PILLAI'S COLLEGE OF ARCHITECTURE

SECOND YEAR B. ARCH --- REPEATER EXAM --- OCTOBER 2009

SUBJECT—T.O.S.

DATE: TIME : 3 HRS MARKS : 100

NOTES: 1) Solve any three questions from each section
2) Q 1 and Q 6 carry 18 marks each . All other questions Carry 16 marks each

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Section I

Q.I (a) Write a note about different types of foundations and draw sketches 12 Marks

(b) Define the following (any three)
i) Void Ration ii) Bulk Density
iii) Liquid Limit iv) Plastic Limit 6 Marks

Q.2:- A fixed beam AB is 7 cm long and is loaded as shown in fig.1 Calculate the values of Shear Force and Bending Moments of important points and draw Shear Force Diagram and Bending Moment Diagram

Q.3:- A continuous beam ABC has both ends A and C as fixed ends. It carries loads as shown in Fig 2. Use the Theorem of Three Moments and calculate Moments at A, B & C and draw Shear Force Diagram and Bending Moment Diagram for this beam

Q.4:- A retaining wall has over all height of 4 m. It is 0.75m wide at the top and 2.5 m wide at the base. The earth filling is upto the level of top edge (fig 3). If density of earth is 13 KN/m^3, the density of wall material is 20KN/m^3—co-efficient of friction (μ) is 0.5 and angle of repose of earth is 30 degree, stage the stability of wall and find maximum and minimum pressures at the base.

Q.5: Find Euler's crippling load and load by Rankine's formula for a hollow cylindrical column having 38 mm external and 2.5 m thickness. The original length of column is 2.3 m, with both ends hinged, E= 205 KN/mm^2 and f_e =335 N/mm^2 and constant "a" is 1/7500

Section II

Q.6 :- (a) What is importance of Soil Mechanics with reference to construction works

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

Q.7: The cross section of a column is as shown in fig 4. There is an eccentric load of 60 KN with eccentricities as shown. Find the stresses at the four corners of the column. What additional load is required for no tension at any of the corners

Q.8: A cantilever beam is 4.0 long. It carries a point load of 100 KN at a point C, which is 3.0 m away from the fixed end A. Determine deflection at the free end . $E=2.0 \times 10^5$ N/mm^2 and $I = 40{,}000 \times 10^4$mm^4

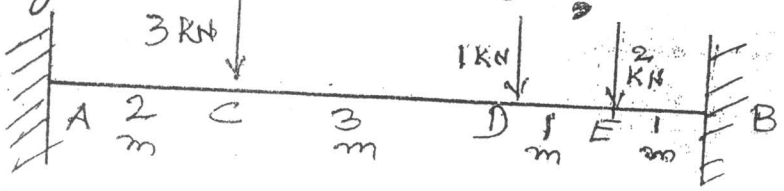
Q.9: A timber beam of rectangular cross section is 100mm wide and 240mm deep. It is simply supported at the ends and has span of 4.0mm. What U.D load the beam would carry to produce maximum deflection of 6.0mm. Take $E=1.1 \times 10^4$ N/mm^2

Q.10 For a portal frame loaded as shown in fig 5, find moments and reactions at A& d and draw Bending Moment Diagram

---------- End of Question Paper ----------

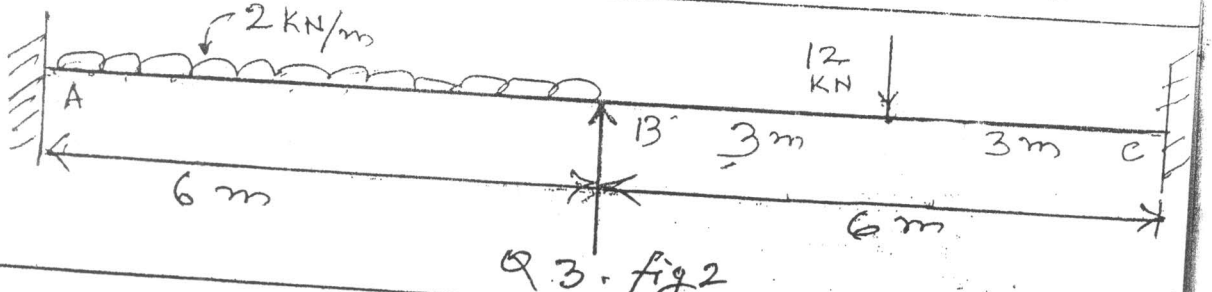
IInd year – TOS – Oct 2009

Q2 fig 1

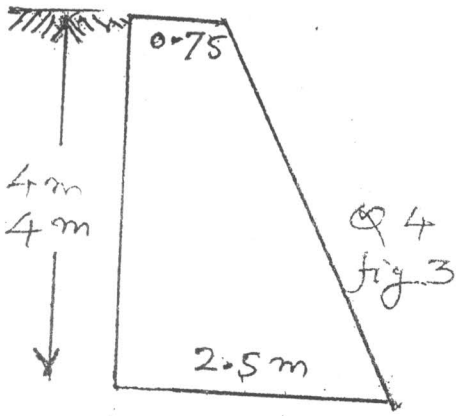


2nd Year B. Arch

Oct. 08



Q 3. fig 2



Q 4 fig 3

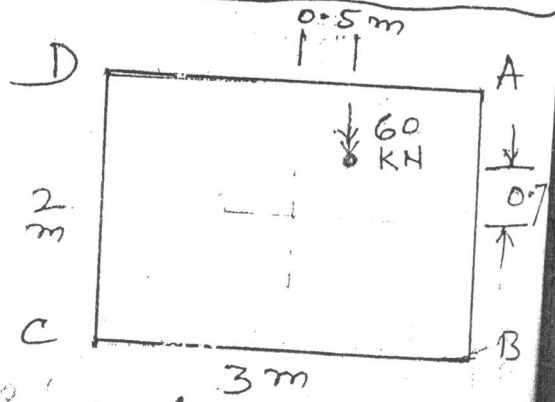


fig 4, Q 7.

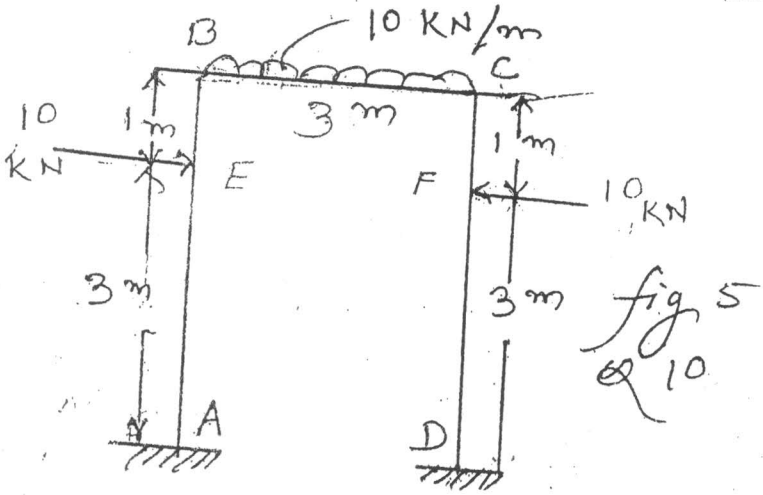


fig 5 Q 10