



**Department of Computer Science and Engineering**

**CE8601- DESIGN OF STEEL STRUCTURAL MEMBERS**

**Unit I - MCQ Bank**

1. Steel is mainly an alloy of

- a) **Iron and Carbon**
- b) Sulphur and Zinc
- c) Zinc and tin
- d) Phosphorous and Tin

Ans a) Iron and Carbon

2. Which of the following is a disadvantage of Steel?

- a) High strength per unit mass
- b) High durability
- c) **Fire and corrosion resistance**
- d) Reusable

Ans c) Fire and corrosion resistance

3. Elastic Modulus of Steel is \_\_\_\_\_

- a)  $1.5 \times 10^9 \text{ N/mm}^2$
- b)  **$2.0 \times 10^5 \text{ N/mm}^2$**
- c)  $2.0 \times 10^5 \text{ N/m}^2$
- d)  $1.5 \times 10^9 \text{ N/m}^2$

Ans b)  $2.0 \times 10^5 \text{ N/mm}^2$

4. Unit mass of Steel = \_\_\_\_\_

- a)  $785 \text{ kg/m}^3$
- b)  $450 \text{ kg/m}^3$
- c)  $450 \text{ kg/cm}^3$
- d)  **$7850 \text{ kg/m}^3$**

Ans d)  $7850 \text{ kg/m}^3$

5. Poisson's ratio of steel is \_\_\_\_\_

- a) 0.1
- b) 1.0

- c) **0.3**
- d) 2.0

Ans c) 0.3

6. Structural Steel normally has carbon content less than \_\_\_\_\_
- a) 1.0%
  - b) **0.6%**
  - c) 3.0%
  - d) 5.0%

Ans b) 0.6%

7. What is the permissible percentage of Sulphur and Phosphorous content in steel?
- a) **0.1%, 0.12%**
  - b) 1.0%, 3.0%
  - c) 3.0%, 1.0%
  - d) 1.0%, 1.0%

Ans a) 0.1%, 0.12%

8. What happens when Manganese is added to steel?
- a) decreases strength and hardness of steel
  - b) improves corrosion resistance
  - c) decreases ductility
  - d) **improves strength and hardness of steel**

Ans d

9. Which of the following is correct criteria to be considered while designing?
- a) Structure should be aesthetically pleasing but structurally unsafe
  - b) Structure should be cheap in cost even though it may be structurally unsafe
  - c) Structure should be structurally safe but less durable
  - d) **Structure should be adequately safe, should have adequate serviceability**

Ans d) Structure should be adequately safe, should have adequate serviceability

10. What is serviceability?
- a) It refers to condition when structure is not usable
  - b) It refers to services offered in the structure
  - c) **It means that the structure should perform satisfactorily under different loads, without discomfort to user**
  - d) It means that structure should be economically viable

Ans c) It means that the structure should perform satisfactorily under different loads, without discomfort to user

11. Analysis is referred to \_\_\_\_\_

- a) determination of cost of structure
- b) determination of axial forces, bending moment, shear force etc.**
- c) determination of factor of safety
- d) drafting architectural plans and drawings

Ans b) determination of axial forces, bending moment, shear force etc.

12. The structure is statically indeterminate when \_\_\_\_\_

- a) static equilibrium equations are insufficient for determining internal forces and reactions on that structure**
- b) static equilibrium equations are sufficient for determining internal forces and reactions on that structure
- c) structure is economically viable
- d) structure is environment friendly

Ans a) static equilibrium equations are insufficient for determining internal forces and reactions on that structure

13. Which of the following is one of the methods of analysis prescribed in the code for steel structures?

- a) Hinge Analysis
- b) Limit Analysis
- c) Roller Analysis
- d) Dynamic Analysis**

Ans d) Dynamic Analysis

14. Which method is mainly adopted for design of steel structures as per IS code?

- a) Limit State Method**
- b) Working Stress Method
- c) Ultimate Load Method
- d) Earthquake Load Method

Ans a) Limit State Method

15. Which IS code is used for general construction of steel?

- a) IS 456
  - b) IS 256
  - c) **IS 800**
  - d) IS 100
- Ans c) IS 800

16. Which of the following relation is correct?

- a) Permissible Stress = Yield Stress x Factor of Safety
  - b) **Permissible Stress = Yield Stress / Factor of Safety**
  - c) Yield Stress = Permissible Stress / Factor of Safety
  - d) Permissible Stress = Yield Stress – Factor of Safety
- Ans b) Permissible Stress = Yield Stress / Factor of Safety

17. In Working Stress Method, which of the following relation is correct?

- a) **Working Stress  $\leq$  Permissible Stress**
  - b) Working Stress  $\geq$  Permissible Stress
  - c) Working Stress = Permissible Stress
  - d) Working Stress  $>$  Permissible Stress
- Ans a) Working Stress  $\leq$  Permissible Stress

18. What is Load Factor?

- a) ratio of working load to ultimate load
  - b) product of working load and ultimate load
  - c) product of working load and factor of safety
  - d) **ratio of ultimate load to working load**
- Ans d) ratio of ultimate load to working load

19. Which of the following is not a main element of framed structure?

- a) Beam
  - b) Column
  - c) **Shear connector**
  - d) Lattice member
- Ans c) Shear connector

20. Which of the following are subjected to both axial loads and bending moments?

- a) **Beam-Column**
- b) Column
- c) Lattice member
- d) Beam

Ans a) Beam-Column

21. The number of seismic zones in which the country has been divided is

- a) 3
- b) **5**
- c) 6
- d) 7

Ans b) 5

22. Load factor is

- a) Always equal to factor of safety
- b) Always less than factor of safety
- c) **Always greater than factor of safety**
- d) Sometimes greater than factor of safety

Ans c) Always greater than factor of safety

23. The mechanism method and the statical method give

- a) Lower and upper bounds respectively on the strength of structure
- b) **Upper and lower bounds respectively on the strength of structure**
- c) Lower bound on the strength of structure
- d) Upper bound on the strength of structure

Ans b) Upper and lower bounds respectively on the strength of structure

24. The maximum spacing of vertical stiffeners is

- a)  $1.33 d$

- b) 1.25 *d*
- c) **1.5 *d***

d) 1.75 *d*

Ans 1.5 *d*

25. Allowable working stress corresponding to the slenderness ratio of double angles placed back to back and connected to one side of a gusset plate, is reduced to

a) 52%

b) 60%

c) 72%

**d) 80%**

Ans d) 80%

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