Q.1. In a RCC beam of breadth b and overall depth D exceeding 750 mm, side face reinforcement required and the allowable area of maximum tension reinforcement shall be respectively.

A• 0.2% and 0.02 bD

B• 0.3% and 0.03 bD

C• 0.1 % and 0.04 bD

D• 0.4% and 0.01 bD

Q.2. The effective width "bf" of flange of a continuous T-beam in a floor system is given by bf = l0 /6+bw + 6 Of where 10 represents the

(a) Distance between point of contraflexure in a span

(b) Effective span of beams

(c) Clear span of beams

(d) spacing between beams

Q.3. A doubly reinforced beam is considered less economical than a singly reinforced beam because

(a) Tensile steel required is more than that for a balanced section

(b) Shear reinforcement is more

(c) Concrete is not stressed to its full value

(d) Compressive steel is under-stressed

Q.4. As per IS : 456-1978 the vertical deflection limit for beams may generally be assumed to be satisfied provided that the ratio of span to effective depth of a continuous beam of span upto 10m is not be greater than .

(a) 35

(b) 26

(c) 20

(d) 18

Q.5. Match List I with List II and select the correct answer

List – I		List – I
A•	Minimum percentage of tension reinforcement of RC beam	1• 4
B•	Minimum percentage of shear reinforcement of RC beam	2• 85/ fY
C•	Maximum allowable percentage of tension reinforcement of RC beam	3• 40 SV / fY d
D•	Maximum allowable percentage of compression reinforcement of RC beam	

Codes :

A• A – 2, B – 1, C – 3, D – 1
B• A – 2, B – 3, C – 1, D – 1
C• A – 1, B – 3, C – 1, D – 2
D• A – 3, B – 2, C – 1, D – 1

Q.6. According to Whitney's theory, the maximum depth of concrete stress block in a balanced RCC beam section of depth 'd' is

(a) 0.3 d

(b) 0.43 d

(c) 0.5 d

(d) 0.53 d

Q.7. For the purpose of design as per IS: 456, deflection of RC slab or beam is limited to

(a) 0.2% of span

(b) 0.25% of span

(c) 0.4% of span

(d) 0.45% of span

Q.8. As per IS: 456, side face reinforcement, not less than 0.05% of web area, is provided on each side when the depth of web is not less than

(a) 300 mm

(b) 400 mm

(c) 500 mm

(d) 750 mm

Q.9. The yield line theory is a

(a) Lower bound method of design of over- reinforced slabs

(b) Lower bound method of design of under-reinforced slabs

(c) Upper bound method of analysis of under-reinforced slabs

(d) Upper bound method of analysis of over-reinforced slabs

Q.10. Consider the following statements:

The impact factor for reinforced concrete bridges = $\frac{4.5}{(6+L)}$ (where L is the length in metres of the span).

The bridge is designed

1• For spans upto 30 m
2• For spans between 3 m and 45 m
3• Either for class A or class B loading.
4• For class AA and class 70 R.

Which of these statements are correct?

(a) 1 and 3

(b) 2 and 3

(c) 1 and 4

(d) 2 and 4

Q.11. In a reinforced concrete T-beam (in which the flange is in compression). The position of neutral axis will

(a) Be within the flange

(b) Be within the web

(c) Depend on the thickness of flange in relation to total depth and percentage of reinforcement

(d) At the junction of flange and web

Q.12. In the design of as masonry retaining wall, the

(a) Vertical load should fall within the middle- third of base width

(b) Horizontal thrust should act as h/3 from base

(c) Resultant load should fall within a distance of one-sixth of base width on either side of its midpoint

(d) Resultant load should fall within a distance of one-eight of base width on either side of its midpoint

Q.13. Which of the following deformations are important in case of deep beams when compared to flexure alone?

(a) shear

(b) axial

(c) torsional

(d) bearing

Q.14. The maximum depth of neutral axis for a beam with d as the effective depth, in limit state method of design for Fe415 steel is

(a) 0.46 d

(b) 0.48 d

(c) 0.50 d

(d) 0.53 d

Q.15. A simply supported rectangular beam of span 20.0 m is subjected to u.d.1. The minimum effective depth required to check deflection of this beam, when modification factor for tension and compression are 0.9 and 1.1. respectively, will be

(a) 2.0 m

(b) 1.8 m

(c) 1.3 m

(d) 1.0m

Q.16. A buttress in a wall is intended to provide

(a) lateral support to roof slab only

(b) lateral support to wall

(c) to resist vertical loads only

(d) lateral support to roof beams only

Q.17. The reinforcement for tension, when required in members, shall consists of

(a) only longitudinal reinforcement in the tension face

(b) only longitudinal reinforcement in the compression face

(c) only two legged closed loops enclosing the corner reinforcement

(d) both longitudinal and transverse reinforcement

Q.18. In case of two-way slab, the deflection of the slab is

(a) Primarily a function of the long span

(b) Primarily a function of the short span

(c) Independent of the span, long or short

(d) Mostly long span but sometimes short span

Q.19. A reinforced concrete beam is subjected to the following bending moments:

Dead load 20 kNm
Live load 30 kNm
Seismic load 10 kNm

The design bending moment for limit state of collapse is

(a) 60 kNm

(b) 75 kNm

(c) 72 kNm

(d) 80 kNm