

Future Secure Institute®

Design of Steel and Masonry Structure

1. The maximum center to centre distance between rivets a tension member of thickness 10 mm is:

- a) 200mm b) 160mm c) 120mm d) 100mm

2. A reverted joint can fail due to:

- a) Tearing of plate only b) Shearing of river only
c) Bearing of plate or rivet only d) Any of the above

3. The gross diameter of a 14mm nominal diameter rivet is:

- a) 15.5mm b) 16mm c) 16.5mm d) None of the above

4. In calculating area to be deducted for bolts of 36mm diameter, the diameter of the hole shall be taken as:

- a) 37.5mm b) 36.0mm c) 38.0mm d) 38.5mm

5. For a rivet of 36 mm diameter, the diameter of hole shall be taken as:

- a) 37.5mm b) 36.0mm c) 38.0mm d) 38.5mm

6. What should be multiplied with permissible bearing stress to find out strength of rivet in bearing?

- a) $d \times t \times f_b$ b) $\frac{\pi}{4} d^2$ c) $\frac{\pi}{2} d^2$ d) dt^2

7. Pick the wrongly written assumption taken in analysis of riveted joints: (SSC JE 2010)

- a) Friction in plate is negligible
b) Uniform stress distribution in plates is not considered
c) Bending moment is not taken into consideration
d) Total load on the joint is equally shared by all rivets.

8. Standard loads are given in:

- a) IS 885 b) IS 1375 c) IS 675 d) IS 875

9. The heaviest I-section for the same depth is:

- a) ISLB b) ISMB c) ISHB d) ISWB

10. If p and d are pitch and gross diameter of rivets, the efficiency of the η of the riveted joint, is given by:

- a) $\eta = p/(p-d)$ b) $\eta = (p-d)/p$ c) $\eta = p/(p+d)$ d) $\eta = (u+d)/p$

11. Minimum pitch of the rivets shall not be less than:

- a) Less than 1.5 d b) Less than 2.5 c) Less than 2.0 d) Less than 3.0

12. The minimum thickness of the plates used in pressed steel tanks is?

- a) 4mm b)3mm **c)5mm** d)6mm

13. The size of a rivet is identified by:

- a)Diameter of shank** b)Diameter of head c)Length of shank d)Shape of head

14. The maximum permissible stress for power driven field rivet in bearing on rivet is

- a)100 N/mm² b)250N/mm² **c)270N/mm²** d) 300N/mm²

15. The maximum permissible stress for hand driven rivet in axial tensile is:

- a)90N/mm²** b)100N/mm² c)250N/mm² d)80N /mm²

16. Diameter of a rivet hole is made larger than the diameter of the river by:

- a)3mm **b)2.0mm** c)0.5mm d)1.0mm

17. The distance between two rivets measured perpendicular to the direction of applied force is known as:

- a) Pitch **b)Gauge** c)Staggered pitch d)Edge distance

18. T minimum edge and end distance from the centre of any hole the nearest flame-cut edge shall not be less than:

- a)1.5 time hole dia b)1.7 times hole dia c)2 times hole dia **d)1.5 times bolt/rivet dia**

19. According to unwin's formula, the relation between diameter of rivet hole (d) in mm, and thickness of plate (t) in mm is given by:

- a)d=t/d=t **b)d=6.01 \sqrt{t}** c) d=2t/d=2t d) d= 2.6 \sqrt{t}

20. The modulus of elasticity of steel is:

- a) 2 x 10⁴MPa b)1.2 x 10⁵MPa **c) 2 x 10⁵MPa** d)2 x 10⁶MPa

21. The fillet weld whose axis is parallel to the direction of the applied load is known as?

- a)Diagonal fillet weld b)Flat fillet weld c)End fillet weld **d)Side fillet weld**

22. The actual thickness of a butt weld when compared with the thickness of the plate is?

- a) Less** b)More or less c) Equal d)More

23. The throat in a fillet weld is:

- a)Large side of the triangle of the fillet
b)Hypotenuse of the triangle of the fillet
c)Smaller side of the triangle of the fillet
d)Perpendicular distance from the root to the hypotenuse

24. The size of a fillet weld is indicated by:

- a) Throat of the fillet **b)length of fillet weld** c)size of the plate d)side of the triangle of fillet

25. Maximum size of a fillet weld for a plate of square edge is:

- a) 1.5 mm less than the thickness of the plate b) One-half of the thickness of the plate
c) Thickness of the plate itself d) 1.5 mm more than the thickness of the plate

