** D.Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY**

**Set-: I**

**Q. Paper Code:**

**23SYCE202402**

**KASABA BAWADA KOLHAPUR-416006**

**(An Autonomous Institute)**

S. Y. B. Tech (Civil) , Sem-III

**Backlog END SEMESTER EXAMINATION, Jan – 2023**

Course Name: **Mechanics of Structures**, Course Code: **201CEL202**

Seat No:

**Day and Date: Wednesday, 18.01.2023**

**Time: 2.00 pm to 4.00 pm Max. Marks- 50**

***Instructions:***

1. *All Question is compulsory.*
2. *Figure to the right indicate full marks.*
3. *Non-Programmable calculator is allowed to use.*
4. *Assume suitable data if necessary.*

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| **BT** | **CO’s** | **Q. No.** | **Marks** | |
|  |  | **Q.1** | **All questions are compulsory 20** | |
|  | **CO2** | **a** | Explain term point of contraflexure with neat sketch? | **6M** |
| **1,2** | **CO1** | **b** | Determine the Poisson's ratio and bulk modulus of a material, for which Young's modulus is 1.2 x 105 N/mm2 and modulus of rigidity is 4.8 x 104 N/mm 2. | **7 M** |
| **1,2** | **CO1** | c | Draw SFD & BMD for beam as shown,  C:\Users\civ90-4\Downloads\sfd problem.jpg | **7 M** |
|  | |
|  |  | **Q.2** | **All questions are compulsory 10** | |
| **1,2** | **CO2** | **a** | Explain concept of pure bending | **4M** |
| **1,2** | **CO1** | **b** | A rectangular beam 200mm deep and 300mm wide is simply supported over the span of 8m. What uniformly distributed load per meter the beam may carry, if the bending stress is not exceeding 120N/mm2. | **6M** |
|  | |
|  |  | **Q.3** | **All questions are compulsory 10** | |
| **1,2** | **CO1** | **a** | Draw Shear stress diagram for L , I & T beam | **3M** |
| **1,2** | **CO1** | **b** | A T-section beam has a top flange of (120mm x 20mm) and the web of (20mm x 100mm). The overall depth is 120mm. It is subjected to a shear force of 60kN. Draw the shear stress distribution diagram. | **7M** |
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|  |  | **Q.4** | **Attempt any two questions 10** | |
| **1,2** | **CO1** | **a** | Explain following terms Normal stresses, Shear stress and Angle of obliquity. | **5M** |
| **1,2** | **CO1** | **b** | At a point in strained material the principal stresses are 100 N/mm2  Tensile & 40 N/mm2 compressive determine the normal stress, tangential stress and resultant stress in magnitude on plane 30 0 to principal plane | **5M** |
| **1,2** | **CO1** | **C** | Evaluate the principal stresses and principal planes for the state of stress shown | **5M** |

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