



SSC JE MAINS 2019

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Q :) Find the delta of a crop when its duty is 900 ha/cumec on the field.

The base period of the crop days.

A : 87 cm

B : 54 cm

C : 96 cm

D : 64 cm

Q :) Which of the following form of iron is obtained after smelting of calcined ore in a blast furnace?

A : Cast iron

B : Mild steel

C : Wrought iron

D : Pig iron

Q :) An excavation is to be made in a saturated soft clay ($\phi_u = 0$) with vertical sides. What will be maximum unsupported depth of the vertical cut?

Given that cohesion intercept = 30 kN/m^2 ,

Unit weight of clay = 15 kN/m^3

A : 6 m

B : 5 m

C : 8 m

D : 4 m

Q :) Which of the following increases the workability of concrete?

A : Increasing aggregate-cement ratio

B : Increasing the aggregate size without any change in the mix of concrete

C : Decreasing the water-cement ratio

D : Using angular aggregates instead of round aggregates

Q :) A backsight (BS) reading taken by a level instrument set at station A on a bench mark (RL = 210.852) is 2.325 m, and foresight (FS) at a station is measured as 1.835 m. What will be reduced level (RL) of the station A?

A : 210.362 m

B : 211.342 m

C : 210.842 m

D : 211.654 m

Q :) Calculate the approximate number of cement bags required for preparing wet concrete of 10 m^3 by volume in 1 : 3 : 6 mix proportion. Consider dry volume of concrete to be 1.54 m^3 per cubic metre of wet concrete.

A : 50 bags

B : 40 bags

C : 35 bags

D : 45 bags

Q :) The carpet area of a residential building is generally _____ of its plinth area.

A : 35% - 50%

B : 65% - 80%

C : 80% - 95%

D : 50% - 65%

Q :) Which of the following is true for the flow of any fluid, real or ideal, laminar or turbulent?

A : It satisfies the equation of continuity

B : It satisfies newton's law of viscosity

C : Velocity at boundary must be zero relative to boundary

D : Velocity normal to a solid boundary is zero

Q :) The power transmitted through a water carrying pipe is maximum when (ignoring the minor losses):

A : The head loss due to friction is equal to the total head applied

B : The head loss due to friction is one-third of the total head applied

C : The head loss due to friction is half of the total head applied

D : The head loss due to friction is two times the total head applied

Q :) Which of the following wood defect (s) develop(s) when a tree grows rapidly?

- 1. Coarser grain**
- 2. Widened annular rings**
- 3. Lesser strength**

A : 1, 2 and 3

B : 1 and 2 only

C : 1 only

D : 2 and 3 only

Q :) Determine the approximate quantity of earthwork for a road in embankment having a length of 120 m on a uniform level ground. The width of formation is 10 m and side slopes are 3 : 1. The heights of the bank at the ends are 1 m and 1.5 m, respectively. Use trapezoidal method considering average of areas at the two ends.

A : 1885 m³

B : 2085 m³

C : 1485 m³

D : 1785 m³

Q :) Select the correct option from the following regarding ultrasonic pulse velocity test.

- 1. It is used to measure the strength of wet concrete**
- 2. It is used to obtain estimate of concrete of finished concrete elements**
- 3. It is a non-destructive test**

A : 1, 2 and 3

B : 2 and 3

C : 1 and 2

D : 1 and 3

Q :) A silt control device consisting of a number of rectangular tunnels – provided parallel to the axis of head regulator and terminating near used-slucied weir – to allow the clearer water to flow through the head regulator is called:

A : Silt ejector

B : Silt excluder

C : Silt tunnel

D : Under sluice

Q :) Which of the following statements is correct regarding leachate?

A : It is generated in a landfill.

B : It is used for the treatment of wastewater.

C : It can be discharged in water bodies without any treatment.

D : It can be used for the irrigation in parks.

Q :) The divergent cone angle in a venturi meter is generally kept lesser than the convergent cone angle to:

A : Avoid cavitation

B : Avoid separation of flow

C : Save the material

D : Set more accurate measurements

Q :) Which of the following is NOT the correctly matched pair?

- 1. Open sluice – Non-modular outlet**
- 2. Gibb-s module – modular outlet**
- 3. Drowned pipe outlet – Modular outlet**
- 4. Venturi flume – semi module**

A : 1

B : 2

C : 4

D : 3

Q :) According to IS 800 : 2007, what is the maximum permissible effective slenderness ratio for a tension member in which the reversal of direct stress occurs due to the loads other than the wind or seismic forces.

