explain the various methods of leveling with neat sketches. **(07)**

(b) Describe the key components of GIS and draw its essentials of GIS. **(07)**

Q-5 **Attempt all questions**

(a) Write short notes on the importance of sand and aggregate in construction. **(07)**

(b) Describe in detail about the various types of ferrous metals. **(07)**

Q-6 **Attempt all questions**

(a) Determine the x and y components of each of the forces shown in figure.1. **(07)**

(b) A T-shaped bracket supports the four loads shown in Figure.2. Determine the reactions at A and B (a) if a =10 m ; (b) a = 7 m. **(07)**

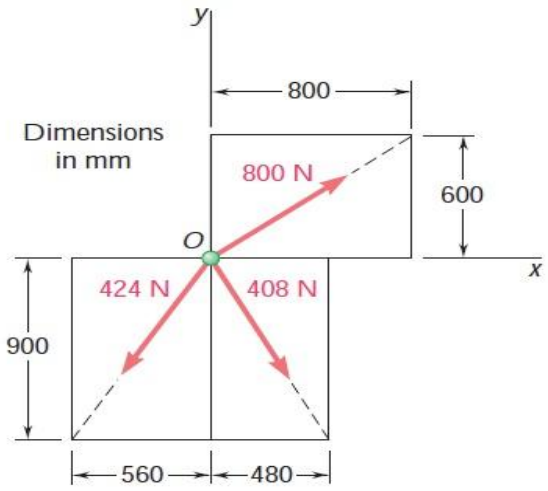

Figure.1.

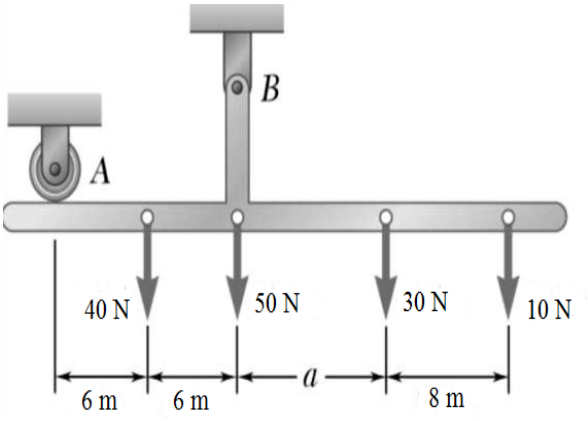

Figure.2.

Q-7 **Attempt all questions**

(a) Determine the forces in all the members of the truss shown in Figure.3. **(10)**

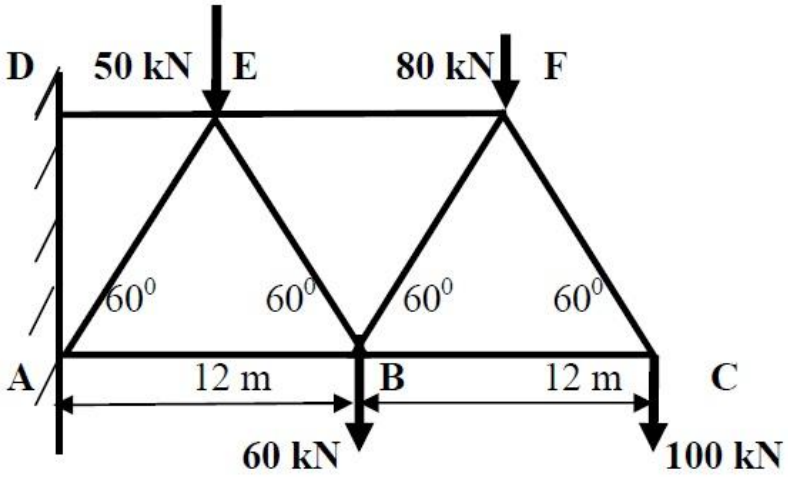

Figure.3.

(b) Explain with sketches the perfect truss and imperfect truss. **(04)**

Q-8 **Attempt all questions**

(a) Find the centroid of the shaded section shown in the figure.4. **(06)**

(b) Determine the moment of inertia of section shown in Figure.5. (All dimensions in mm) **(08)**

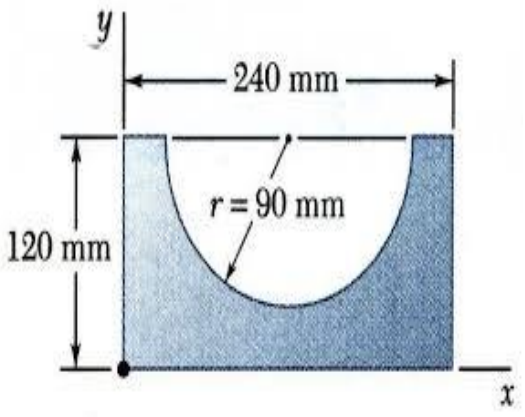

Figure.4.

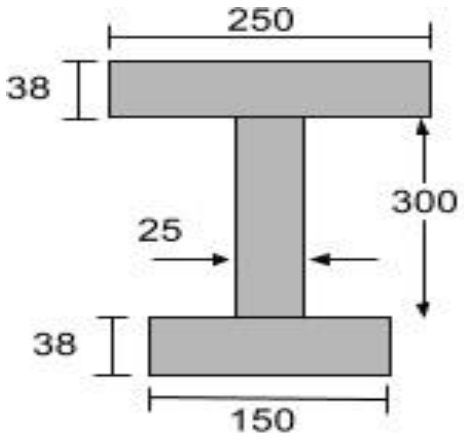

Figure.5.