A4

Candidate's Seat No

GUJARAT UNIVERSITY

B.E. Sem VII (Civil) Examination

Computer Application in Structural Engineering-I

Saturday, 5th January, 2008] **[Time : 4 Hours**

Max. Marks : 100

Instructions : (1) Attempt **all** questions.
(2) Answer to the two sections must be written in **separate** answer books.
(3) Figures to the right indicate **full** marks.
(4) Assume suitable data if necessary.
(5) Take EI = 20000 kN.m^2 if not mentianed.

SECTION I

1 Analyse a beam shown in **fig.1** by flexibility method. **18**

2 Analyse a the plane frame as shown in **fig.2** by flexibility method. Take M_B and M_C as redundents **16**

OR

2 Analyse the plane frame as shown in **fig. 3** by stiffness member approach method. **16**

3 Analyse the Continuous beam shown in **fig. 4** by stiffness member approach. draw S.F. and BM diagrams. **16**

OR

3 (a) Classify and explain C++ data types. **16**
(b) Enlist different operators, explain each with illustrations.
(c) Write short note on OOP.
(d) Using "function" find displacement matrix [D], if [S], [AD], and [ADL] is given.

SECTION II

4 (a) Pepare stffness matrix for a truss shown **fig. 5.** **8**

OR

(a) Pepare stffness matrix for a grid shown in **fig. 6.** Take GJ = 0.8 EI. **8**

(b) Pepare flexibility matrix for a grid structure shown in fig. 6. if support at B is removed. Take GJ = 0.8 EI. **10**

OR

(b) For a truss shown in Fig.7. Find [S], [D] and final forces in each members. **10**

5 (a) Write a C++ program to find out SF & BM at a given section for a cantilever beam subjected to general roodings. **8**

(b) Write a C++ program to find SI and KI of plane structure. **8**

OR

(b) Write a C++ program for design of tension member. **8**

OR

5 (a) Differentiate following Autocad commands. **8**
(i) Rectangulars array V/S polar array.
(ii) Line V/S pline
(iii) Block V/S wblock

(b) Write a C++ Program to find interpolation between given Numbers **5**

(c) Explain layers. **3**

6 (a) Write least AutoCAD commands in sequence to draw **fig.6** and **fig.7.** **8**

(b) Prepare generalized program for design of isolated RCC footing. **8**

OR

6 (a) Explain and give syntax for following AutoCAD commands (any **four**). **8**
(i) Arc (ii) Circle (iii) Trim (iv) 3D move (v) Array.

