**18CED11**

**Hall Ticket Number:**

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| **III/IV B.Tech (Regular) DEGREE EXAMINATION** | | | |
| **August, 2021** | **Civil Engineering** | | |
| **Sixth Semester** | **Advanced Structural Analysis** | | |
| **Time:** Three Hours | | **Maximum: 5**0 Marks | |
| *Answer Question No. 1 Compulsorily.* | | | (10X1 = 10 Marks) |
| *Answer* ***ANY ONE*** *question from each Unit.* | | | (4X10=40 Marks) |

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| 1. | a) | How do you calculate the radial shear at support in a two hinged arch? | CO1 | |  |
|  | b) | Distinguish between statically determinate and indeterminate structures. | CO1 | |  |
|  | c) | Define shape factor and mention the value for rectangular section. | CO2 | |  |
|  | d) | Define plastic hinge. | CO2 | |  |
|  | e) | State the necessity of cantiliver method? | CO3 | |  |
|  | f) | What will be the relative stiffness if the far end is fixed end? | CO3 | |  |
|  | g) | List out the assumptions in portal method for analysis. | CO3 | |  |
|  | h) | What is the static indeterminacy for a three span continuous beam with all hinge supports? | CO4 | |  |
|  | i) | How many no. of equilibrium equations required to be satisfied for static equilibrium of a plane structure? | CO4 | |  |
|  | j) | What will be the size of stiffness matrix for a continuous beam ABC is fixed at A, simply supported at B and C? | CO4 | |  |
| **Unit - I** | | | | | |
| 2. |  | Find the vertical deflections of the joint B of the truss by strain energy method shown in fig. The sectional area of each member is 1500mm2. Take E=200KN/mm2 | CO1 | **10M** | |
|  |  | **(OR)** |  |  | |
| 3. |  | Analyze the continuous beam shown in fig by strain energy method. EI= constant  C:\Users\general\Desktop\Capture.PNG | CO1 | **10M** | |
| **Unit – II** | | | | | |
| 4. | a) | Explain in detail about the Moment-curvature relationship for flexure members. | CO2 | **5M** | |
|  | b) | A propped cantilever of length l carries two equal concentrated loads at distances l/3 and 2l/3 from the fixed end. Determine the collapse value of each load. | CO2 | **5M** | |
|  |  | **(OR)**  **P.T.O.** |  |  | |
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| 5. |  | Find the shape factor for the following figure  C:\Users\general\Desktop\Capture.PNG. | CO2 | **10M** | |
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| **Unit - III** | | | | | |
| 6. |  | Analyze the frame and draw BMD using portal frame method. | CO3 | **10M** | |
|  |  | **(OR)** |  |  | |
| 7. |  | Analyze the continuous beam using Kani’s method and draw BMD diagram. | CO3 | **10M** | |
| **Unit - IV** | | | | | |
| 8. |  | Analyze the continuous beam shown in fig by stiffness matrix method and draw bending moment diagram. Assume IAB=I, IBC=2I | CO4 | **10M** | |
|  |  | **(OR)** |  |  | |
| 9. |  | Analyze the continuous beam shown in fig by flexibility method and draw bending moment diagram. Assume IAB=I, IBC=2I | CO4 | **10M** | |

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