**POORNIMA UNIVERSITY, JAIPUR**

**END SEMESTER EXAMINATION, November 2022**

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|  | **3BT5154** | Roll No. | Total Printed Pages: 2 |
| **3BT5154** |  |
| B. Tech. III Year V-Semester (Main/Back) End Semester Examination, November 2022  **(CV)** | |
| **BCV05102: Design of Concrete Structures** | | | |

# Time: **3** Hours. Total Marks: **60**

Min. Passing Marks: **21**

Attempt **five** questions selecting one question from each Unit. There is internal choice from Unit I to Unit V. Marks of each question or its parts are indicated against each question / parts. Draw neat sketches wherever necessary to illustrate the answer. Assume missing data suitably (if any) and clearly indicate the same in the answer.

Use of following supporting material is permitted during examination for this subject.

# **Code IS 456:2000** **2. ------------------Nil-----------------------**

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|  |  | **UNIT-I (CO1)** | **Marks** | **Bloom Level** |
| **Q.1** | **(a)** | Write the assumptions of Limit state method. | **(6)** | **Understanding** |
|  |  |  |  |  |
|  | **(b)** | Define Characteristic strength and Characteristic load. | **(6)** | **Understanding** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
|  |  |  |  |  |
| **Q.2** | **(a)** | Using working stress method, find the moment of resistance of a R.C.C. beam 300 mm wide and 500 mm effective depth is reinforced with 3-bars of 16 mm. Use M-20 concrete grade and Fe-415 steel is used. | **(6)** | **Evaluating** |
|  |  |  |  |  |
|  | **(b)** | Solve the above numerical using limit state method. | **(6)** | **Evaluating** |
|  |  |  |  |  |
|  |  | **UNIT-II (CO2)** |  |  |
|  |  |  |  |  |
| **Q.3** | **(a)** | What is advantage of LSM over WSM? | **(6)** | **Remembering** |
|  |  |  |  |  |
|  | **(b)** | Explain different types of sections according to working state method. | **(6)** | **Understanding** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
|  |  |  |  |  |
| **Q.4** | **(a)** | Write the design steps for doubly reinforced section design. | **(6)** | **Understanding** |
|  |  |  |  |  |
|  | **(b)** | Write the design steps for T-section design. | **(6)** | **Remembering** |
|  |  |  |  |  |
|  |  | **UNIT-III (CO3)** |  |  |
|  |  |  |  |  |
| **Q.5** | **(a)** | Explain following:-.  1) Types of shear reinforcement 2) Rules for minimum sear reinforcement | **(6)** | **Understanding** |
|  |  |  |  |  |
|  | **(b)** | Explain following:-.  1) Types of shear failure 2) Design shear strength of concrete beam | **(6)** | **Understanding** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
|  |  |  |  |  |
| **Q.6** | **(a)** | What are the three different ways to provide shear reinforcement? | **(6)** | **Remembering** |
|  |  |  |  |  |
|  | **(b)** | State the condition to be satisfied for the curtailment of tension reinforcement when designing the shear reinforcement. | **(6)** | **Understanding** |
|  |  |  |  |  |
|  |  | **UNIT-IV (CO4)** |  |  |
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|  |  |  |  |  |
| **Q.7** | **(a)** | Write down the design steps in detail of 2-way simply supported slab using LSM. | **(6)** | **Understanding** |
|  |  |  |  |  |
|  | **(b)** | Write down the design steps in detail of flat slab using LSM. | **(6)** | **Applying** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
|  |  |  |  |  |
| **Q.8** |  | Design an RCC slab of size 5 m x 6 m, simply supported on all four edges with corners held down. The slab is carrying a load of 4 kN/m2 including floor finish etc. Use M 20 concrete & Fe 415 steel. | **(12)** | **Evaluating** |
|  |  |  |  |  |
|  |  | **UNIT V (CO5)** |  |  |
|  |  |  |  |  |
| **Q.9** | **(a)** | Explain Yield line theory concept. | **(6)** | **Understanding** |
|  |  |  |  |  |
|  | **(b)** | Write down the applications of Yield line theory to slabs with simple support conditions. | **(6)** | **Remembering** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
|  |  |  |  |  |
| **Q.10** | **(a)** | Explain the different losses in Pre-stressed concrete. | **(6)** | **Remembering** |
|  |  |  |  |  |
|  | **(b)** | Write down the difference between Counterforts and buttress type retaining wall. | **(6)** | **Remembering** |