A : 300

B : 250

C : 180

D : 350

Q :) As per IS 800 : 2007, what is the maximum pitch of bolts allowed in a lap joint between two steel plates (in compression) of equal thickness, t ?

A : $16t$ or 200 mm whichever is less

B : $12t$ or 200 mm whichever is less

C : 2.5 times diameter of the bolt

D : 2.5 times diameter of the hole

Q :) The minimum average compressive strength of common burnt clay brick of class 3.5, as per IS 1077 : 1992, is:

A : 3.5 kg/mm²

B : 3.5 N/mm²

C : 3.5 N/cm²

D : 3.5 kg/cm²

Q :) Which type of steel member in tension will NOT experience any shear lag effect when connected to a gusset plate?

A : A rectangular plate.

B : An angle with one leg connected to the gusset plate.

C : An I section with bottom flange connected to the gusset plate.

D : Two angles connected back to back on both sides of the gusset plate.

Q :) Which of the following conditions is NOT applicable to a true regime?

A : Channel can be scoured more easily than it can be deposited.

B : Silt change is constant.

C : Silt grade is constant.

D : Discharge is constant.

Q :) From the following what is the standard size of a modular building brick as per IS 1077-1992?

A : 19 cm × 9 cm × 9 cm

B : 23 cm × 11 cm × 7 cm

C : 20 cm × 10 cm × 10 cm

D : 10 cm × 4 cm × 1 cm

Q :) According to IS 8041-1990, the minimum specific surface area (by Blaine's air permeability method) required for rapid hardening Portland cement is:

A : 2250 cm²/g

B : 3250 cm²/g

C : 3500 cm²/g

D : 3200 cm²/g

Q :) Which type of rollers are most effective for the compaction of sands?

A : Pneumatic rollers

B : Smooth wheeled rollers

C : Sheep foot rollers

D : Vibratory rollers

Q :) A method usually adopted to contour rough mountainous region is:

A : Chain and compass

B : Tacheometry

C : Chain and level

D : Plane table

Q :) What is the criteria to decide the clear distance between two channel sections in a built up column?

A : The length and width of the built up section should be same.

B : The moment of inertia about minor axis should be 5 times the moment of inertia about major axis.

C : The moment of inertia about major and minor axis should be same.

D : The moment of inertia about major axis should be 5 times the moment of inertia about minor axis.

Q :) What nature of warping stresses are generated in a reinforced cement concrete pavement during a summer mid-day?

A : Tensile in both top and bottom fibre

B : Tensile in bottom fibre and compressive in top fibre

C : Compressive in bottom fibre and tensile in top fibre

D : Compressive in both top and bottom fibre

Q :) The minimum eccentricity to be considered for an axially loaded RCC column of size 400 mm × 400 mm with unsupported length of 5 m is:

A : 15.6 mm

B : 20.5 mm

C : 23.3 mm

D : 30.6 mm

Q :) When $0.1 \text{ m}^3/\text{s}$ water flows through a pipe of area 0.25 m^2 , which later reduces to 0.1 m^2 , what is the velocity of flow in the reduced pipe?

A : 2.0 m/s

B : 0.5 m/s

C : 1.0 m/s

D : $1/5 \text{ m/s}$

Q :) AN owner of a building sets aside Rs. 1,500 as sinking fund in the bank every year, from the rent he gets from the building. He wishes to rebuild another portion of the building after 25 years. If the rate of interest of the bank is 7%, what will be the amount available with him after 25 years?

A : Rs. 84,929

B : Rs. 75,324

C : Rs. 78,965

D : Rs. 85,624

Q :)What is the effect on the strength of concrete on addition of pozzolanas, keeping other factors same?

A : The early strength decreases but the ultimate strength remains almost same.

B : The ultimate strength decreases.

C : The early strength and ultimate strength both increase.

D : There is no change in the ultimate strength.

Q :) If the age of loading increases, the creep coefficient for concrete will:

A : Increase

B : Decrease

C : Increase if age of loading is greater than 28 days, otherwise it will decrease

D : Remain constant

Q :) In levelling, which of the following is an advantage of the rise and fall method over the height of instrument method?

