SSC JE 15 NOV 2022

CIVIL ENGINEERING

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$\frac{d}{2}(A_1+A_2)$

$V = \frac{d}{6}(A_1 + 4A_m + A_2)$

1. Which of the following formulas is used for calculation of earthwork volume and is also known as the average end area formula?

(a) Prismoidal formula
(b) Mid-section formula
(c) Simpsons formula
(d) Trapezoidal formula

2. A carpet area which includes the inner walls and balcony of the structure at floor is called__.

(a) built up area

(b) horizontal circulation area

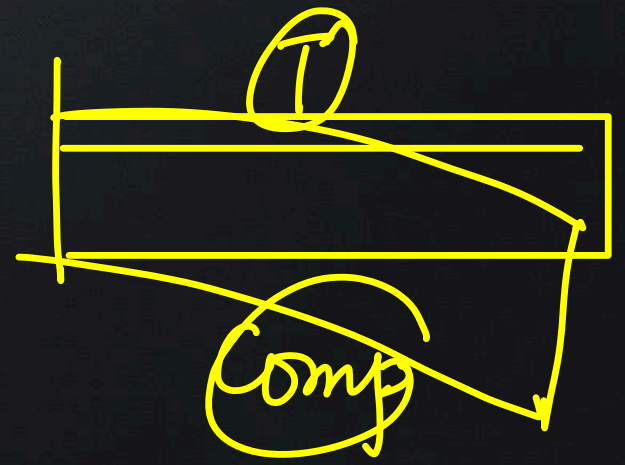
(c) verandah

(d) plinth area

balcony, stair

3. In the design of a cantilever beam, main steel reinforcement is provided along _____ face of the beam.

(a) tension
(b) compression
(c) central
(d) side



4. The sprinkler irrigation method for water distribution is most suitable:

(a) when the land topography is irregular

b) when the land topography is regular

(c) when the water table is very low

(d) for crops with deep roots

5. _____ condition develops in saturated thick layer of loose fine sandy soils, when disturbed due to vibration from pile driving in adjoining area or by pressure of flowing water.

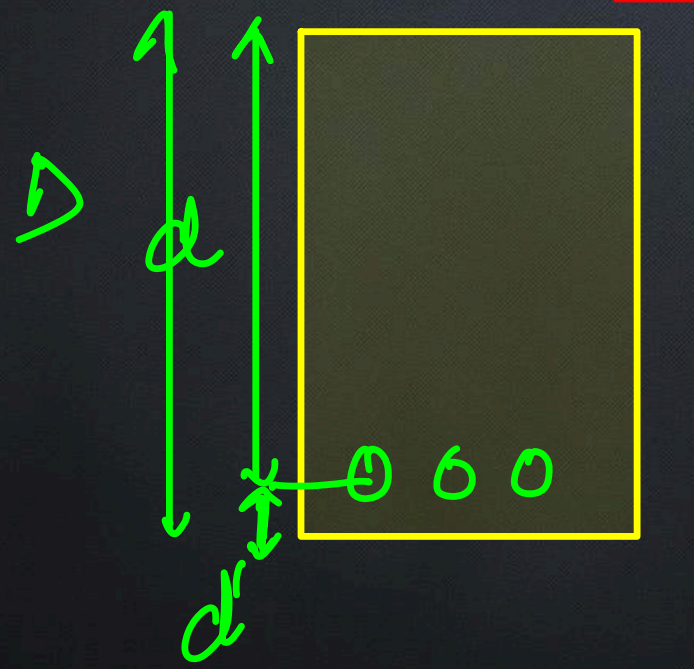
(a) Unstable
(b) Collapse
(c) Quick sand
(d) Failure

6. According to the assumptions made in the limit state method of design of a compression member, The maximum compressive strain in concrete under axial compression is

(a) 0.002
(b) 0.0035
(c) 0.001
(d) 0.45

⇒ 0.0035 - 0.75ε

→ Bending comp.



