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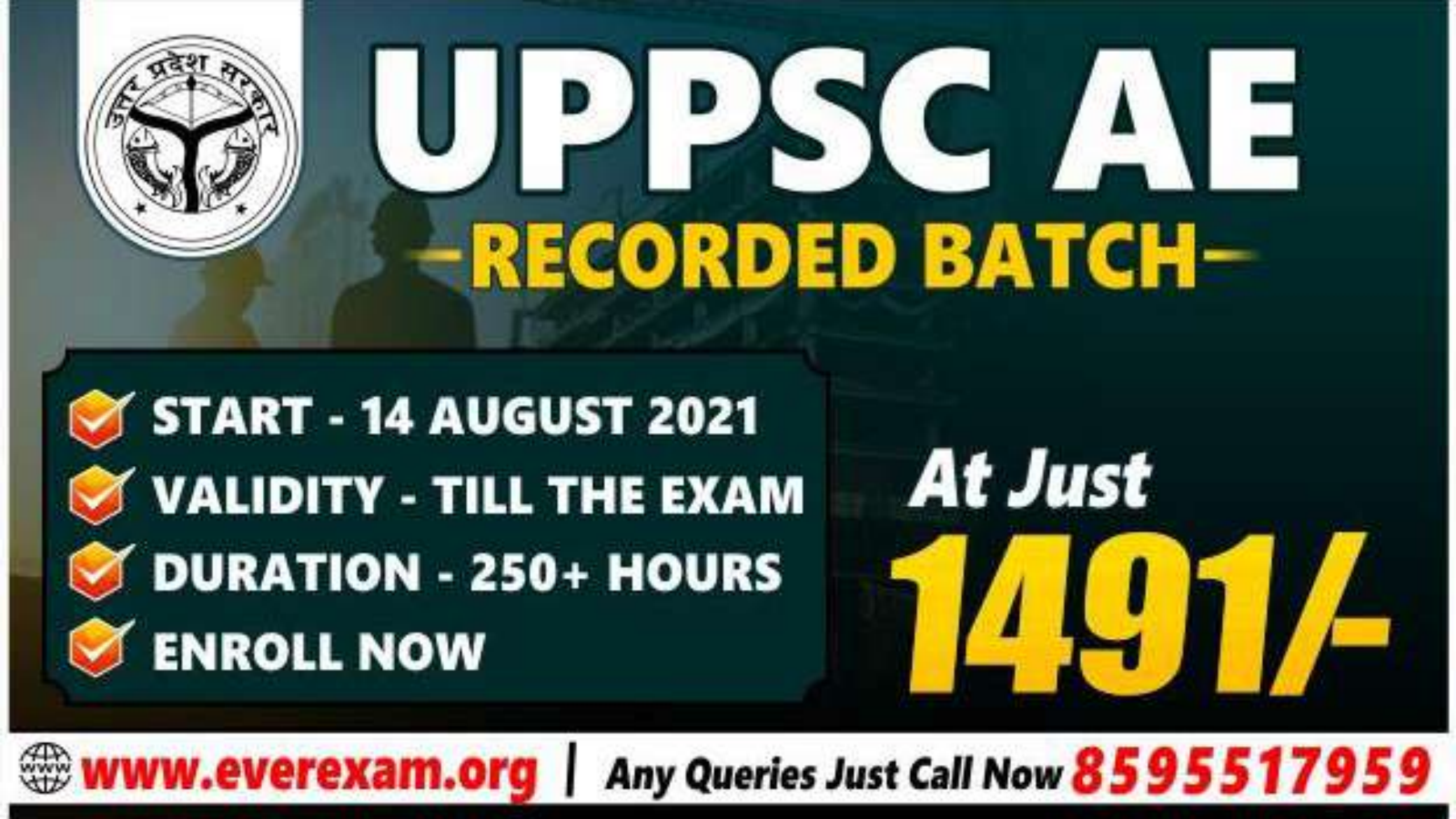
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131. A beam curved in plan is designed for

a. Bending moment and shear
b. Bending moment and torsion
c. Shear and torsion
d. Bending moment, shear and torsion