A : No benchmark is required to calculate the reduced level if each point

B : Check on the calculations for intermediate sights are done

C : No backsight is required at change points

D : It is relatively rapid

Q :) In a rigid footing on a cohesive soil, the contact pressure distribution is:

A : Non-uniform, with maximum at the ends and minimum at the centre

B : Linear

C : Uniform

D : Non-uniform, with maximum at the centre and minimum at the ends.

Q :) Which of the following is Not a critical parameter to cracking and rutting in a flexible pavement?

A : Tensile strain near the surface close to the edge of the wheel

B : Vertical sub-base strain

C : Vertical subgrade strain

D : Tensile strain at the bottom of bituminous layer

Q :) The minimum tension reinforcement (Fe 50) in the beam of size 4500 mm × 600 mm (effective depth = 550) is:

A : 520 mm²

B : 420 mm²

C : 500 mm²

D : 580 mm²

Q :) The interface treatment provided to plug in the voids of porous surfaces and to bond loose particles in bituminous

A : Prime coat

B : Seal coat

C : Surface dressing

D : Tack coat

Q :) Which of the following is best suited for the compaction of concrete in rigid pavements?

A : Table vibrator

B : Screed board vibrator

C : Formwork vibrator

D : Needle vibrator

Q :) Limestone is a type of:

A : Metamorphic rock

B : Sedimentary rock

C : Plutonic rock

D : Igneous rock

Q :) Choose the correct option from among the following with respect to the given statements.

Statement (i) the effect of the curvature of the earth is to cause an object to appear lower.

Statement (ii) the effect of refraction is to cause an object to appear higher.

A : Both (i) and (ii) are correct

B : (i) is correct and (ii) is incorrect

C : Only (i) is correct

D : Only (ii) is correct

Q :) The book value of a property in a particular year is the:

A : Value at the end of utility period

B : Original cost minus the amount of depreciation up to the previous year

C : Market value

D : Original cost minus the amount of depreciation till date

Q :) What is the minimum cement content for a reinforced concrete structural member subjected to moderate exposure condition as per IS 456:2000? Assume 20 mm nominal maximum size aggregates as used.

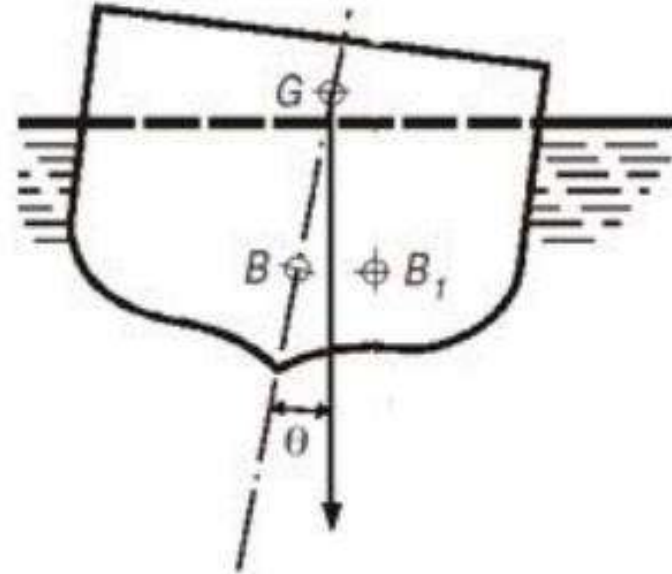
A : 380 kg/m³

B : 280 kg/m³

C : 350 kg/m³

D : 300 kg/m³

Q :) If B = centre of buoyancy, G = centre of gravity, B_1 = new centre of buoyancy when the floating body rotates by an angle θ , then the location of metacentre will be:



A : Same as B_1

B : In between point B and B_1

C : At the point of intersection of axis of floating body passing through B and G and vertical line passing through B_1

D : At the point of intersection of axis of floating body passing through B and G and horizontal line passing through B_1

Q :) A declination 3° east means:

A : True south is 3° east of magnetic south

B : Magnetic north is 3° west of true north

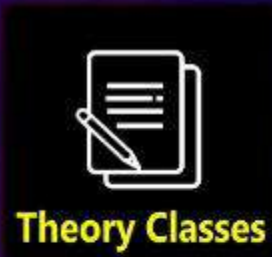
C : True north is 3° east of magnetic north

D : Magnetic north is 3° east of true north



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