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**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_\_

**End Semester Examination – Nov/Dec - 2016**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **09CE218 / 12CE224 / CE255** | **Duration :** | **3 hrs** |
| **Sub. Name :** | **STRUCTURAL ANALYSIS II / ADVANCED STRUCTURAL ANALYSIS** | **Max. marks :** | **100** |

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| **Q. No.** | **Questions** | **Marks** |
| **PART-A(10X1=10 MARKS)** | | |
| 1. | What is meant by SWAY? | (1) |
| 2. | Can slope deflection method be used to analyse statically determinate beams? | (1) |
| 3. | A beam is simply supported at end A and fixed at B. If a moment ‘M’ is applied at the simple end, the moment developed at the fixed end will be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. | (1) |
| 4. | Say true or false – *‘In symmetrical structure, symmetrical joints rotate the same amount in the same direction under symmetrical loading.* | (1) |
| 5. | Define ‘*degree of freedom’*. | (1) |
| 6. | To get element forces, the external force matrix is multiplied with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. | (1) |
| 7. | Give any 2 instances you prefer stiffness method over flexibility method. | (1) |
| 8. | What is the property which governs the size of stiffness matrix? | (1) |
| 9. | What are the types of vibration? | (1) |
| 10. | Define critical damping. | (1) |

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| **PART B(5 X 3= 15 MARKS)** | | | |
| 11. | Write the steps to solve any structurally indeterminate structure by slope – deflection method. | | (3) |
| 12. | What do you mean by CARRY OVER FACTOR? | | (3) |
| 13. | Write the flexibility matrix for coordinates 1 and 2 of the beam shown in fig 13.1. Take EI = 4. |  | (3) |
| 14. | What do you mean by static condensation technique and where it is used? | | (3) |
| 15. | Enumerate the differences between damped and undamped vibrations. | | (3) |

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| **PART C(5 X 15= 75 MARKS)** | | | |
| 16. | Analyse the continuous beam ABC shown in figure 16.1 by slope defection method and draw bending moment diagram. |  | (15) |
| (OR) | | | |
| 17. | Analyse the rigid joint frame shown in figure 17.1 using slope deflection method. Draw the bending moment diagram. |  | (15) |
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| 18. | Analyse the continuous beam loaded as shown in fig 18.1 by moment distribution method. Sketch and bending moment diagram and shear force diagram. |  | (15) |
| (OR) | | | |
| 19. | Analyse the frame shown in figure 19.1 using moment distribution method and draw the bending moment diagram. |  | (15) |
|  |  |  |  |
| 20. | Analyse the continuous beam shown in figure 20.1 by matrix flexibility method and draw the bending moment diagram. |  | (15) |
| (OR) | | | |
| 21. | Develop the flexibility matrix for the beam shown in the figure 21.1. |  | (15) |
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| 22. | Analyse the continuous beam shown in figure 22.1 whose EI is uniform throughout the beam using stiffness method. |  | (15) |
| (OR) | | | |
| 23. | Analyse the pin jointed frame shown in the figure 23.1. The axial stiffness for each member is 40kN/mm. |  | (15) |
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| 24. | What do you mean by critically damped system? Derive the equation of motion for a critically damped system. | | (15) |
| (OR) | | | |
| 25. | Derive the equation for the undamped free vibrations of a single degree of freedom system. | | (15) |

🡨 *ALL THE BEST* 🡪