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Q :) A fluid in which shear stress is more than the yield value and is proportional to rate of shear strain is known as

- (a) Newtonian fluid**
- (b) Non-Newtonian fluid**
- (c) Ideal plastic fluid**
- (d) Real fluid**

Q :) As per 456:2000, minimum period before striking formwork for vertical surface of the columns

A: 1 days

B: 7 days

C: 14 days

D: 28 days

Q :) The effect of air entrainment in concrete is to

- 1. Increase resistance to freezing and thawing**
- 2. Improve workability**
- 3. Decrease strength**

Which of these statements is/are correct?

A: 1 alone

B: 1 and 3

C: 2 and 3

D: 1, 2 and 3

Q :) Concrete exposed to severe freezing-thawing condition shall be classified as exposed to:

A: Moderate

B: Extreme

C: Severe

D: Very severe

Q :) In reinforced concrete construction, the structures in which marked changes in plane dimension take place abruptly shall be provided with:

A: Contraction joints

B: Vertical cut

C: Construction joints

D: Expansion joints

Q :) If the permissible compressive and tensile stresses in a singly reinforced beam are 20 Mpa and 250 MPA respectively, and if the neutral axis depth is limited to 0.3 times the effective depth of the section, then the percentage area of the steel required for an economic section is

A: 0.56%

B: 0.76%

C: 0.86%

D: 0.96%

Q :) As per IS 456-2000, When HYSD bars are used, the minimum reinforcement in either direction of slabs is:

A: 0.35% of the total cross sectional area

B: 0.12% of the total cross sectional area

C: 0.80% of the total cross sectional area

D: 0.25% of the total cross sectional area

Q :) Deformation in concrete due to sustained loading is:

A: Shrinkage

B: Creep

C: Segregation

D: Bleeding

Q :) The additional cover thickness to be provided in reinforced concrete member that are total immersed in sea water is:

A: 25 mm

B: 30 mm

C: 35 mm

D: 40 mm

Q :) Which of these statements are correct for bleeding of concrete leads?

A: Drying up of concrete surface

B: Formation of pores inside

C: Segregation of aggregate

D: Decrease in strength

Select the correct answer given below code.

A: Only A

B: Only A and B

C: Only A and C

D: Only B and D

Q :) Which of the following is not a component of an expansion joint used in jointed plain cement concrete?

A: Dowel bars

B: Joint filler

C: Joint sealer

D: Tie bar

Q :) Match List-II and select the correct answer using the codes given below the lists:

List-I (Soil type)	List-II (characteristic)
A. Oolitic sand	1. Under-consolidated
B. Biogenetic sand	2. Rounded
C. Calcareous clay	3. Cemented
D. Soft clay	4. Crushing

Codes:

A: 2, 4, 3, 1

B: 2, 1, 3, 4

C: 2, 1, 4, 3

D: 2, 3, 4, 1

Q :) Sedimentary deposits consisting of alternate thin layers of silt and clay are called as-

A: Dispersive clays

B: Expansive clays

C: Calcareous clays

D: Varved clays

Q :) The texture of sand is-

A: Porphyritic

B: Conglomerate

C: Vesicular

D: Clastic

Q :) Drilling mud is usually a mixture of

A: Bentonite clay and water

B: China clay and water

C: Fine silt, fine sand and water

D: Fine silt and water

Q :) Consider the following statements:

- 1. Illite is the mineral largely responsible for the swelling and shrinkage behavior of clayey soils.**
- 2. A differential free swell value of 55% indicates a soil with low degree of expansiveness.**
- 3. Higher the plasticity index of a soil greater its swelling potential.**
- 4. A low shrinkage limit of a soil indicates possibility of swelling at low water content.**

Which of the above statements are correct?

- A: 1 and 2 only**
- B: 2 and 3 only**
- C: 1 and 4 only**
- D: 3 and 4 only**

Q :) A soil has a bulk density of 17.6 kN/m^3 and water content 10%. If void ratio remains constant then the bulk density for water content of 20% will be

A: 16.13 kN/m^3

B: 19.20 kN/m^3

C: 19.36 kN/m^3

D: 17.6 kN/m^3

Q :) For a sandy soil with soil grains in shape and uniform in size, what is the theoretical void ratio?

