

KATHMANDU UNIVERSITY  
End Semester Examination [C]  
November/December, 2023

Marks Scored:

Level : B.E.

Year : III

Course : CIEG 308

Semester : II

Exam Roll No. :

Time: 30 mins.

F. M. : 10

Registration No.:

Date 26 NOV 2023

SECTION "A"

[20 Q. × 0.5 = 10 marks]

Choose and encircle the most appropriate answer among the given choices.

- The propped cantilever beam is statically indeterminate by  
a. One degree      b. Two degree      c. Three degree      d. Four degree
- The Slope Deflection method only accounts for the  
a. Axial deformation      b. Shear Deformation  
c. Flexural Deformation      d. Torsion only
- The sum of the distribution factors of all the members  
a. Zero      b. less than 1      c. 1      d. greater than 1
- The castigliano's first theorem can be used to compute  
a. Deflection of any structure      b. Force applied at the structure  
c. Strain energy of the beam      d. Torsional energy of the beam
- If there are more equations than the unknowns, the structure is  
a. Statically unstable      b. Statically stable  
c. Statically determinate      d. Statically indeterminate
- A point load acting at the mid-span of a fixed beam of uniform section produces fixed end moments of 60 kNm. If the same total load is spread over the entire span as a uniformly distributed load, the magnitude of the fixed end moment will be  
a. 15 kNm      b. 10 kNm      c. 20 kNm      d. 40 kNm
- The collapse load ( $W_c$ ) for a simply supported beam with a central point load is given by  
a.  $M_p/2L$       b.  $2M_p/L$       c.  $M_p/4L$       d.  $4M_p/L$   
[ $M_p$  is the plastic moment and  $L$  is the span of the beam]
- In the analysis of the structure by the elastic theory the stress-strain relation is assumed to be  
a. Linear      b. Non-linear      c. Polynomial      d. Quadratic
- In the Moment Distribution Method, the unbalanced moments are distributed as per  
a. Stiffness of the span      b. Total length of the structure only  
c. Support conditions only      d. Fixed end moment

10. An arch can be treated as a curved beam
- Whose ends are restrained against horizontal movement
  - Whose ends do not provide any reaction
  - Whose ends are unsupported
  - Whose ends are fixed
11. The sway correction for a frame may be required because
- the frame is unsymmetrical
  - the joint does not rotate
  - the applied moment is not distributed uniformly
  - the frame is statically indeterminate
12. The Muller-Breslau principle is applicable only when the material is
- Beyond the elastic limit
  - Within the elastic limit and obeys Hooke's law
  - Reached to the rupture zone
  - Reached at yield strength
13. The maximum value of the ordinate for the Influence line for support reaction of an indeterminate beam is
- Depends on the external load
  - Unity
  - Two times the external load
  - Depending on the section of the beam
14. The collapse load depends on the
- Shape factor
  - Carry-over factor
  - Load factor
  - Distribution factor
15. The stiffness factor at the near end of a member with the far end fixed is
- $3EI/4L$
  - $2EI/L$
  - $4EI/L$
  - $3EI/L$
16. In the consistent deformation method of structural analysis, the basic unknowns are
- Forces
  - Displacements
  - Moments
  - Shear forces
17. In the analysis of structurally indeterminate structures, compatibility equations are based on
- Forces of structures
  - Deformation of structure
  - External moments of structures
  - Internal shear forces of structure
18. The shape factor for the rectangular section is
- 1.5
  - 2.5
  - 2.0
  - 3.0
19. The ratio of the plastic moment of a section to its yield moment is called the
- Carry-over factor
  - Shape factor
  - Distribution factor
  - Stiffness factor
20. In the stiffness method, the stiffness structural matrix is
- Square
  - Square and symmetrical
  - Identity
  - Triangular Elastic moment of resistance