Mahatma Education Society's
PILLAIS' COLLEGE OF ARCHITECTURE
Sector-16, Plot No.10, New Panvel – 410 206

SECOND YR.B.ARCH. ANNUAL EXAM. APRIL, 2009
SUBJECT : T.O.S.

DATE : 6/4/2009 HRS: 3 MARKS:100

Note: **1. Solve any three questions from each section.**
2. Q.1 & Q.6, carry 18 marks; all other questions carry 16 marks each.
3. Sketches are essential.

SECTION – I

Q.1. (a) Write a note on various types of foundations and draw sketches. (9)
(b) Why is de-watering of water from soil is necessary before construction? State the methods of dewatering and explain any one method with sketches. (9)

Q.2. A fixed beam AB is loaded as shown in Fig.I. Find the Fixed End Moments at A & B; reactions at A & B and draw the B.M. & S.F.Diagrams giving values at important points.

Q.3. A continuous beam ABCD is loaded as shown in Fig.II. Find the moments at A.B.C.& D. Find the reactions at A, B, C & D. Use the method of Theorem of Three Moments.

Q.4. Solve the problem mentioned in question three by Moment Distribution Method. Draw the S.F.Diagram and B.M.Diagram; giving values at important points.

Q.5. A hollow circular tube, used as column, has outer diameter 200mm and thickness as 20mm. The length of the column is 5m with both ends hinged. If $E = 1 \times 10^5$ N/mm^2, $f_c = 550$ and $a = \frac{1}{1600}$

find the load carried by the column
using – i) Euler's Formula and ii) Rankine's Formula.

Contd.....2.....

SECTION – II

Q.6. (a) Name the different type of soil found in India and give properties of each of this soil. (10)

(b) What is the purpose of stabilization of soil.? State methods of stabilization of soil and explain any one method. (8)

Q.7 (a) A column section is loaded eccentrically, as shown in Fig.III. Find stresses on the four corners of the section. (8)

(b) A water retaining Dam has cross section as shown in figure. Find the maximum and minimum pressures at the base, when the reservoir is full with water and with no water in the Dam. Density of wall material is 21KN/m^2. (8)

Q.8. (a) What is meant by 'Strain Energy'? Explain the terms: i) Resilience, ii) Proof Resilience and iii) Modulus of Resilience. (8)

(b) Calculate the strain energy stored in a bar 2.0m long, 50mm wide and 40mm thick; when it is subjected to a tensile load of 60 KN. Take E = 200GPa. (8)

Q.9. (a) A wooden beam simply supported 140mm wide and 240mm deep has a span of 4.0m. Find point load at the centre, if maximum permissible deflection is 10mm. Take E = $6x10^3$ N/mm^2

(b) A simply supported beam is 100mm wide and 240mm deep. It carries a U.D.load of 2251 N/m on entire span of 4.0m. Find the deflection produced, if E = 1.1 x 104 N/mm^2.

Q.10. A continuous beam has two spans AB & BC and is loaded as shown.
Find the Fixed End Moments at A,B & C in following two types of End conditions:-
i) End A and End C are both Fixed.
ii) End A is simply supported and End C is fixed.
Use any method you like. Draw B.M.Diagrams in both cases.

&&&&&&&&&&&&&&&

II nd year – TOS – April 2009

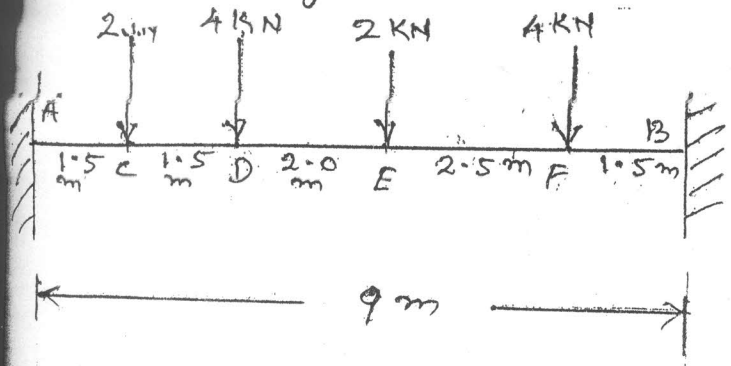


fig I. Q 2.

