**POORNIMA UNIVERSITY, JAIPUR**

**END SEMESTER EXAMINATION, November 2022**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **3BT5153** | Roll No. | Total Printed Pages: 2 |
| **3BT5153** |  |
| B. Tech. III Year V- Semester (Main/Back) End Semester Examination, November 2022  **(CV)** | |
| **BCV05101:** **Structural Analysis- II** | | | |

# Time: **3Hours**. 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.

# **NIL** **2.NIL**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | **UNIT-I (CO1)** | **Marks** | **Bloom Level** |
| **Q.1** | **(a)** | (1) How do you calculate static and kinematic indeterminacy?  (2) What is the difference between continuous and fixed beams?  (3) What is the example of indeterminate? | **(2x3)** | **Understand** |
|  |  |  |  |  |
|  | **(b)** | (1) What are limitations of reciprocal theorem?  (2) Which principle is used in Bettis law?  (3) What is the difference between reciprocal and maxwell equation? | **(6)** | **Understand** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
|  |  |  |  |  |
| **Q.2** |  | Analysed the beam by using Slope deflection method support B sinks by 5mm I=9300cm4, E=2.1×105N/mm2  **1.JPG** | **(12)** | **Evaluate** |
|  |  |  |  |  |
|  |  | **UNIT-II (CO2)** |  |  |
|  |  |  |  |  |
| **Q.3** | **(a)** | Explain the terms  (1) stiffness and flexibility (2) Carry over factor (3) Distribution factor | **(2x3)** | **Understand** |
|  |  |  |  |  |
|  | **(b)** | (a) How do you use the force method?  (b) How do you find the degree of kinematic indeterminacy of a beam?  (c) What is the example of displacement method? | **(2x3)** | **Understand** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
| **Q.4** |  | Analyze the two span continuous beams shown in Fig. by using the moment distribution method. Draw the shear force and bending moment diagrams.  2.JPG | **(12)** | **Evaluate, Apply** |
|  |  |  |  |  |
|  |  | **UNIT-III (CO3)** |  |  |
| **Q.5** |  | A three hinged parabolic arch of 30m span and 5m central rise carries a point load of 6KN at 6m horizontally from the left hand hinge. Calculate the normal thrust and shear force at the section under the load. Also, calculate the maximum B.M. positive and negative. | **(12)** | **Evaluate** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
|  |  |  |  |  |
| **Q.6** |  | A suspension cable of 90 m horizontal span and central dip 7 m has a stiffening girder hinged at both ends. The dead load transmitted to the cable inclusive its own weight is 1800kN. The girder carries a live load of 40kN/m as a UDL over the left half of the span. Assuming the girder to be rigid, calculate the shear force and bending moment in the girder at 30 m from the left support. Also calculate the maximum tension in the cable. | **(12)** | **Evaluate** |
|  |  |  |  |  |
|  |  | **UNIT-IV (CO4)** |  |  |
|  |  |  |  |  |
| **Q.7** |  | Analyze the structure shown in Fig. using Column Analogy method. Also draw BMD and SFD.  C:\Users\gauravs\Desktop\New folder\4a.jpg | **(12)** | **Evaluate,** **Apply** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
|  |  |  |  |  |
| **Q.8** |  | Analyze the structure shown in Fig. using Kani’s method. Also draw BMD. | **(12)** | **Evaluate,** **Apply** |
|  |  |  |  |  |
|  |  | **UNITV (CO5)** |  |  |
|  |  |  |  |  |
| **Q.9** |  | Using influence lines calculate the bending moment and shear force at a section 8.0 m from the left hand support for the section in Fig. | **(12)** | **Evaluate,** **Apply** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
|  |  |  |  |  |
| **Q.10** | **(a)** | State Muller Breslau principle and mention its various applications. | **(4)** | **Understand** |
|  |  |  |  |  |
|  | **(b)** | (1) How are moving loads calculated?  (2) What are the different types of moving load?  (3) What is the condition for absolute bending moment due to moving UDL longer than span?  (4) When a series of wheel loads move along a girder What is the condition for getting maximum bending moment under any one point load? | **(2x4)** | **Understand** |