7. Identify the correct expression with respect to depth of beam in RC structures. Where

D = Overall depth of beam

d = Effective depth of beam

d' = Effective cover

(a) D = d + d'

(b) D = 3d

(c) D = d - d'

(d) D = 2d

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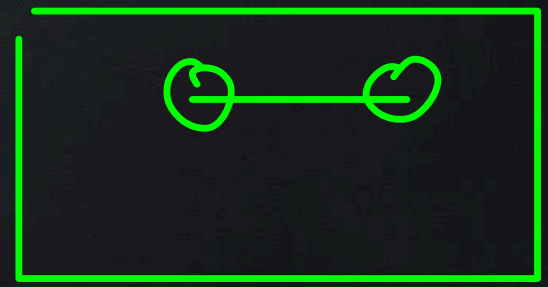
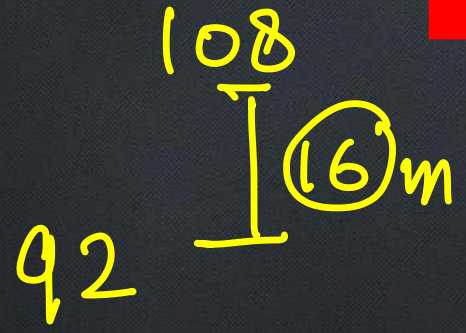
8. In structural steel construction, the distance between centre of fasteners shall NOT be less than X times the nominal diameter of the fastener, where X is:

2.5d

(a) 1.5
(b) 3.0
(c) 2.0
(d) 2.5





9. A water supply pipe with a diameter of 0.5 m conveys 0.8 m^3/sec of water from a source, where the lowest water level is at RL 92.00 m to a reservoir level where it is delivered at RL 108.00 m. The distance between source and supply is 500 m and the friction factor of a pipe is 0.03. Calculate the static head required to calculate the capacity of the pump.

(a) 16 m (b) 18 m

(c) 12 m (d) 14 m

10. As per IRC, which of the following is NOT a recommended characteristic of the road shoulder?

(a) It's surface must be rough as compared to the adjacent road.

(b) It's minimum width should be 4.6 m.

(c) It must be able to support a truck load in wet weather.

(d) It's colour must be different from that of the road.

11. Select the incorrect statement regarding biomedical wastes segregated into red coloured bins as per Indian Rules, 1998.

(a) These wastes need to be incinerated for disposal.

(b) These may contain human anatomical wastes.

(c) These wastes may microwave disposal.

(d) These may contain chemical solid wastes.

12. Engineering hydrology does NOT deal with:

(a) estimation of water demand

(b) study of hydrological process

(c) estimation of water resources

(d) study of problems such as flood and droughts

13. Signs having red border, white background and black symbols are:

(a) warning signs

(b) can be both warning and prohibitory signs

(c) prohibitory signs

(d) mandatory signs

give way Sign

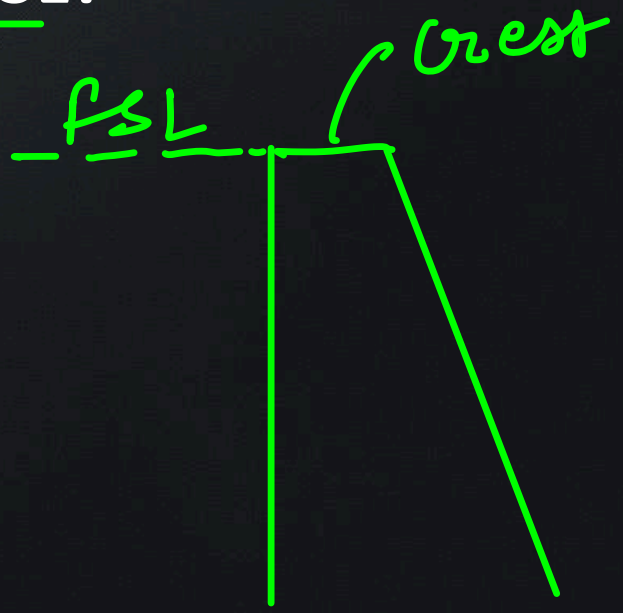
14. In which type of canal escapes is the crest of the weir wall kept at R.L. equal to the canal FSL?

