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

SECOND YR.B.ARCH. REPEATER EXAM –JULY,2010
SUBJECT : T.O.S.

DATE : 12 /7/2010 HRS: 3 MARKS:100

Note: 1. All questions carry equal marks, 16 marks each.
2. Four marks are reserved for neat sketches.
3. Solve any three questions from each section.
4. Split questions are not allowed. Full question has to be attempted at one place.

SECTION-I

Q.1. (a) Why de-watering is necessary before foundation. State the methods of de-watering and explain any one method.

(b) Write a note, with neat sketch, about test in accessing the load bearing capacity of soil.

Q.2. A fixed beam AB has 10.0m span. The beam carries four point loads as shown in Fig.I. Find Fixed End Moments at A & B and draw Bending Moment Diagram and Shear Force Diagram.

Q.3. A continuous beam ABCD has simple supports at A & D. The loads on the beam are as shown in Fig.II. Find the moments at A,B,C & D and draw Shear Force and Bending Moment Diagram. Use the moment distribution method only.

Q.4. A steel beam, simply supported and with 6.0m span, carries a point load of 50KN, at 1.2m from left end. If $EI = 14 \times 10^{12} Nmm^2$, find the distance of maximum deflection from left end and also find maximum deflection.

Q.5. The cross section of a column is as shown in Fig.III. There is an accentric load acting as shown in Fig.III. Find stresses at all corners. What additional load is required for no tension in any corner. Find the new stresses due to these two loads together.

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SECTION-II

Q.6.(a) Write a note about the types of foundations and draw sketches. (13)

(b) What is the effect of water table pertaining to bearing capacity of soil. (5)

Q.7. Find:- i) Euler's crippling load and ii) load by Rankine's formula for a hollow cylindrical steel tube having 40mm external diameter and 3.0mm thickness. The effective length of column is 2,5m, value of $E = 2.05 \times 10^3 N/mm^2$ $f_c = 335$ N/mm2 and constant a = 1/7500

Q.8. (a) A cantilever beam is fixed at A and is 1.5 long. There is a point load 'P' at the free end B. If maximum bending stress is 120N/mm2, find the value of 'P'. Given diameter pf round bar 340mm. $E = 2.1 \times 10^3 N/mm^2$ and $I = 7000 \times 10^4 mm^2$

(b) A cantilever beam AB, 4.5m long, is loaded with U.D.load of 40KN/m on entire span. If $E = 200KN/mm^2$ and $I = 7\text{-} \times 10^6 mm^4$, find maximum deflection.

Q.9. A continuous beam ABC is as shown in Fig-IV. Using theorem of three moments calculate the moments at A, B & C and draw Bending Moment Diagram and Shear Force Diagram.

Q.10. A fixed beam AB, 9.0m long is loaded as shown in Fig.-V. Draw Bending Moment Diagram and Shear Force Diagram, giving values at all important points.

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IInd year – TOS – July 2010

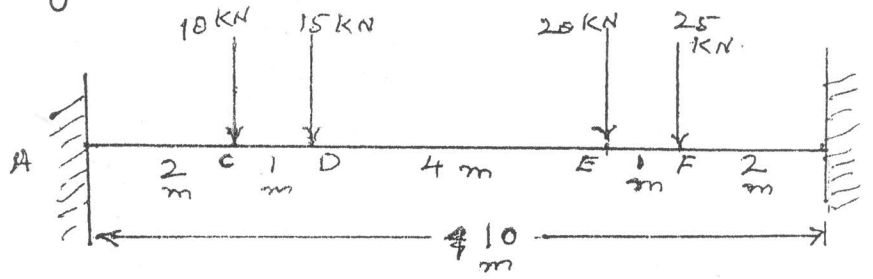

fig I

Q 2

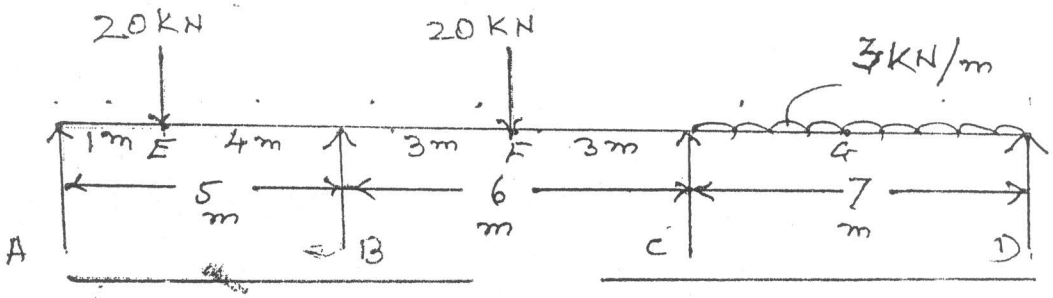

fig II

Q 3

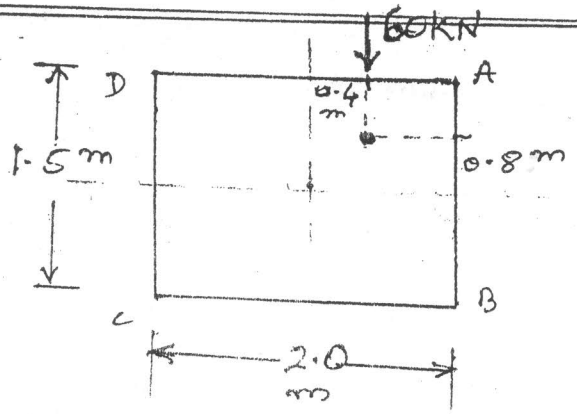

fig III

Q 5

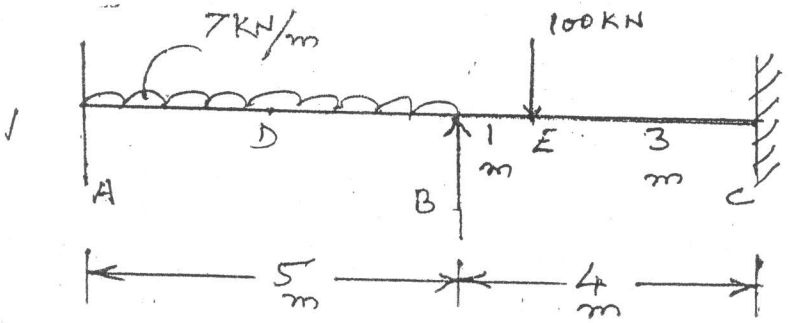

fig IV

Q 9

continuous beam

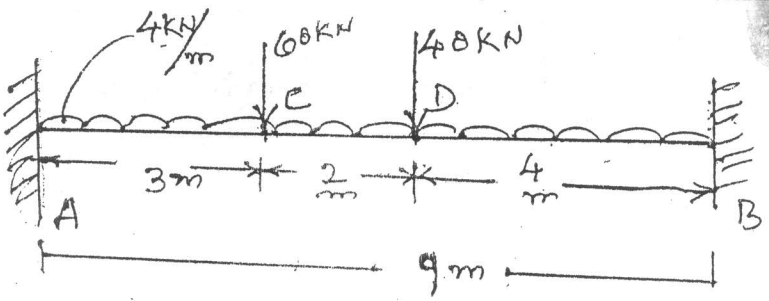

fig V

Q 10

fixed Beam