A: 0.61

B: 0.71

C: 0.81

D: 0.91

Q :) In soil, the value of which of the following can be more than 100%?

- (i) Air content**
- (ii) Water content**
- (iii) Void ratio**
- (iv) Porosity**

A: Only (i)

B: (i) and (ii)

C: (ii) and (iii)

D: (ii), (iii) and (iv)

Q :) The relative density of a soil is equal:

A: $\frac{\rho_{max} - \rho_{min}}{\rho} \times 100\%$

B: $\frac{\rho_{max} - \rho}{\rho_{max} - \rho_{min}} \times 100\%$

C: $\frac{\rho_{max}}{\rho} \times \left(\frac{\rho - \rho_{min}}{\rho_{max} - \rho_{min}} \right) \times 100\%$

D: $\frac{\rho_{max} - \rho}{\rho_{max} - \rho_{min}} \times 100\%$

Q :) The unconfined compressive strength of a clay in un-disturbed and disturbed state was found to be 180 kN/sqm and 10 kN/sqm respectively. Based on sensitivity, the soil may be classified as:

A: In-sensitivity

B: Sensitivity

C: Quick clays

D: Extra sensitivity clays

Q :) Poisson ratio of steel in elastic range is:

A: 0.5

B: 0.4

C: 0.3

D: 0.2

Q :) A member which is subjected to reversible tensile or compressive stresses may fail at stresses lower than the ultimate stresses of the material. This property of metal is called

A: Plasticity of the metal

B: Workability of the metal

C: Fatigue of the metal

D: Creep of the metal

Q :) If σ and E for a body of volume $2 \times 10^5 \text{ mm}^3$ are 10 N/mm^2 and $1 \times 10^5 \text{ N/mm}^2$, resilience of the body is:

A: 10 N mm

B: 20 N mm

C: 100 N mm

D: 200 N mm

Q :) A bar of 80 mm diameter and 800 mm length is subjected to an axial load of 200 kN. It elongates by 0.30 mm and the diameter decreases by 0.01 mm. What is the poisson's ratio of the material of the bar?

A: 0.25

B: 0.33

C: 0.5

D: 0.75

Q :) The ratio of modulus of rigidity and modulus of elasticity (G/E) for any elastic isotropic material is:

A: Less than $\frac{1}{2}$

B: Less than $\frac{1}{3}$

C: More than $\frac{1}{3}$

D: Both (a) and (c)

Q :) A steel plate is 30 cm wide and 10 mm thick. A rivet of nominal diameter of 18 mm is driven. The net sectional area of plate is

A: 18.00 cm²

B: 28.20 cm²

C: 28.05 cm²

D: 32.42 cm²

Q :) The minimum pitch of the rivet shall not be less than

A: d

B: 1.5 d

C: 2.0 d

D: 2.5 d

Q :) Rivets and bolts subjected to both shear stress (T_{vf} , cal) and axial tensile stress (S_{tf} , cal) shall be so proportioned that the stresses do not exceed the respective allowable stresses T_{vf} and S_{tf} and the value of $(T_{vf}, \text{cal}/T_{vf}) + (S_{tf}, \text{cal}/S_{tf})$ does not exceed:

A: 0.90

B: 1.00

C: 1.80

D: 1.20

E: 1.40

Q :) Which of the following failures of bolted joint can be avoided by providing sufficient edge distance?

A: Bearing failure of bolt

B: Shear failure of bolt

C: Shear failure of plate

D: Tensile failure of plate

Q :) For field rivets, the permissible stresses are reduced by what percentage?

