Q 1   The split tensile strength of M15 grade concrete when expressed as a percentage of its compressive strength is

(a) 10 to 15%

(b) 15 to 20%

(c) 20 to 25%

(d) 25 to 30%

Q 2   The approximate ratio between the strength of cement concrete at 7 days and 28 days is

(a) 3/4

(b) 2/3

(c) ½

(d) 1/3

Q 3   Modulus of elasticity of M25 concrete as determined by formula of IS 456 is

(a) 1,42,500 MPa

(b) 90,125 MPa

(c) 28, 500 MPa

(d) 16,667 MPa

Q 4   The modulus of elasticity of high tensile steel is

(a)   smaller   than   that   of   mild   steel
(b) equal to that of mild steel

(c)   larger   than   that   of   mild   steel
(d) equal to that of aluminium

Q 5   Assertion (A) : Workability of concrete is improved by air entraining agent.

Reason (R) : Air entraining agent increases concrete strength

Q 6   Tensile strength of concrete is measured by

(a) direct tension test in the universal testing machine

(b) applying compressive load along the diameter of the cylinder

(c) applying third point loading on a prism

(d) applying tensile load along the diameter of the cylinder.

Q 7 The approximate ratio of strength of 15 cm x 30 cm concrete cylinder to that of 15 cm cube of the same concrete is

(a) 1.25

(b) 1.00

(c) 0.85

(d) 0.50

Q 8   If in a concrete mix the fineness modulus of coarse aggregate is 7.6, the fineness Modulus of fine aggregate IS 2.8 and the economical value of the fineness modulus of combined aggregate is 6.4, then the proportion of the fine aggregate is

a.   25 %

b.   33 1/3 %

c.   50 %

d.   66 1/33%

Q 9   The ratio of Young's modulus of high tensile steel to that of mild steel is about

(a) 0.5

(b) 1.0

(c) 1.5

(d) 2.0

Q 10   Polyvinyl chloride (PVC) is a

(A)   Thermosetting   Material
(B)   Thermoplastic   Material
(C)   Elasto-plastic   Material
(D)   Rigid Plastic Material

Q 11   General shrinkage in cement concrete is caused by

(a) carbonation

(b) stresses due to external load

(c) drying with starting with a stiff consistency

(d) drying with starting with a wetter consistency

Q 12   While concreting in cold weather where frosting is also likely, one uses

(a) High quality portland cement with minimum volumes of added water

(b) High alumina cement with calcium chloride additives

(c) Portland cement together with calcium choloride additives

(d) A mixture of high alumina cement and portland cement

Q 13   Weigh-batching proceeds on

(a) The assumption of the declared weight in each bag of cement

(b) Weighing the contents of each bag

(c) Accurately estimating the weight of each material to be used in each batch

(d) The assumption of correct dry weight of each size range of each material and the weight of water

Q 14   The modulus of elasticity (E) of concrete is given by

a. $E = 1000 f_{ck}$

b. $E = \sqrt{f_{ck}}$

c. $E = 5700 \sqrt{f_{ck}}$

d. $E = 10,000 \sqrt{f_{ck}}$

Q 15   The optimum number of revolutions over which concrete is required to be mixed in a mixer machine is.

(a) 10

(b) 20

(c) 50

(d) 100

Q 16   The ultimate strength of cold drawn steel wires

(a) Increases with the increase in the diameter of the bar

(b) Increases with reduction in the diameter of the bar

(c) Does not depend upon the change in the diameter of the bar

(d) Depends only on the diameter of the bar.

Q 17   Consider the following statements. The addition of surfactants in the concrete mix results in
1. Increase in the water-cement ratio.
2. Decrease in the water-cement ratio.
3. Increase in the strength of concrete.
4. Decrease in the curing duration.
5. Increase in the density of concrete
(a) 1, 3 and 4 are correct
(b) 2, 3 and 5 are correct
(c) 3, 4 and 5 are correct
(d) 1, 4 and 5 are correct

Q 18   Consider the following statements:
High water-cement ratio in concrete results in

1. Stronger mix
2. Better workable mix.
3. A weak mix
4. Less bleeding.

(a) 1 and 2 are correct
(b) 2 and 3 are correct
(c) 3 and 4 are correct
(d) 1 and 4 are correct

Q 19   A spliting tensile test is performed on a cylinder of diameter 'D' and length 'L'. If the ultimate load is 'P', then the splitting tensile strength of concrete is given by

A. $\dfrac{P}{\pi DL}$ B. $\dfrac{2P}{\pi DL}$

C. $\dfrac{4Pl}{\pi D}$ D. $\dfrac{2Pl}{\pi D}$

Q 20   Match List I (Admixtures) with List II (Chemicals) and select the correct answer using the codes given below the lists

List – I	List – II
A. Water-reducing admixture	1. Sulphonated melanin formaldehyde
B. Air-entraining agent	2. Calcium chloride

C. Superplasticiser   3. Lignosulphonate
D. Accelerator   4. Neutralised vinsol resin

Codes :

a.   A – 2, B – 4, C – 1, D – 3

b.   A – 1, B – 3, C – 4, D – 2

c.   A – 3, B – 4, C – 1, D – 2

d.   A – 3, B – 4, C – 2, D – 1