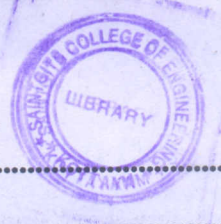


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Reg. No.....

Name.....



B.TECH. DEGREE EXAMINATION, MAY 2015

Sixth Semester

Branch : Civil Engineering

CE 010 603—STRUCTURAL ANALYSIS II—(CE)

(New Scheme—2010 Admission onwards)

[Regular/Improvement/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Assume any missing data suitably.

Part A

Answer all questions.

Each question carries 3 marks.

Write short notes on the following terms ;

1. Plastic Hinge.
2. Cantilever method.
3. Non Sway Frame.
4. Strain Tensor.
5. Inertia Force.

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

Explain briefly about :

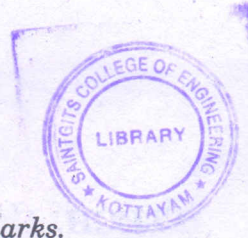
6. Basic theorem in Plastic Analysis.
7. Space Frame.
8. Advantages of Kani's Method.
9. Compatibility equations.
10. Free vibrations.

(5 × 5 = 25 marks)

Turn over

Part C

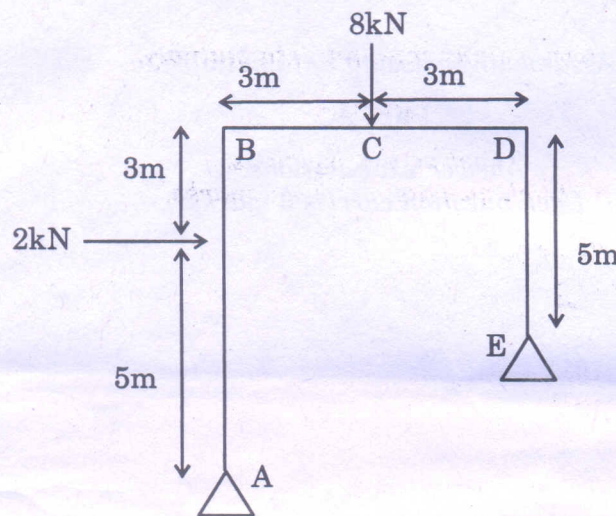
Answer all questions.
Each question carries 12 marks.



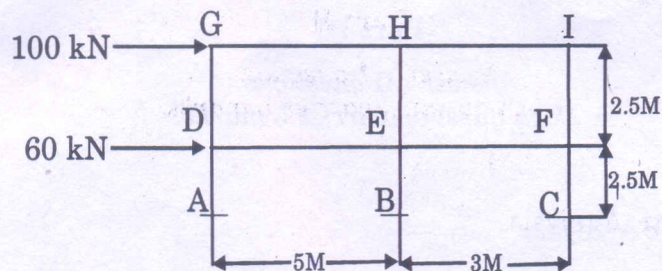
11. (a) A continuous beam ABC Fixed at A and C having span AB 5m, and BC 4m carries a concentrated load of 40 kN at a distance of 2 m from A and span BC carries a uniformly distributed load of intensity 50 kN/m throughout the full span. Fully plastic moment for AB is M_p and for BC is $2 M_p$. Find the collapse load factor of the continuous beam.

Or

- (b) Find the collapse load for the portal frame of uniform cross section shown below :



12. (a) Analyse a frame shown below using Cantileverl method. Draw also the BMD.

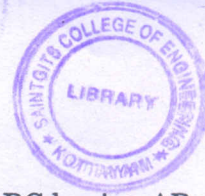


Or

- (b) Analyse the above frame using Portal method. Also draw the BMD

- 13 (a) A continuous beam ABCD simply supported at A, B, C and D having span AB 5 m, BC 7 m and CD 3 m carries a concentrated load 10 kN at mid span of AB , span BC carries a uniformly distributed load of intensity 14 kN/m throughout the full span and span CD does not carry any load. Analyse this beam using Kani's method and draw the BMD and SFD.

Or



(b) Draw the ILD for the reaction at A for a continuous beam ABC having AB span as $1.5L$ and BC span as $2L$.

14. (a) Derive the Compatibility equation for a three dimensional strain system.

Or

(b) Explain the concept of Plane stress and plane strain with suitable examples.

15. (a) Calculate the natural circular frequency for a cantilever beam of span 1 m , having a square cross sectional size of $10 \times 10\text{ mm}$ made up of steel whose free end is attached with a spring having stiffness of $15,000\text{ N/m}$. The end of the spring is connected to a body of mass " M " KG.

Or

(b) Find the natural Period of vibration of a system in which a S.S. beam having a span of 4 m is having a spring mass system attached at a distance of 1 m from one end, the spring having a constant of $25,000\text{ N/m}$ and the mass of the body is " M " Kg. The circular cross section of the beam is having a diameter of 15 cm . E is $2 \times 10^5\text{ N/mm}^2$.

(5 × 12 = 60 marks)