(a) Sluice type

(b) Weir type

(c) Regulator type

(d) Orifice type



15. The unit of measurement for damp proof course (DPC) is

(a) square metre
(b) cubic metre
(c) metre
(d) kilogram

16. In approximate quantity method, for superstructure,

(a) price per running metre is determined

(b) price per cubic metre is determined

(c) price per cubic feet is determined

(d) price per square metre is determined

17. Which of the following characteristics of a brick make it a good quality brick?

(a) Warping
(b) Uneven texture
(c) Shrinkage
(d) Good durability

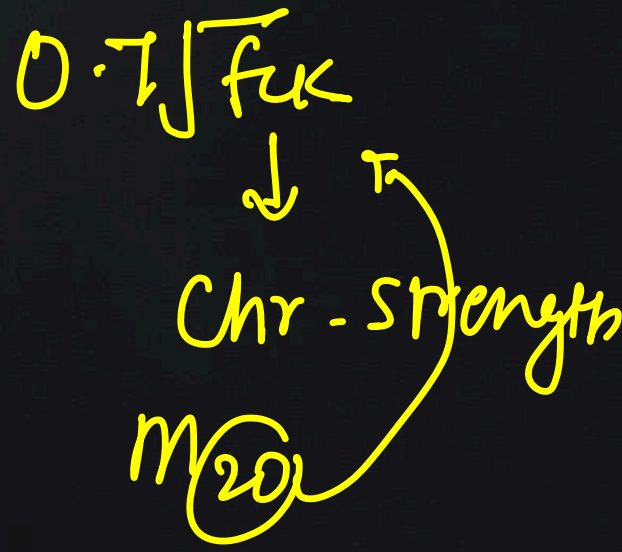
18. As per Indian Standard IS 456 : 2000, where f_{Ck} is the concrete compressive strength, the tensile strength of concrete is calculated as:

(a) $0.7\sqrt{f_{ck}}$

(b) $0.87\sqrt{f_{ck}}$

(c) $0.45\sqrt{f_{ck}}$

(d) $0.57\sqrt{f_{Ck}}$



19. The flow in which the depth changes in the flow direction slowly enough that the piezometric head can be assumed constant on every cross section is called as:

(a) gradually varied flow
(b) uniform flow
(c) turbulent flow
(d) hydraulic jump

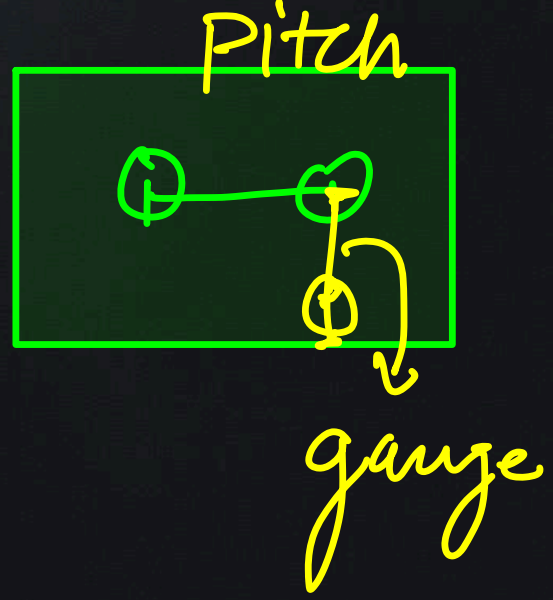
20. For prevention of creep in a railway track, which of the following methods can be adopted?

i. Using creep indicator
ii. Using anchors below the rails
iii. Use of steel sleepers
iv. Avoid fast movement of trains

(a) Both ii and iii
(b) Only i, ii and iii
(c) Both i and iv
(d) Both ii and iv

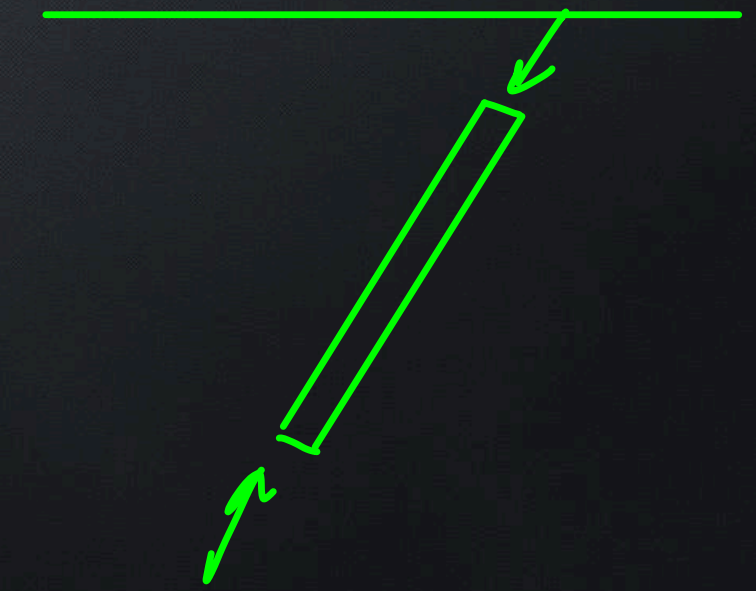
21. The centre to centre distance between individual fasteners in a line, in the direction of load is called