26. When two plates are placed end –to-end and joined by two cover plates, the joint is known as:

- a) Lap joint b) Butt joint c) Chain riveted lap joint d) Double cover butt joint

27. The maximum slenderness ratio of a tension member, as per the code, shall not exceed:

- a) 300 b) 180 c) 400 d) 450

28. Net sectional area of tension member is equal to its gross sectional area:

- a) Plus the area of rivet holes b) Divided by the area of the rivet holes
c) Multiplied by the area of the rivet holes d) Minus the area of the rivet holes

29. Partial safety factor on steel stresses is:

- a) 1.15 b) 1.67 c) 1.5 d) 1.77

30. Tacking rivets in compression plates exposed to weather have a pitch not exceeding 200 mm or?

- a) 32 times the thickness of outside plate b) 16 times the thickness of outside plate
c) 24 times the thickness of outside plate d) 8 times the thickness of outside plate

31. Horizontal stiffeners are needed in plate girders if the thickness of web is less than:

- a) 6mm b) Depth/200 c) Span/500 d) Flange thickness

32. Permissible stress may also be known as:

- a) Ultimate stress b) Working stress c) Limit stress d) Yield stress

33. A tie is a:

- a) Tension member b) Compression member c) Flexural member d) Torsion member

34. The purpose of Stiffeners in a plate girder is to:

- a) Take care of bearing stress b) Increases the moment carrying capacity of the
c) Prevent buckling of web plate d) Reduce the shear stress

35. If t is the thickness of MS plate in mm, the standard weight of the MS plate per sq. meter is

- a) 5.87 t b) 7.85t c) 8.75 t d) 8.57 t

36. The maximum allow slenderness ratio for axially loaded member carrying tension only is:

- a) 180 b) 250 c) 350 d) 400

37. As per the code, the slenderness ratio of the lacing bars for compression member should not exceed:

- a) 80 b) 100 c) 145 d) 225

38. For field rivets the maximum permissible stress in rivets and as given in the code are reduced by:

- (a) 5% (b) 10% (c) 15% (d) 20%

39. As per the code, the permissible stress in axial tension in N/mm^2 on the net effective area of the section shall not exceed

- a) $0.5f_y$ (b) $0.6f_y$ c) $0.75f_y$ d) $0.8f_y$

40. For steel construction where secondary effects are considered without wind or earthquake loads, the permissible stresses on the members of connections, as specified, may be exceeded by:

- a) 25% b) 33% (c) 33.33% d) 40%

41. A tension member, if subjected to possible reversal of stress due to wind, the slenderness ratio of member should not exceed:

- a). 180 to b). 200 to c). 250 to (d) 350 to

42. The maximum allowable slenderness ratio for members carrying compressive load due to wind and seismic force only is:

- a) 180 (b) 250 c) 350 d) 400

43. The slenderness ratio of lacing bars should not exceed:

- a) 120 (b) 145 c) 180 d) 100

44. The permissible bending stress in working stress method of design of column base is considered equal to:

- (a) $0.66f_y$ b) $0.75f_y$ c) $0.87f_y$ d) $0.6f_y$

45. In single laced column construction, the thickness of the flat lacing bars shall not be less than:

- a) $\frac{1}{40}$ th of the effective length of single lacing b) $\frac{1}{10}$ th of the width of the lacing bar
c) $\frac{1}{15}$ th of the width of the lacing bar d) $\frac{1}{30}$ th of the effective length of single lacing

46. The effective length of a steel column, effectively held in position and restrained against rotation at both ends is:

- a) $0.5L$ (b) $0.65L$ c) $0.80L$ d) $1.0L$

47. Which one of the following factors does not affect the lateral buckling strength of a steel I section undergoing bending about its major axis?

- a) Boundary conditions at the ends
b) Radius of gyration about the minor axis of the
c) Laterally unsupported length of the compression flange
(d) Radius of gyration about the major axis of the section

48. The lacing bars in steel columns should be designed to resist

- a) Tension member b) Compression member (c) Flexural member d) Torsion member

49. The effective slenderness ratio of laced columns, compared to actual maximum slenderness ratio shall be considered as:

- a) 1.05 times b) 1.10 times c) 1.15 times d) 1.20 times

50. The outstand of web stiffeners in terms of the thickness of flat 't' should be:

- a) 6t b) 8t c) 10t d) 12t