A: 10%

B: 15%

C: 25%

D: $33\frac{1}{3}\%$

Q :) Metamorphic rocks are the rocks which are formed

A: When molten lava (magma) cools and turns to solid rock

B: When heat and pressure are applied on the rocks

C: When small pieces of rocks are pressed together over a period of time

D: Due to the gradual erosion of the earth surface

Q :) Impact value of stone for road work specified is-

A: Wearing coat – 30%

B: Bituminous macadam – 35%

C: Water-bound macadam – 40%

D: All of the above

Q :) Mafic rocks are a part of

A: Igneous rocks

B: Sedimentary rocks

C: Metamorphic rocks

D: Fossil rocks

Q :) Consider the following statements for selecting building stones:

- 1. Seasoning of stones is essential and is done by soaking in water**
- 2. Specific gravity of stone is to be more than 2.7**
- 3. Porosity of stone affects its durability**
- 4. Climatic conditions decide the type of stone to be used in construction**

Which of the above statements are correct?

A: 1, 2 and 3 only

B: 1, 2 and 4 only

C: 1, 3 and 4 only

D: 2, 3 and 4 only

Q :) As per moh's scale the hardness of quartz and topaz respectively are

A: 7 & 8

B: 8 & 7

C: 9 & 10

D: 10 & 9

Q :) In which of the following units is the kinematic viscosity of fluid expressed?

