S. Y. B.ARCH. SEM – III (2010 COURSE) : WINTER - 2018
SUBJECT: THEORY OF STRUCTURES & BUILDING MATERIALS-III

Day : Monday
Date : 19/11/2018

W-2018-3459

Time: 02.00 PM TO 05.00 PM
Max. Marks: 100.

N.B.:

1) Attempt any **THREE** from **Section –I.**
2) Attempt any **FOUR** from **Section –II.**
3) Assume suitable data if necessary.
4) Figure to the write indicate full marks.
5) Answer to both section should be written in **SEPARATE** answer books.
6) Draw illustrative sketches wherever necessary.

SECTION-I

Q.1 Design a roof slab 7.0x5.5 m. The slab is simply supported on four side Walls. Live load is 2.5 kN/m^2. Assume M20 grade and Fe500 steel. **(20)**

Q.2 A R.C.C. column 4.1 m effective length is required to resist an axial load of 2000 kN. Design column using M20 concrete and Fe415 steel. **(20)**

Q.3 **a)** A beam is 12 m long and is simply supported at its ends. It carries a point load of 120 kN and 150kN at distances 3 m and 6 m respectively from the left end. Calculate the deflection under each load by double integration method. I= 18x10^8 mm^4 ; E= 200kN/mm^2. **(10)**

b) An ISMB 300 rolled steel joist is to be used as a column 4.50m long with one end fixed and the other end hinged. Find the safe axial load on the column allowing a factor of safety three.
Fc=325 N/mm^2 , α=1/7000 ; A= 5000 mm^2; Ixx=6x10^7 mm^4 ; Iyy=4x10^6 mm^4. **(10)**

Q.4 Solve Any **FOUR** of the following. **(20)**

a) Explain Rankine's method for column

b) Explain double integration method

c) Draw reinforcement details for one way, two way slab.

d) Give I. S. Code provisions for cantilever slab.

e) Explain two hinged arch.

SECTION-II

Q.5 Explain the role of water in concrete. What is significance of water cement ratio? **(10)**

Q.6 Explain basic ingredients of paint. **(10)**

Q.7 What are concrete admixtures? State five types of admixtures explaining their uses. **(10)**

Q.8 Explain any three types of external plasters. **(10)**

Q.9 Explain role of reinforcement in concrete. Explain common defects found in reinforcement **(10)**

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