

Shivaji University

Name of Subject – Design of Concrete Structures-II(67748)

Semester- VIII

Question Bank -2019-20

01. In WSM and LSM of RCC

- i) Plane section remain plane after bending
- ii) The tensile strength of concrete is ignore

Of these statement the correct one are

- a) 1 alone
- b) 2 alone
- c) both 1 and 2
- d) none

Answer-c

02. Consider following statement

- i) If the numerical value of M_t is greater than M_u then compression steel required
- ii) The value of $M_{e2} = M_t - M_u$

- a) Both are correct
- b) First statement is correct second is wrong
- c) First statement is wrong and second is correct
- d) Both are wrong

Answer- a

03. Minimum shear reinforcement in the form of stirrups shall be provided such that

- a) $\frac{A_{sv}}{b_{sv}} \geq \frac{0.4}{0.36 f_y}$
- b) $\frac{A_{sv}}{b_{sv}} \geq \frac{0.4}{f_y}$
- c) $\frac{A_{sv}}{b_{sv}} \geq \frac{1}{0.87 f_y}$
- d) $\frac{A_{sv}}{b_{sv}} \geq \frac{0.4}{0.87 f_y}$

Answer-d)

04. Equation for calculation of total area of steel

- a) $A_{st} = \frac{0.5 f_{ck}}{f_y} \left[1 - \sqrt{1 - \frac{4.6 M_u}{f_{ck} b d^2}} \right]$
- b) $A_{st} = \frac{0.5 f_{ck}}{f_y} \left[1 - \sqrt{1 - \frac{4.6 M_u}{f_{ck} b d^2}} \right] b d$
- c) $A_{st} = \frac{0.5 f_{ck}}{f_y} \left[\sqrt{1 - \frac{4.6 M_u}{f_{ck} b d^2}} \right] b d$
- d) $A_{st} = \frac{0.5 f_{ck}}{f_y} \left[1 - \sqrt{\frac{4.6 M_u}{f_{ck} b d^2}} \right] b d$

Answer- b)

05. The support moment at simply support end support is

- a) Maximum
- b) Minimum
- c) zero
- d) none of all

Answer – c)

06. Calculate bending moment by IS code method in water tank of height 3 m. Take bending coefficient of 0.5 and $w=9810 \text{ N/m}^2$

- a. 132 KNm
- b. 231KNm
- c. 331KNm

d. 441KNm

Ans; a

07. Calculate shear force by IS code method in water tank of height 2.5m. Take shear coefficient of 0.6 and $w=9810 \text{ N/m}^2$

- 1 33KN
2. 23KN
3. 36KN
4. 44KN

08. Development of early cracks in reinforced concrete is due to,

- a) Strains of steel
- b) Stresses of steel
- c) Ultimate load
- d) Bending of steel

Ans; a

08. The shift of pressure line measured from centroidal axis is obtained as _____

- a) $(m/p)-e$
- b) $(m/q)-e$
- c) $(m/r)-e$
- d) $(m/i)-e$

Answer: a

09. A pretensioned concrete beam 200mm wide and 300mm deep, is prestressed by straight wires carrying an initial force of 150kn at eccentricity of 50mm, area of steel wires is 188mm². Find initial stress in steel?

- a) 1400
- b) 800
- c) 200
- d) 100

Answer: b

10. A prestressed concrete beam has a cross section with the following properties:

$A = 46400 \text{ mm}^2$, $I = 75.8 \times 10^7 \text{ mm}^4$, $y_{\text{bottom}} = 244 \text{ mm}$, $y_{\text{top}} = 156 \text{ mm}$.

