

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

Day : **Wednesday**
Date : **02/05/2018**

S-2018-3319

Time: **10.00 AM TO 1.00 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 column using M20 concrete and Fe 415 steel for axial load of 3000 kN. (20)
Effective length of column = 4.25m.
- Q.2** Design a roof slab 6.0x3.0m. The slab is simply supported across shorter span on (20)
Walls. Live load is 2 kN/m². Concrete is M25 and steel is Fe500.
- Q.3** a) A simply supported beam of span 6m is subjected to a point load of 90kN (10)
at a distance of 2m from left end support and 120kN at a distance of 4m
from left end support. Determine deflection under point load by double
integration method. $E=200 \text{ Gpa}$; $I= 3 \times 10^8 \text{ mm}^4$.
- b) An ISMB 250 rolled steel joist is to be used as a column 5 m long with one (10)
end hinged and other end is roller. Find safe axial load on the column
allowing factor of safety 3.
 $F_c=320 \text{ N/mm}^2$, $\alpha= 1/7500$, $A=4755\text{mm}^2$, $I_{xx}=5.13 \times 10^7 \text{ mm}^4$,
 $I_{yy}=3.34 \times 10^6 \text{ mm}^4$.
- Q.4** Solve Any **FOUR** of the following. (20)
- a) Give I. S. Code provision for cover requirements for major structural elements.
 - b) Give I.S. Code provision for 'L' beam.
 - c) Explain fixed arch.
 - d) Explain Euler's method for column
 - e) Give I.S. code provision for load bearing structure

SECTION-II

- Q.5** Explain basic ingredients of paints. (10)
- Q.6** Explain three types of external plasters. (10)
- Q.7** What defects are generally found in plastering? (10)
- Q.8** Explain water cement ratio. How does water cement ratio affects durability, (10)
strength and workability of concrete?
- Q.9** Write note on concrete admixtures. (10)
- Q.10** Explain reinforcement. What are market forms of reinforcement? (10)