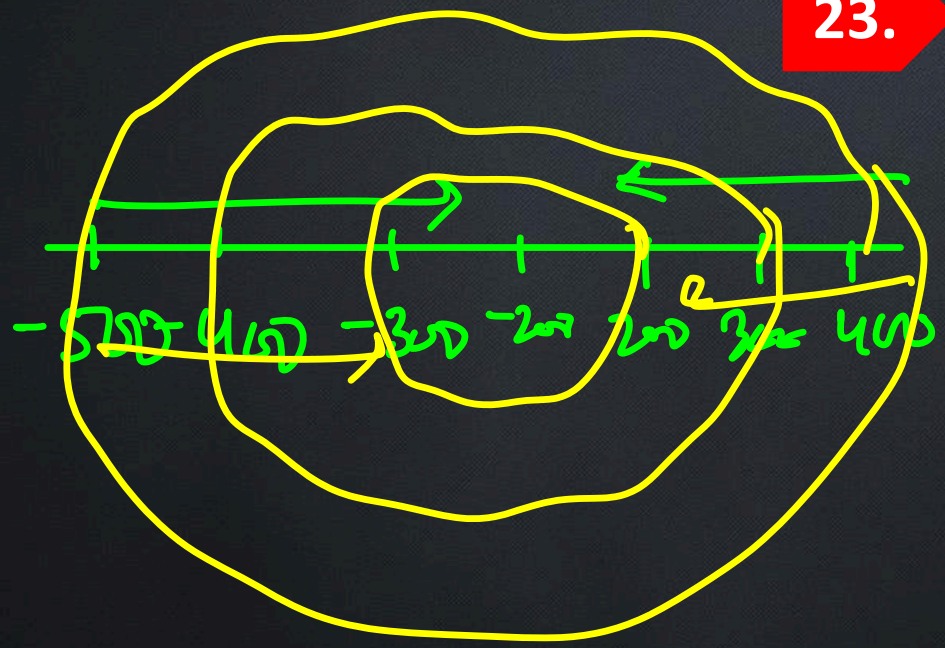
(a) Gauge distance
(b) Pitch
(c) End distance
(d) Edge distance



22. The structural member carrying compressive load in a truss is called:

(a) purlin
(b) tie
(c) strut
(d) cleat





23. While drawing a cross-section of a contour map, the following values were noted from point A to point B on a strip of paper to draw the graph - 500 m, 400 m, 300 m, 200 m, 200 m, 300 m, 400 m, 500 m. Which cross-section would be drawn by using the above values?

(a) Hill
(b) Steep slope
(c) Depression
(d) Cliff

N value

0-4 → Very loose

4-10 → Loose

10-30 → Medium

30-50 → Dense

>50 → Very Dense.

24. Identify the state of sand, if the number of blow in the SPT test is more than 50.

(a) Medium dense
(b) Dense
(c) Very dense
(d) Loose

24. The actual discharge of liquid through an orifice is determined by multiplying ideal discharge by a factor called coefficient of discharge. The coefficient of discharge is given by__.

$$Q_A = C_d \times Q_T$$

(a) $\frac{\text{Discharge}}{\text{Velocity}}$

(b) $\frac{\text{Theoretical discharge}}{\text{Actual discharge}}$

(c) $\frac{\text{Actual discharge}}{\text{Theoretical discharge}}$

(d) $\frac{\text{Actual discharge}}{\text{Velocity}}$

26. The major segregation of biomedical solid waste for safe and economic disposal is done on the basis of:

(a) organic and inorganic categories

(b) hazardous and non-hazardous categories

(c) colour of the waste

(d) biodegradable and non-biodegradable categories

27. Find the head loss due to friction in a pipe of diameter 200 mm and length 50 m, through which water is flowing at a velocity of 1.5 m/s using the Darcy-Weisbach equation. Take the Darcy-Weisbach friction factor = 0.018.