It is subjected to a prestressing force at an eccentricity 'e' so as to have a zero stress at the top fibre. The value of 'e' is given by,

- a) 140
- b) 80
- c) 90
- d) 104

Ans d

11. If a bent tendon is required to balance a concentrated load W at the centre of the span L , the central dip h must be at least

a) $\frac{WL}{P}$

b) $\frac{WL}{2P}$

c) $\frac{WL}{3P}$

d) $\frac{WL}{4P}$

Answer: d

12. If k is wobble correction factor, μ is coefficient of friction between the duct surface and the curve of tendon of radius R , the tension ratio at a distance x from either end, is

a) $1 + kx - \frac{\mu x}{R}$

b) $1 - kx + \frac{\mu x}{R}$

c) $1 - kx - \frac{\mu x}{R}$

d) $1 + kx + \frac{\mu x}{R}$

13. In a prestressed beam carrying an external load W with a bent tendon is having angle of inclination θ and prestressed load P . The net downward load at the centre is

a) $W - 2P \cos \theta$

b) $W - P \cos \theta$

c) $W - P \sin \theta$

d) $W - 2P \sin \theta$

Answer: d

14. While checking shear resistance of reinforced concrete beams for limit state of collapse as per IS: 456, which one of the following nominal shear stress recommendations is to be adhered to? (V_u is shear force in a vertical cross-section; b and d are overall width and effective depth of the beam respectively).

a) $0.5 V_u / bd$

b) $2V_u / 5bd$

c) $V_u / 0.5bd$

d) V_u / bd

Ans d

15. When the concrete attains sufficient strength, which elements are released?

a) Jacks

b) Casting bed

c) Tendons

d) Beams

Ans a

16. Which is one of the systems used for pretensioning?

a) Magnel-Balton system

b) Freyssinet system

c) Gifford-Udall system

d) Hoyer's long line method

Ans d

17. Hoyer's system of pre tensioning is generally adopted for _____

a) Small scale members

b) Large scale members

- c) Middle span members
- d) End members

Ans b

18. The transfer of prestress of concrete is achieved by _____

- a) Plates
- b) Rings
- c) Steel bars
- d) Jacks

Ans d

19. How many types of losses in prestress are observed in pretensioned member?

- a) 7
- b) 8
- c) 4
- d) 2

Ans c

20. The frictional and anchorage slip losses are observed in _____

- a) Post tensioned members
- b) Pretensioned members
- c) Ruptured members
- d) Tensile members

Ans a

21. The method of prestressing the concrete after it attains its strength is known as _____

- a) Pre tensioning
- b) Post tensioning
- c) Chemical prestressing
- d) Axialprestressing

Ans b

22. General design requirements of R.C.C. water tank is,

- a. Strength
- b. Water Tightness
- c. Preventing Shrinkage Cracks
- d. All of Answers

Ans d

23. The permissible direct tensile stress in concrete for M20 grade concrete in N/mm² is

,

a. 1.1

b. 1.2

c. 1.3

d. 1.5

Ans a

24. Redistribution of moment is permissible in between,

a. 15 to 30 %

b. 40 to 60%

c. 65 to 80 %

d. 10 to 25 %

Ans a

25. High strength concrete resists _____

a) Levelling

b) Bursting

c) Tangent moments

d) Trapezoidal moment

Ans b

26. When the beam supports two concentrated loads, the cable follows which profile?

a) Straight

b) Bent

c) Curved

d) Trapezoidal

Ans d

27. The concept of load balancing is useful in selecting the _____

a) Anchorage profile

b) Bending profile

c) Tendon profile

d) Jack profile

Ans c

28. The beam with more than two span is called as,

- a. Long Beam
- b. Continuous Beam
- c. Cantilever Beam
- d. Uniform Beam

Ans b

29. Flexible joint in water tank is preferred for,

- a. For small structures and free movement
- b. For small structures and free movement
- c. For no movement and rough finishing
- d. None of these

Ans b

30. The location of the pressure line depends upon,

- a. Breakage and Bondage
- b. Magnitude and direction
- c. Shear and Torsion
- d. Pressure and equilibrium

Ans b

-----*End of Question Bank*-----