132. In a spherical dome subjected to concentrated load at crown or uniformly distributed load, the meridional force is always

a. Zero
b. Tensile
c. Compressive
d. Tensile or compressive

133. Sinking of an intermediate support of a continuous beam

i. Reduces the negative moment at support
ii. Increases the negative moment at support
iii. Reduces the positive moment at centre of span
iv. Increases the positive moment at centre of span

The correct answer is
a. (i) and (iii)
b. (i) and (iv)
c. (ii) and (iii)
d. (ii) and (iv)

134. The maximum value of hoop compression in a dome is given by

a. wR / 4d
b. wR / 2d
c. wR / d
d. 2wR / d

Where, w = load per unit area of surface of dome
R = radius of curvature
d = thickness of dome

135. In a spherical dome the hoop stress due to a concentrated load at crown is

a. Compressive everywhere
b. Tensile everywhere
c. Party compressive and party tensile
d. zero

136. In a ring beam subjected to uniformly distributed load

a. Shear force at mid span is zero
b. Shear force at mid span is zero maximum
c. Torsion at mid span is zero
d. Torsion at mid span is zero maximum

The correct answer is
a. (i) and (iii)
b. (i) and (iv)
c. (ii) and (iii)
d. (ii) and (iv)

137. In prestressed concrete

a. Force of tension and compression change but lever arm remains unchanged
b. Force of tension and compressions remain unchanged but lever arm changes with the moment
c. Both forces of tension and compression as well as lever arm change
d. Both forces of tension and compression as well as lever arm remain unchanged

138. The purpose of reinforcement in prestressed concrete is

a. To provide adequate bond stress
b. To resist tensile stresses
c. To impart initial compressive stress in concrete
d. All of the above

139. Normally prestressing wires are arranged in the

a. Upper part of the beam
b. Lower part of the beam
c. Centre
d. anywhere

140. Most common method of prestressing used for factory production is

a. Long line method
b. Freyssinet system
c. Magnel - blaton system
d. Lee – macall system

141. Select the incorrect statement

a. The loss of prestress is more in pretensioning system than in postensioning system
b. Postensioning system has greater certainty about its durability
c. For heavy loads large spans in buildings or bridges, post-tensioning system is cheaper than prestensioning system
d. None of the above

142. Which of the following losses of prestress occurs only in pretensioning and not in post-tensioning

a. Elastic shortening of concrete
b. Shrinkage of concrete
c. Creep of concrete
d. Loss due to friction

143. Prestress loss due to friction occurs

a. Only in post-tensioned beams
b. Only in pretensioned beams
c. In both post-tensioned and pretensioned beams
d. None of the above

144. The coefficient of shrinkage for high grade concrete for pretensioned work is

a. 3×10^4
b. 3×10^4
c. $\frac{3\times10^{-2}}{log_10(T+2)}$
d. $\frac{3\times10^{-4}}{log_10(T+2)}$

Where T is the age of concrete in days at prestressing

145. Which of the following has high tensile strength

a. Plan hot rolled wires
b. Cold drawn wires
c. Heat treated rolled wires
d. All have same tensile strength

146. High carbon content in the steel causes

a. Decrease in tensile strength but increase in ductility
b. Decrease in tensile strength but decrease in ductility
c. Decrease in both tensile strength and ductility
d. Increase in both tensile strength and ductility

147. Stress strain curve of high tensile steel

a. Has a definite yield point
b. Does not show definite yield point but yield point is defined by 0.1 % proof stress
c. Does not show definite yield point but yield point is defined by 0.2 % proof stress
d. Does not show definite yield point but yield point is defined by 2 % proof stress

148. Select the correct statement

a. Elastic modulus of high tensile steel is nearly the same as that of mid steel.
b. Elastic modulus of high tensile steel is more then that of mid steel.
c. Carbon percentage in high carbon steel is less than that in mid steel.
d. High tensile steel is cheaper than mild steel.