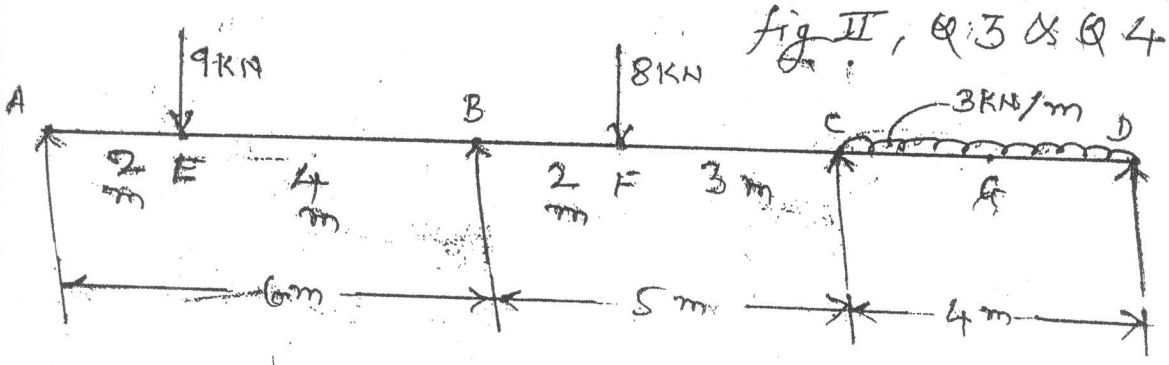
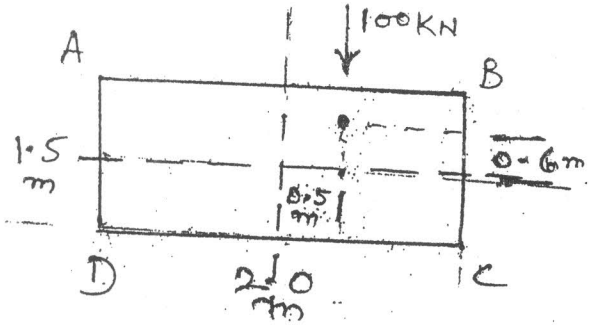
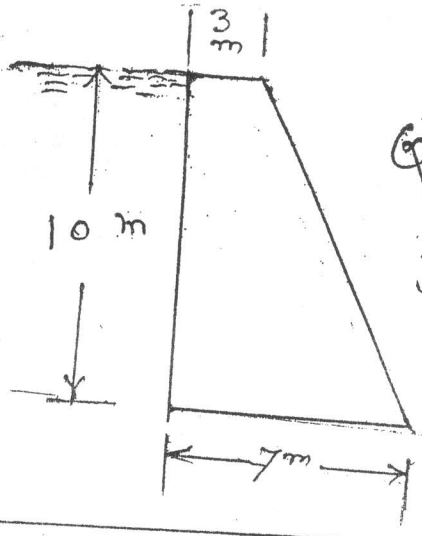


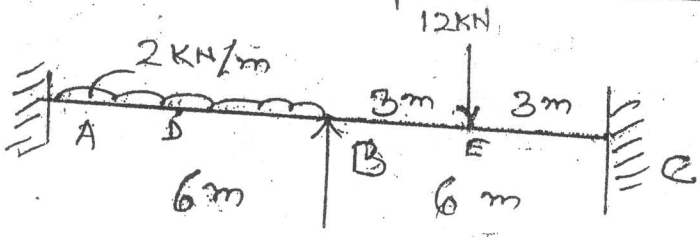
fig II, Q 3 & Q 4.



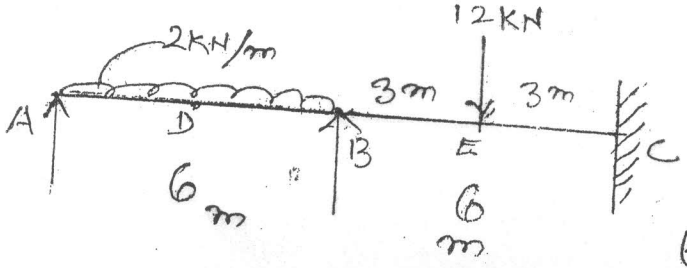
Q 7 (a)
fig III



Q 7 (b)
fig IV.



Q 10 fig V



Q 10 fig VI