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Paper Code: STR31B	Roll No.									

M.Tech.
(SEM III) ODD SEMESTER EXAMINATION 2015-2016
MASONRY STRUCTURES

[Time: 3hrs.] **[Max. Marks: 100]**

Note- Attempt All Questions. All Questions carry equal marks:-

Q.No.1: Attempt any two

a) Define mortar and discuss its varieties on the basis of nature of application.
b) Discuss the lateral support and stability of the masonry structures.
c) What is the load dispersion? Explain the arching action with sketch.

Q.No.2: Attempt any two

a) Explain the different permissible stresses on the masonry structures.
b) Discuss the following
   i) Effective height of walls, columns.
   ii) Effective thickness and slenderness ratio.
   iii) Eccentricity with sketches.
c) Explain the masonry bonds in detail, its type and uses.

Q.No.3: Attempt any two

a) Write in detail about the different types of loads acting on masonry structures.
b) Name all the test conducted on stones, giving the purpose of each test. Give the procedure for conducting
   i) Attrition test
   ii) Crushing strength test
   iii) Water absorption test
c) List out the composition of a good brick earth and explain in detail the effect of alumina, lime and magnesia.

Q.No.4: In a double storeyed building walls are 20cm thick; clear height of floors 3.0m; plinth is 0.7m above the foundation, footing, floor and roof are of RCC 12cm thick, door height is 2.1m window height is 1.5m and plan of building is as shown in fig.1 work out effective height, effective length, effective thickness of walls and columns of first and second floor.

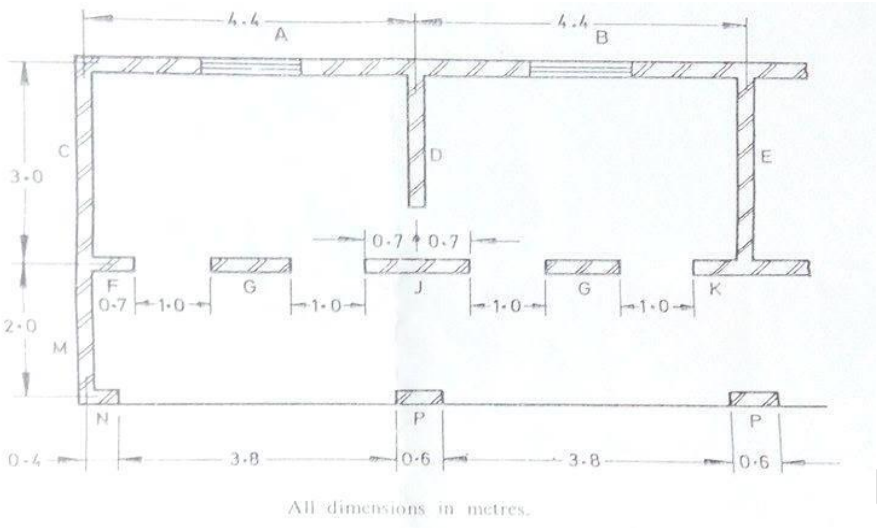

Fig.1

Q.No.5: Attempt any two

a) If the masonry element P in first floor of the fig.1 carries a load of 44 kN at the base inclusive of self load, what should be the strength of bricks and grade of mortar for masonry in question? Assume the the joints are not raked.

b) A wall 20cm thick , using modular brick carries at the top a load of 80 kN/m having resultant eccentricity ratio of 1/12. Wall is 5m long between cross walls and is of 3.4 m clear height between RCC slab at vtop and bottom . what should be the strength of brick and grade of mortar. Assume that joint is not raked.

c) Explain the following tests of brick

i) Water absorption
ii) Presence of soluble salts
iii) Crushing strength
iv) Structure