**POORNIMA UNIVERSITY, JAIPUR**

**END SEMESTER EXAMINATION, November 2022**

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|  | **2BT3103** | Roll No. | Total Printed Pages: 2 |
| **2BT3103** |  |
| B. Tech. II Year III-Semester (Main/Back) End Semester Examination, November 2022  **(CV & Dip. CV)** | |
| **BCVCCV3103 / DCVCCV3101 : Strength of Material** | | | |

# 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.

# **------------------Nil-----------------------** **2. ------------------Nil-----------------------**

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|  |  | **UNIT-I (CO1)** | **Marks** | **Bloom Level** |
| **Q.1** | **(a)** | Find the total elongation of the bar shown in figure | **(6)** | **Evaluating** |
|  |  |  |  |  |
|  | **(b)** | A body of length 2 m as a cross-section 20x30cm on which a 2 kN tensile load is applied. The length increases 10 mm. Find out stress, strain & modulus of elasticity. | **(6)** | **Evaluating** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
|  |  |  |  |  |
| **Q.2** | **(a)** | Explain stress-strain curve for mild steel in tension. | **(6)** | **Remembering** |
|  |  |  |  |  |
|  | **(b)** | Find the total elongation of the bar shown in figure | **(6)** | **Evaluating** |
|  |  |  |  |  |
|  |  | **UNIT-II (CO2)** |  |  |
|  |  |  |  |  |
| **Q.3** | **(a)** | Define Euler’s theory and Rankin’s theory with limitations. | **(6)** | **Remembering** |
|  |  |  |  |  |
|  | **(b)** | Write the applications of Mohr’s circle. | **(6)** | **Understanding** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
|  |  |  |  |  |
| **Q.4** | **(a)** | A piece of material is subjected to tensile stresses 60 N/mm2 and 30 N/mm2 right angle to each other find tangential, normal and resultant stress on a plane which makes an angle at 400 with the vertical plane. | **(6)** | **Evaluating** |
|  |  |  |  |  |
|  | **(b)** | At a point in an elastic material there are normal stresses of 50 N/mm2 and 30 N/mm2 respectively at right angle to each other with a shearing stress 25 N/mm 2 find normal stresses are tensile. Plane at 400 inclined. | **(6)** | **Evaluating** |
|  |  |  |  |  |
|  |  | **UNIT-III (CO3)** |  |  |
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|  |  |  |  |  |
| **Q.5** | **(a)** | Write Expression for M.O.I. of triangular section. | **(6)** | **Remembering** |
|  |  |  |  |  |
|  | **(b)** | Calculate centroid & M.O.I.  1 | **(6)** | **Evaluating** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
|  |  |  |  |  |
| **Q.6** | **(a)** | Define parallel axis theorem & write its expression. | **(6)** | **Remembering** |
|  |  |  |  |  |
|  | **(b)** | Define MOI & Polar MOI. | **(6)** | **Understanding** |
|  |  |  |  |  |
|  |  | **UNIT-IV (CO4)** |  |  |
|  |  |  |  |  |
| **Q.7** | **(a)** | Define SFD, BMD, Axial Thrust and its properties. | **(6)** | **Understanding** |
|  |  |  |  |  |
|  | **(b)** | Draw SFD & BMD.  2 | **(6)** | **Evaluating** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
|  |  |  |  |  |
| **Q.8** | **(a)** | Draw SFD & BMD.  5 | **(6)** | **Evaluating** |
|  |  |  |  |  |
|  | **(b)** | Draw SFD & BMD.  7 | **(6)** | **Evaluating** |
|  |  |  |  |  |
|  |  | **UNIT V (CO5)** |  |  |
|  |  |  |  |  |
| **Q.9** | **(a)** | Write down the assumptions of theory of bending. | **(6)** | **Understanding** |
|  |  |  |  |  |
|  | **(b)** | Define shape factor. | **(6)** | **Remembering** |
|  |  | **OR** |  |  |
|  |  |  |  |  |
| **Q.10** | **(a)** | Write down the assumptions of shear stress distribution. | **(6)** | **Remembering** |
|  |  |  |  |  |
|  | **(b)** | What is shear centre? Write down the rules to define shear centre. | **(6)** | **Remembering** |