149. Cube strength of controlled concrete to be used for pretensioned and post-tensioned work respectively should not be less than

a. 35 Mpa and 42 Mpa
b. 42 Mpa and 35 Mpa
c. 42 Mpa and 53 Mpa
d. 53 Mpa and 42 Mpa

150. Ultimate strength of cold drawn high steel wires

a. Increases with increase in diameter of bar
b. Decreases with increase in diameter of bar
c. Does not depends on diameter of bar
d. None of the above

151. Prestressing losses in post-tensioned and pretensioned beams are respectively

a. 15 % and 20 %
b. 20 % and 15 %
c. 15 % and 15 %
d. 20 % and 20 %

152. In concrete, use of angular crushed aggregate in place of natural rounded gravel affects

a. Direct tensile strength
b. Split tensile strength
c. Flexural tensile strength
d. Compressive strength

153. Ratio of compressive strength to tensile strength of concrete

a. Increases with age
b. Decreases with age
c. Remains constant
d. None of the above

154. According to Indian standards, the grading of fine aggregate is divided into

a. Two zone
b. Three zone
c. Four zone
d. Five zone

Select your answer according to the coding system given below:

155. **Assertion A:** light weight concrete exhibits higher shrinkage than normal weight concrete
Reason R: Modulus of elasticity of light weight concrete is lower. Than that of normal weight concrete

a. Both A and R are true and R is the correct explanation of A
b. Both A and R are true but R is not a correct explanation of A
c. A is true but R is false
d. A is false but R is true

156. Endurance limit of mild steel is approximately equal to

a. 0.3
b. 0.5
c. 0.7
d. 0.8

Endurance limit is defined as the maximum value of the ratio of maximum stress to short time static strength, below which no failure occurs

157. With the increase in rate of loading during testing, compressive strength of concrete

a. Increases
b. Decreases
c. Remains same
d. None of the above

158. For a given aggregate content, increasing the water-cement ratio in concrete

a. Increases shrinkage
b. Decreases shrinkage
c. Does not change shrinkage
d. None of the above

Select your answer according to the coding system given below:

159. **Assertion A:** The net loss of strength due to air entrainment of a richer mix is higher than that of a leaner mix

Reason R: Effect of air entrainment on improving workability is smaller in richer mix than in a leaner mix.

Select your answer based on the coding system given below

a. Both A and R are true and R is the correct explanation of A
b. Both A and R are true but R is not a correct explanation of A
c. A is true but R is false
d. A is false but R is true

160. The bond strength between steel reinforcement and concrete is affected by

i. Steel properties
ii. Concrete properties
iii. Shrinkage of concrete

The correct answer is
a. (i) and (iii)
b. (ii) and (iii)
c. (i) and (iii)
d. (i), (ii) and (iii)

161. The bond strength between steel and concrete is due to

a. Friction
b. Adhesion
c. Both friction and adhesion
d. None of the above

162. Impact strength of concrete increases by using

i. Smaller maximum size of aggregate
ii. Aggregate with high modulus of elasticity
iii. Aggregate with low poission's ratio

The correct answer is
a. (i) and (ii)
b. (ii) and (iii)
c. (i) and (iii)
d. (i) (ii) and (iii)

163. Impact strength of concrete is greater for

i. Water stored concrete than for dry concrete
ii. Angular crushed aggregates
iii. Rounded aggregates

The correct answer is
a. (i) and (ii)
b. (i) and (iii)
c. Only (i)
d. Only (ii)

164. If the contributions of tricalium silicate, dicalcium silicate tricalium altimate and tetra calcium alumino ferrite to the 28 days strength of hydrated ordinary portland cement are respectively W, X, Y and Z then

a. W > X > Y > Z
b. X > W > Y > Z
c. W > X > Z > Y
d. W > Y > X > Z

165. The initial and final setting times for ordinary portland cement are appoximately related as

a. $T = 530 + t$
b. $T = 270 + t$
c. $T = 90 + 1.2\,t$
d. $T = 600 + 1.2\,t$

Where T and t are respectively final and initial setting times in minutes

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