(b) Write short note on C++ graphics applications with illustrations. **8**

P. T. O.

A4-2

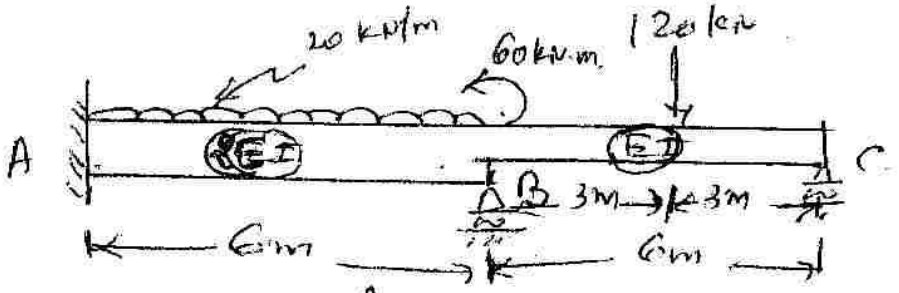

fig-1 Q-1

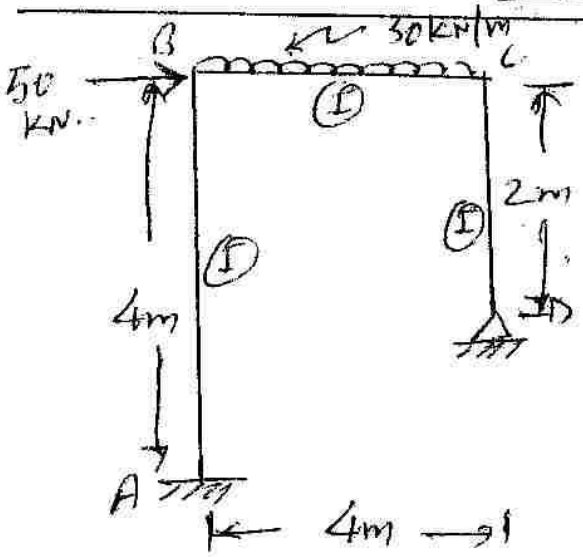

fig-2 Q-2

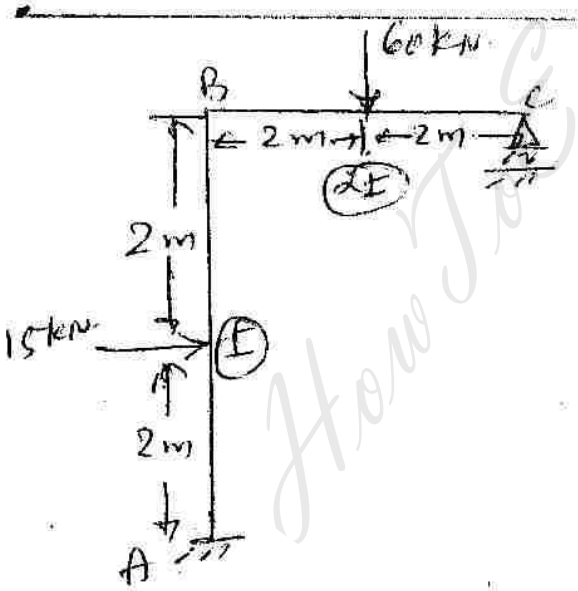

fig. 3 Q-2 OR

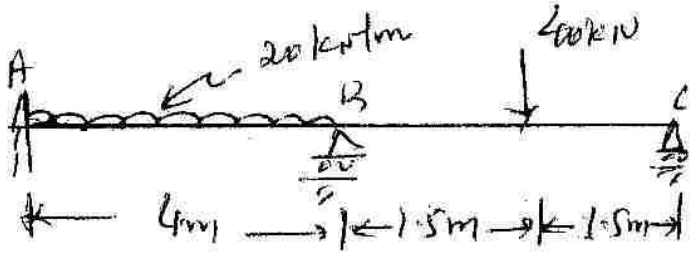

fig-4. Q-3.

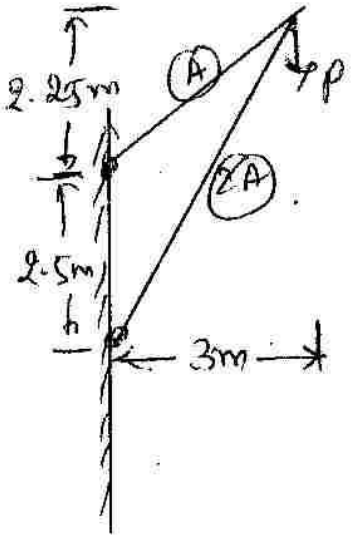

Fig-5 Q-4 (a)

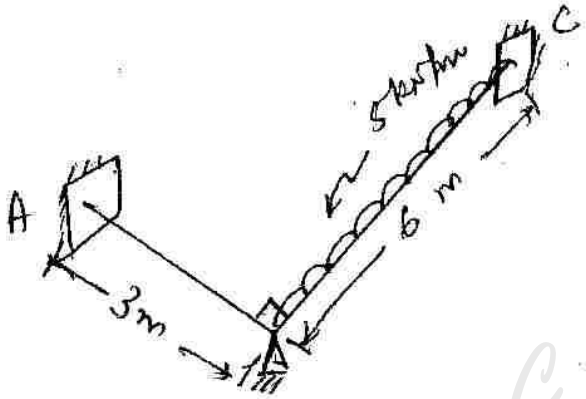

Fig-6 Q 4 (a) OR &
Q-4 (b)

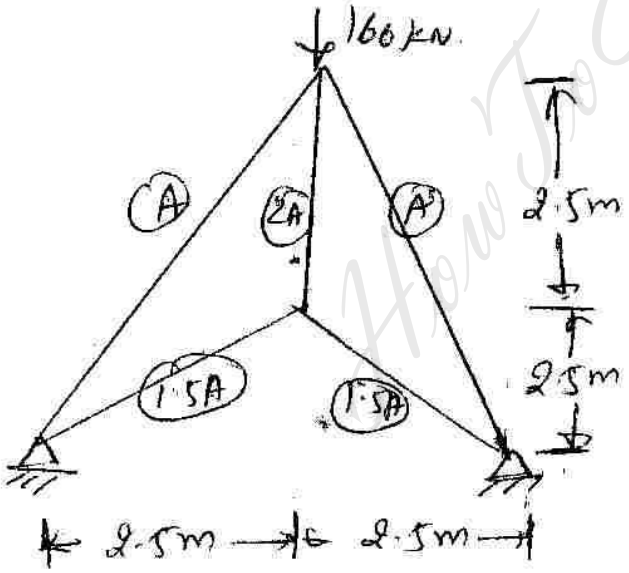

Fig-7 Q- 4(b) OR

AE = 3.0 MN