(a) 0.616 m (b) 0.566 m

(c) 0.516 m (d) 0.590 m

$$h_f = \frac{fLv^2}{2gD}$$

$$= \frac{0.018 \times 50 \times 1.5^2}{2 \times 9.81 \times 0.2}$$

28. As per IS 383 (1970), the grading limit percentage of fine aggregates in Zone II which are passing through a 4.75 mm IS sieve is_.

(a) 0-10

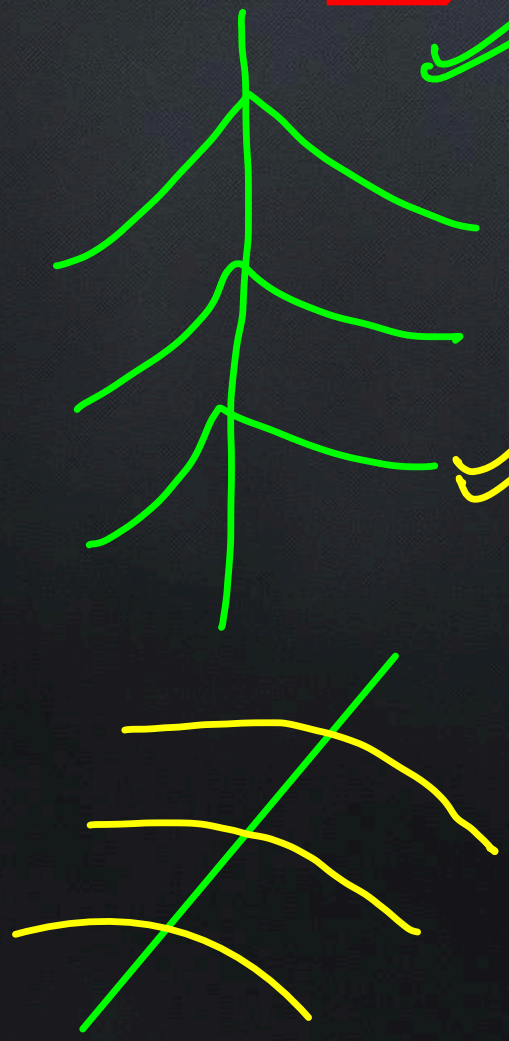
(b) 90-100

(c) 15-34

(d) 35-59

I II III IV

(95-100)



28. Identify the correct statements.

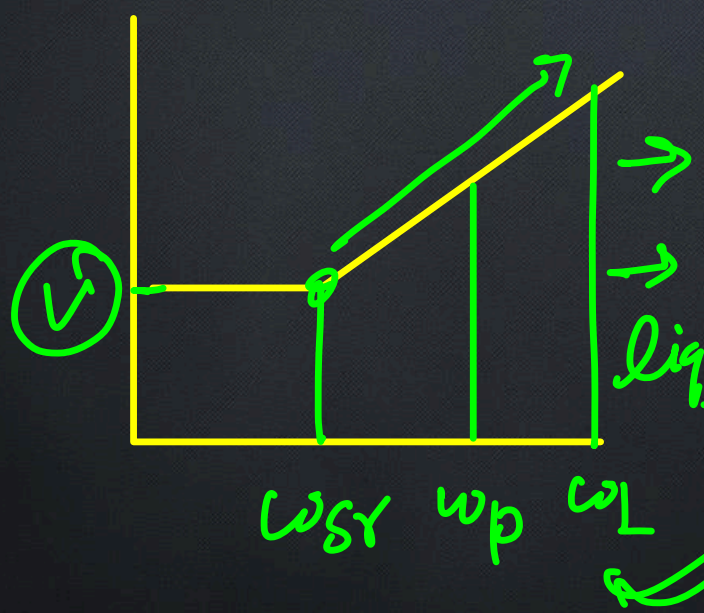
i. Contour lines form sharp V-shaped curves across valley line, with the convex side of the curve towards the higher ground.

ii. Contour lines form U-shaped curves across valley line, with the convex side of the curve towards the higher ground.

iii. Contour lines form U-shaped curves across ridge line, with the concave side of the curve towards the higher ground.

iv. Contour lines form sharp U-shaped curves across ridge line, with the convex side of the curve towards the higher ground.

(a) ii and iii (b) i and iv (c) ii and iv (d) i and iii



29. The minimum amount of water required to be added to the soil, expressed as percentage of weight of the soil, that will just make it flow like a liquid when jarred slightly is known as.__.

(a) liquid limit
(b) tie
(c) plastic limit
(d) shrinkage limit

26+/29

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