Hall Ticket Number:

Code No. : 16102

VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD

B.E. (Civil Engg.: CBCS) VI-Semester Main Examinations, May-2019

Theory of Structure-II

Time: **3** hours Max. Marks: **70**

*Note: Answer **ALL** questions in **Part-A** and any **FIVE** from **Part-B***

Q.No.	Stem of the question	M	L	CO	PO
	Part-A (10 × 2 = 20 Marks)				
1.	Define influence line diagram (ILD) and draw ILD for right support of a simply supported beam.	2	1	1	1
2.	A single wheel load of 10 kN rolls on a simply supported beam of span 12m. Find the maximum BM at a section 4 m. from the left support.	2	2	1	2
3.	A Pratt truss of height 5 m and having six panels with width of each panel as 5m. is subjected to a uniformly distributed live load of 20 kN/m. Compute the maximum force in top chord member of second panel.	2	2	2	2
4.	A three hinged arch of span 36 m. and height 6 m. is subjected to a moving load of 16kN. Determine the maximum height of the influence line diagram for horizontal reaction.	2	2	2	2
5.	Define the terms Flexibility and Stiffness.	2	2	3	2
6.	Develop Flexibility matrix for Propped Cantilever beam.	2	1	3	1
7.	Why is the transformation matrix used in direct stiffness method?	2	1	4	1
8.	Write the member global stiffness matrix for a truss member.	2	1	4	1
9.	For the beam shown in Fig.3 mark the unconstrained degrees of freedom.	2	2	5	2
10.	For the beam shown in Fig.3 write the known force matrix.	2	2	5	2
	Part-B (5 ×10 = 50 Marks)				
11. a)	What do you understand by maximum shear force diagram and maximum bending moment diagram?	2	1	1	1
b)	Four-point loads 120, 160, 160 and 80 KN spaced equally apart at a distance of 2 m. between consecutive loads, roll over a girder of 25 m. span, from left to right with 120 KN load leading. Calculate the position and amount of absolute max. BM in the girder.	8	3	1	2
12. a)	What is the importance of focal length in the design of truss girder bridges?	2	1	2	1
b)	A through type Pratt truss has 6 panels of 4m each. **Compute** the forces in the members of second panel due to a moving load of 40 kN/m of length more than span. Take height of the truss as 4 m.	8	4	2	2
13.	Analyse the continuous beam shown in Fig.1 by flexibility method. Draw bending moment diagram.	10	4	3	2

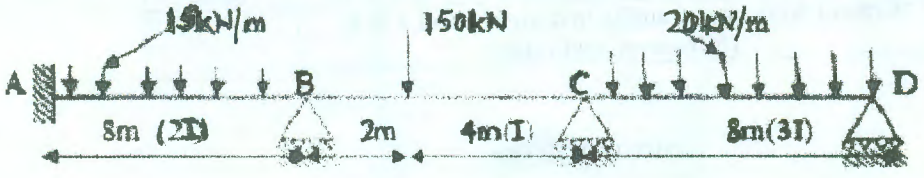

Fig.1

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14. a)	Differentiate between local coordinate system and global coordinate system.	2	1	4	1
b)	Perform analysis of the three-member truss shown in Fig. 2 using direct stiffness method. Take AE as constant.	8	3	4	2

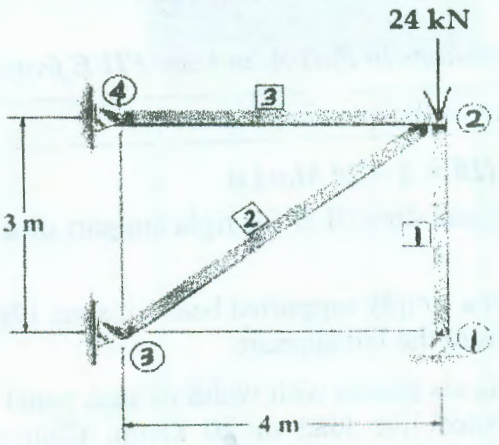

Fig.2

15. a)	Write the beam member stiffness matrix.	2	1	5	1
b)	Determine the support reactions of the beam shown in Fig.3 using direct stiffness method. Take EI as constant.	8	4	5	2

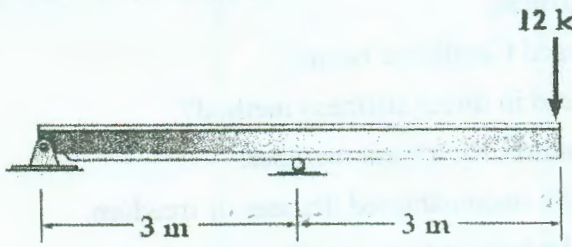

Fig.3

16. a)	Define EUDL and explain with an example.	4	3	1	2
b)	A uniform load of 1kN/m, 4m long crosses a girder of 18m long. Construct maximum shear force and maximum bending moment diagram.	6	4	2	2
17.	Answer any ***two*** of the following:				
a)	State Characteristic of stiffness matrix.	5	4	3	2
b)	Justify why leading diagonal elements of flexibility matrix are positive but element above and below diagonal elements may be positive or negative.	5	4	4	2
c)	Describe step-by-step procedure of performing analysis of a two-span continuous using direct stiffness method.	5	3	5	2

M: Marks; L: Bloom's Taxonomy Level; CO: Course Outcome; PO: Programme Outcome

S. No.	Criteria for questions	Percentage
1	Fundamental knowledge (Level-1 & 2)	40%
2	Knowledge on application and analysis (Level-3 & 4)	60%
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	--