

KATHMANDU UNIVERSITY
End Semester Examination
February, 2025

Marks Scored:

Level : B.Arch.

Year : III

Exam Roll No. :

Time: 30 mins.

Registration No.:

Course : CIEG 341

Semester : II

F. M. : 10

Date : 11 FEB 2025

SECTION "A"

[20 Q. × 0.5 = 10 marks]

Choose and encircle the most appropriate option from each set of choices

1. Which of the following is a disadvantage of Steel?
a. High durability
b. Reusable
c. High strength per unit mass
d. Fire and corrosion resistance
2. Which method is mainly adopted for design of steel structures as per IS code?
a. Earthquake Load Method
b. Ultimate Load Method
c. Limit State Method
d. Working Stress Method
3. What is the net section area of steel plate 40cm wide and 10mm thick with one bolt if diameter of bolt hole is 18mm?
a. 38.2 cm^2
b. 24 cm^2
c. 578 mm^2
d. 465 mm^2
4. Which of the following is advantage of HSFG bolts over bearing type bolts?
a. high strength fatigue
b. joints are not rigid
c. low static strength
d. bolts are subjected to shearing and bearing stresses
5. Which of the following is not a compression member?
a. tie
b. strut
c. rafter
d. boom
6. For connecting 10 to 20mm plates minimum size of fillet weld is
a. 5mm
b. 6mm
c. 7mm
d. 8mm
7. According to IS specifications, the effective length of a column effectively held in position at both ends and restrained in direction at one end is taken as:
a. $0.67L$
b. $0.8L$
c. L
d. $1.5L$
8. The best arrangement to provide unified behavior in built up steel columns is by:
a. Lacing
b. Battening
c. Tie plates
d. Perforated cover plates.
9. The plastic section modulus $Z_{p,z}$ of a rectangular section of width b and depth h about its z axis is given by
a. $hb^2/6$
b. $bh^2/4$
c. $hb^2/4$
d. $bh^2/6$
10. Identify the odd term.
a. angle
b. channel
c. I-section
d. rivet

11. Web crippling generally occurs at the point where
 - a. bending moment is maximum
 - b. shearing force is minimum
 - c. concentrated loads act
 - d. Deflection is maximum
12. Rolled steel flats designated by 50 ISF 8 means that the flat is of?
 - a. 50mm length and 8mm thick
 - b. 50mm width and 8mm thick
 - c. 50mm thick and 8mm length
 - d. 50mm thick and 8mm width
13. A strut is a structural member subjected to?
 - a. Compression in direction perpendicular to its longitudinal axis
 - b. Tension in a direction parallel to its longitudinal axis
 - c. Tension in a direction perpendicular to its longitudinal axis
 - d. Compression in a direction parallel to its longitudinal axis
14. If the tension member is normally acting as a tie in roof truss but subjected to possible reversal stress resulting from the action of wind, the member should have slenderness ratio not greater than?
 - a. 150
 - b. 280
 - c. 350
 - d. 450
15. The effective length of a fillet weld is taken as?
 - a. the actual length plus twice the size of weld
 - b. the actual length minus twice the size of weld
 - c. the actual length plus thrice the size of weld
 - d. the actual length minus thrice the size of weld
16. Which of the following grades of timber is most suitable for heavy structural applications as per IS 883?
 - a. Grade I
 - b. Grade II
 - c. Grade III
 - d. Unclassified
17. What is the primary objective of IS 883 in timber design?
 - a. To provide guidelines for concrete design
 - b. To specify methods for testing timber strength
 - c. To provide specifications for structural timber design
 - d. To outline safety guidelines for steel structures
18. What is the typical mode of failure for masonry walls under in-plane lateral loads?
 - a. Flexural failure
 - b. Shear sliding failure
 - c. Tensile cracking perpendicular to the wall
 - d. Crushing of masonry at supports
19. What is the common failure mechanism for masonry walls under out-of-plane loads?
 - a. Shear cracking
 - b. Buckling of the wall
 - c. Flexural cracking and overturning
 - d. Crushing of masonry at the base
20. Which property of mortar is crucial for effective load transfer in masonry walls?
 - a. Flexural strength
 - b. Compressive strength
 - c. Tensile strength
 - d. Bond strength