

SUBJECT: THEORY OF STRUCTURES & BUILDING  
MATERIALS-VI

Day: **Monday**  
Date: **30/04/2018**

**S-2018-3325**

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

**N.B:**

- 1) Attempt any **THREE** questions from **Section-I** & all Four from **Section-II**.
- 2) Answer to both sections should be written in **SEPARATE** answer Book.
- 3) Illustrate your answers with neat sketches **WHEREVER** necessary.
- 4) Use on non- programmable **CALCULATOR** is allowed.
- 5) Assume suitable data if necessary.

**SECTION-I**

- Q.1 a)** Find area of combined footing for following and draw plan for the same (10)  
data.  
i) Two columns C1 and C2 are carrying compressive load of 1200 KN and 1000 KN respectively.  
ii) Column C1 is 350 mm X 350mm and  
iii) Column C2 is 400 mm X 400mm  
iv) C/C distance between columns is 1.5m  
v) Soil bearing capacity is 180 KN/m<sup>2</sup>
- b)** Enlist the classification of combined footing and explain necessity of (06)  
combined footing.
- c)** What are the assumptions for LSM design? (04)
- Q.2** A built up column is composed of two channel sections placed back to back (20)  
at a distance of 300 mm. Find the maximum load it can carry. The length of  
column is 8 m. with both ends hinged. Use ISLC 450, design battening system  
for the same. Draw neat sketch. Give the required checks.
- Q.3 a)** Explain the method of RCC design. (10)  
**b)** Differentiate between ultimate load methods and limit state method. (04)  
**c)** Draw earthquake resistant detailing of RCC column junction. (06)
- Q.4 a)** How limit state method is superficial than working state method? (10)  
**b)** An RC beam section is 250 mm wide 350 mm effective depth is subjected to (10)  
factored BM at 45 KNm use M20 and Fe415 and determined bottom  
reinforcement.

**SECTION-II**

- Q.5** Write a note on **ANY TWO** of the following: (10)  
**a)** Heat insulating materials in buildings  
**b)** Sound insulating materials in buildings  
**c)** Properties of good sealants
- Q.6** Describe glass manufacturing process. Provide the types of glass and (10)  
applications of glass in building construction.
- Q.7** Explain the term adhesives. What are their applications in building (10)  
construction?
- Q.8** Draw a detailed sketch showing insulation for an internal partition. Explain (10)  
the term insulating material.