**18CED11**

**Hall Ticket Number:**

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| **III/IV B.Tech (Regular/Supplementary) DEGREE EXAMINATION** | | | | | | | | | |
| **June, 2022** | | | | **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) | | | |
| 1. | a) | State castigliano’s theorem - II | | | | CO1 | |  |
|  | b) | Determine static Indeterminacy of 3-span continuous beam | | | | CO1 | |  |
|  | c) | What is Shape factor | | | | CO2 | |  |
|  | d) | Define Plastic hinge | | | | CO2 | |  |
|  | e) | Explain difference between elastic neutral axis and plastic neutral axis. | | | | CO3 | |  |
|  | f) | What is rotation factor | | | | CO3 | |  |
|  | g) | Mention the reasons for the sway in frames | | | | CO3 | |  |
|  | h) | What is the relation between flexibility matrix and Stiffness matrix | | | | CO4 | |  |
|  | i) | Define stiffness | | | | CO4 | |  |
|  | j) | What is displacement factor. | | | | CO4 | |  |
| **Unit - I** | | | | | | | | |
| 2. | | Analyze the beam shown in figure by strain energy method C:\Users\general\Desktop\Capture.PNG | | | | CO1 | **10M** | |
|  |  | **(OR)** | | | |  |  | |
| 3. | | A two hinged parabolic arch of span 40 m and rise 6 m is loaded with a uniformly Distributed load of 30 KN/m over the left half of the span and a concentrated load of 120 KN at 5 m from the right end. Find the a) Horizontal thrust b) Maximum positive and negative bending moment c) Normal and radial shear at 10 m from the right support. The moment of inertia at any section is IC SecƟ | | | | CO1 | **10M** | |
| **Unit - II** | | | | | | | | |
| 4. | | C:\Users\general\Desktop\Capture.PNGDetermine the shape factor for unequal I-section shown in below fig. | | | | CO2 | **10M** | |
|  |  | **(OR)** | | | |  |  | |
| 5. | | Find the required value of plastic moment capacity at collapse load for the continuous beam shown below. Take AB= 2 MP; BC =1.5MP; CD = MP | | | | CO2 | **10M** | |
| **P.T.O**  **18CED11**  **Unit – III** | | | | | | | | |
| 6. | | Analyze the given frame by using Kani’s Method and draw the BMD  **Diagram  Description automatically generated** | | | | CO3 | **10M** | |
|  |  | **(OR)** | | | |  |  | |
| 7. | | . Using the Cantilever method, analyses the building frame subjected to horizontal force (due to wind) as shown below.Sketch the bending moment diagram. | | | | CO3 | **10M** | |
| **Unit - IV** | | | | | | | | |
| 8. | | Analyze the continuous beam shown below by stiffness matrix method. Draw the bending moment diagram. Take EI constant throughout. | | | | CO4 | **10M** | |
|  |  | **(OR)** | | | |  |  | |
| 9. | | Analyze the continuous beam shown below by flexibility matrix method. Draw the bending moment diagram. Take EI is constant throughout. | | | | CO4 | **10M** | |

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