A: m^2/s

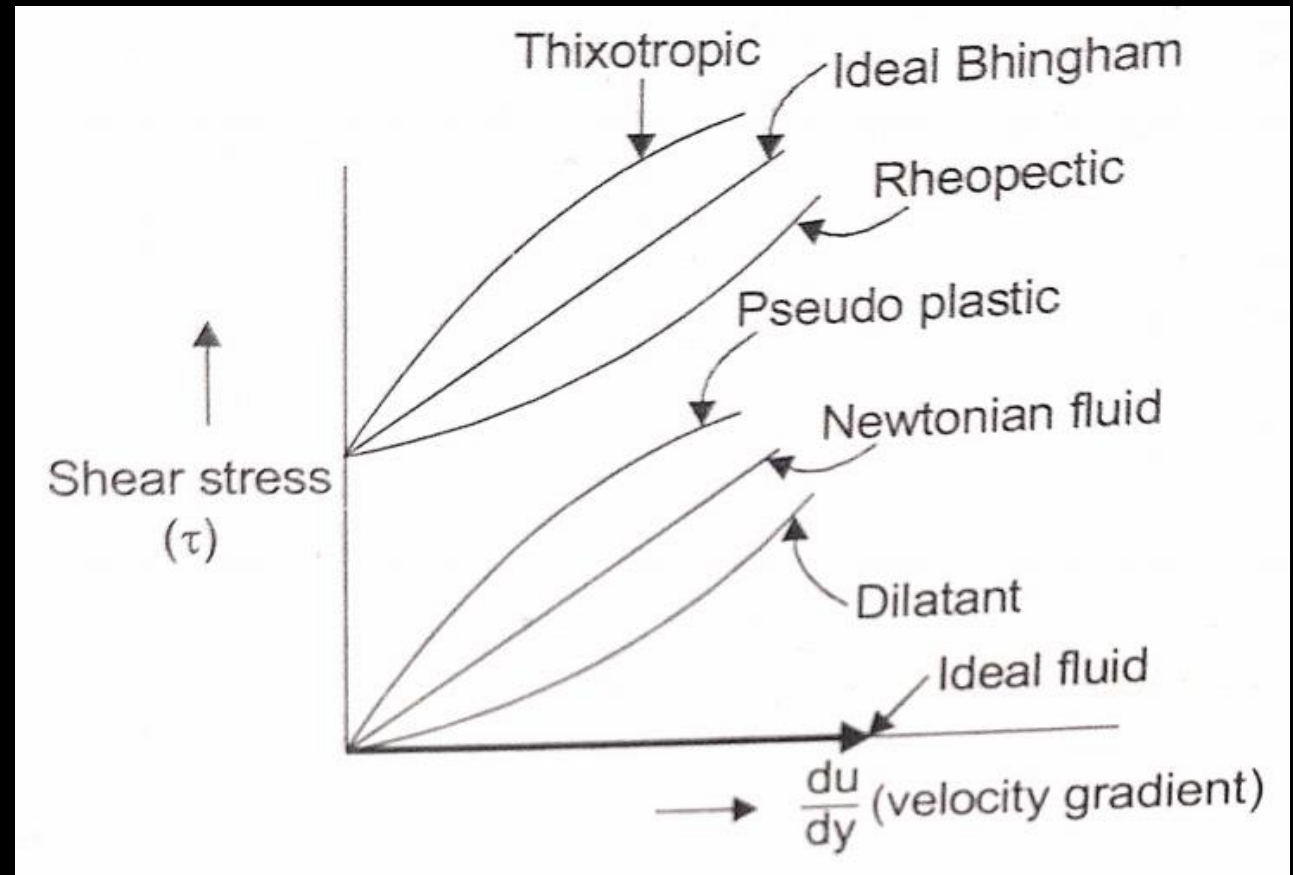
B: $\text{N}\cdot\text{s}/\text{m}$

C: $\text{N}/\text{m}^2\cdot\text{s}$

D: $\text{N}\cdot\text{s}/\text{m}^2$

Q :) The category of fluids in which shear stress is linearly related to the velocity gradient is known as:

- (a) ideal**
- (b) dilatant**
- (c) Newtonian**
- (d) pseudo plastic**



Q :) The concept which defines 'the pressure at a certain horizontal level in a static fluid is proportional to the vertical distance to the surface of the fluid' is called

(a) D'Alembert's paradox

(b) Magnus effect

(c) Hydrostatic paradox

(d) Archimedes effect

Q :) Pascal's law says that the:

- (a) Intensity of pressure at a point in a fluid at rest is equal to zero**
- (b) Intensity of pressure at a point in a fluid at rest is equal in magnitude in all directions**
- (c) Intensity of pressure at a point in a fluid at rest cannot be determined**
- (d) Intensity of pressure at a point in a fluid at motion is equal in magnitude in all directions.**

Q :) Which technique of water distribution in farms is also called trickle irrigation?

(a) Border flooding

(b) Drip irrigation

(c) Sprinkler irrigation

(d) Free flooding

Q :) Water for irrigation supplied as per crop requirement throughout the crop period year is called:

(a) drip irrigation

(b) inundation irrigation

(c) lift irrigation

(d) perennial irrigation

Q :) Calculate the water distribution efficiency if the depths of penetration along the length of a border strip at an interval of 20m are 1.5m,1.8m and 2.1m respectively.

(a) 0.6667

(b) 0.8333

(c) 0.8889

(d) 0.9767

Q :) What is the variation in duty of water from the head of a main canal (M) to that in the field(F)?

- (a) Duty of water at M is always greater than duty of water at F**
- (b) Duty of water at M is always equal to duty of water F**
- (c) Duty of water at M can be greater or less than duty of water at F**
- (d) Duty of water M is always less than duty of water at F**

Q :) In which of the following types of canal alignment are the cross-drainage works minimized ?

(a) Watershed canal

(b) Valley canal

(c) Contour canal

(d) Straight canal

Q :) What is the length of Surveyor's chain?

(a) 33 feet

(b) 133 feet

(c) 100 feet

(d) 66 feet

Q :) The length of a road measured with a 30 metre chain was found to be 300 metres. What is the true length of the road If the chain was 10 cm too long

- (a) 301 metres**
- (b) 298 metres**
- (c) 299 metres**
- (d) 302 metres**

Q :) The correction due to wrong alignment of the tape:

- (a) Depends upon whether the alignment is wrong to the right or left of the line**
- (b) is always positive**
- (c) can be positive or negative**
- (d) is always negative**

Q :) A prism square is used to:

- (a) set out a horizontal circular curve**
- (b) set out a line at 45° to a survey line, without any linear measurement**
- (c) set a line at right angles to a survey line**
- (d) get an enlarged view of station marks**

Q :) A smart station is:

- (a) A total station with an integrated GPS module**
- (b) A total station with software to calculate and display many quantities**
- (c) A total station attached to a computer**
- (d) A total station with display units on both sides**



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