Assignment-8

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

Due on 2019-03-27, 23:59 IST.

1) Identify the FALSE statement with regard to the stress strain curve of concrete

- Prior to the external loading, micro-cracks are not present in hydrated cement paste of the concrete  
- Concrete can be reasonably assumed to show linear elastic behavior until stress level of 30% of ultimate stress  
- At the stress level of 50% of ultimate stress, micro cracks start propagating but not in mortar phase  
- The stress-strain curve of concrete doesn't show a definite yield point

No, the answer is incorrect.
Score: 0

Accepted Answers:
Prior to the external loading, micro-cracks are not present in hydrated cement paste of the concrete

2) Identify the TRUE statement with regard to the modulus of elasticity of concrete

- As per IS 456:2000, the modulus of elasticity of concrete can be estimated using the actual strength of cubes determined during construction  
- Modulus of elasticity of concrete is influenced by the moisture condition of specimen  
- Dynamic modulus of elasticity is obtained from the slope of the tangent drawn at the non-linear part of the stress-strain curve  
- Modulus of elasticity of concrete is independent of the modulus of elasticity of aggregate

No, the answer is incorrect.
Score: 0

Accepted Answers:
Modulus of elasticity of concrete is influenced by the moisture condition of specimen
The observed strength is related to the rate of loading

No, the answer is incorrect.
Score: 0
Accepted Answers:
The strength measured using a cylindrical specimen (100mm x 200mm) is higher than that measured using a cube (150mm side).

4) Identify the TRUE statement with regard to the strength of the concrete

- Strength of concrete (S) can be modelled as \( S = S_0 \exp(-kp) \), where \( S_0 \) and \( p \) are the strength of coarse aggregate and the porosity of hardened cement paste, respectively, with \( k \) being an empirical constant
- Under moist curing condition, complete hydration is achieved when concrete achieves more or less its 100% strength
- If the rate of application of load is low, the strength of specimen will be low due to the effect of creep
- Strength gained by concrete is directly proportional to the w/c ratio in concrete

No, the answer is incorrect.
Score: 0
Accepted Answers:
If the rate of application of load is low, the strength of specimen will be low due to the effect of creep

5) Identify the FALSE statement with regard to the curing of concrete

- Curing is performed to prevent the loss of moisture from the concrete
- Steam curing is used in case where higher early strength is required
- Gain in strength of concrete will happen only when concrete remains moist with a minimum relative humidity of 80% and favorable ambient temperature
- Membrane curing is achieved by covering the surface of concrete with wet cloth or by wet sand

No, the answer is incorrect.
Score: 0
Accepted Answers:
Membrane curing is achieved by covering the surface of concrete with wet cloth or by wet sand

6) Identify the FALSE statement with regard to the maturity of concrete

- The datum temperature for computing maturity is considered as -5°C
- Maturity is the function of time and temperature
- As maturity of concrete increases, its strength gain also increases
- Batches of same concrete mixtures of same maturity will attain the same strength regardless of the time-temperature combinations

No, the answer is incorrect.
Score: 0
Accepted Answers:
The datum temperature for computing maturity is considered as -5°C

7) Identify the TRUE statement with regard to the durability of concrete

- Permeability of concrete is independent of the durability of concrete
- Ingress of harmful material occurs through the pores and not from the ITZ of the concrete
- Concrete in tidal zone generally cracks due to freeze-thaw or chemical decomposition of hydrated cement
Concrete in submerged zone generally cracks due to the corrosion in steel

No, the answer is incorrect.
Score: 0
Accepted Answers:
Concrete in tidal zone generally cracks due to freeze-thaw or chemical decomposition of hydrated cement

8) Identify the TRUE statement with regard to the environmental exposure condition of concrete

- IS 456:2000 classifies four environmental exposure conditions based on the exposure of concrete to environment
- Japanese code classify three environmental exposure conditions based on the corrosive nature of environment
- Only EN-1992 includes sulfates in the classification of environmental exposure condition
- Only ACI 318M includes chemical attack in the classification of environmental exposure condition

No, the answer is incorrect.
Score: 0
Accepted Answers:
Japanese code classify three environmental exposure conditions based on the corrosive nature of environment

9) Identify the TRUE statement with regard to the IS 456:2000 durability specification

- Plain and reinforced concrete exposed to extreme environmental condition require a minimum grade of M25 concrete to be used
- In order to mitigate AAR, the maximum alkali content is specified as 0.8 kg/m³ of concrete
- In RCC, the maximum total acid soluble chloride content in cement is specified as 0.60%
- In order to mitigate sulfate attack, the maximum total water soluble sulfate content is specified as 4% by mass of cement

No, the answer is incorrect.
Score: 0
Accepted Answers:
In order to mitigate sulfate attack, the maximum total water soluble sulfate content is specified as 4% by mass of cement

10) Identify the FALSE statement with regard to the durability of concrete

- Map cracking is the pattern of cracking observed in alkali aggregate reaction distress
- With cyclic exposure to freezing and thawing, ‘pop-outs’ of aggregates are often seen in damaged concrete
- In sulfate attack, cracks are often seen on hydrated cement paste as well as on the aggregate of concrete
- Chloride attack result in reinforcement corrosion which causes the spalling of concrete along the reinforcement

No, the answer is incorrect.
Score: 0
Accepted Answers:
In sulfate attack, cracks are often seen on hydrated cement paste as well as on the aggregate of concrete.