

Q 1 Match List I (Material Characteristics) with List II (Property of Concrete) and select the correct answer :

List – I

List – II

A-Water cement ratio

1. Durability

B-Water content

2. Compressive

C-Minimum cement content

3. Stability of mixture

D-Segregation

4. Workability

Codes :

- a. A – 4, B – 1, C – 3, D – 2
- b. A – 2, B – 4, C – 3, D – 1
- c. A – 4, B – 1, C – 2, D – 3
- d. A – 2, B – 4, C – 1, D – 3

Q 2 Stress-strain curve of concrete is

- (a) A perfect straight line up to failure
- (b) Straight line up to 0.002% strain value and then parabolic up to failure
- (c) Parabolic up to 0.002% strain value and then a straight line up to failure
- (d) Hyperbolic up to 0.002% strain value and then a straight line up to failure

Q 3 Consider the following statements:

Ultrasonic pulse velocity test is

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

Which of these statements are correct?

- (a) 1, 2 and 3
- (b) 2 and 3
- (c) 2 and 4
- (d) 1 and 3

Q4 Assertion (A) : The splitting test for determining the tensile strength of concrete gives more uniform results than any other tension test.

Reason (R) : The splitting test moulds can be used for casting specimens for both compression and tension tests.

Q5 What is the range of fineness modulus of sand which is least suitable for making good concrete?

- (a) 3.5 - 4.5
- (b) 2.9 - 3.2
- (c) 2.6 - 2.9
- (d) 2.2 - 2.6

Q 6 Which one of the following statements is correct? The use of super plasticizers as admixture

- Increases compressive strength of concrete
- Permits lower water cement ratio, thereby strength is increased
- Reduces the setting time of concrete
- Permits lower cement content, thereby strength is increased

Q 7 Match List I (Aggregate) with List II (Effect) and select the correct answer using the codes.

List - I

List - II

- |                         |  |
|-------------------------|--|
| A. Rounded aggregates   | 1. Reduce workability appreciably because of a high ratio of surface area to volume                  |
| B. Crushed aggregates   | 2. Require more water than rounded aggregates and give strength lesser than crushed aggregates       |
| C. Flaky aggregates     | 3. Give concrete of higher compressive strength due to development of stronger aggregate mortar bond |
| D. Irregular aggregates | 4. Require lesser amount of water and cement paste for a given workability                           |

Codes :

a : A - 1, B - 2, C - 4, D - 3

b : A - 1, B - 3, C - 4, D - 2

c : A - 4, B - 3, C - 1, D - 2

d : A - 4, B - 2, C - 1, D - 3

Q 8 Consider the following statements : For increasing the workability of concrete, it is necessary to

- increase the quantity of cement
- decrease the quantity of sand
- alter the proportion of fine and coarse aggregates
- decreases the quantity of water
- Use angular aggregate

Which of the statements given above are correct?

- 1, 2, 3, 4 and 5
- 2, 4 and 5
- 2 and 3
- 1 and 5

Q 9 Slump and compaction factors are two different measures of workability of concrete. For a slump of 0 to 20 mm, what is the equivalent range of compaction factor?

- (a) 0.50 - 0.70
- (b) 0.70 - 0.80
- (c) 0.80 - 0.85
- (d) 0.85 - 0.92

Q 10 The values of slump commonly adopted for the various concrete mixes are given below:

Type of Concrete	Slump Adoptd (mm)
1. Concrete for roads works	20 to 28
2. Ordinary RCC work	50 to 100
3. Columns retaining walls	12 to 25
4. Mass concrete	75 to 175

Which of the pairs given above are correctly matched?

- (a) 1, 3 and 4
- (b) 1 and 2
- (c) 3 and 4
- (d) 2 and 4

Q 11 The fineness modulus of fine aggregate is 2.78 and of coarse aggregate is 7.82 and the desired fineness modulus of mixed aggregate is 6.14. What is the amount of fine aggregate to be mixed with one part of coarse aggregate

- (a) 55%
- (b) 50%
- (c) 45%
- (d) 40%

Q 12 Which one of the following correctly expresses the split tensile strength of a circular cylinder of length L and diameter D, subject to a maximum load of P?

A.  $\frac{P}{\pi DL}$

B.  $\frac{P}{2\pi DL}$

C.  $\frac{2P}{\pi DL}$

D.  $\frac{P}{4\pi DL}$

Q 13 On which one of the following factors, does strength of concrete depend primarily?

- (a) Quality of coarse aggregate
- (b) Quality of fine aggregate
- (c) Fineness of cement
- (d) Water-cement ratio

Q 14 Consider the following statements:

Cement concrete is a/an :

- 1. Elastic material.
- 2. Visco-elastic material.
- 3. Visco-plastic material.

Which of the statements given above is/are correct?

- (a) 1, 2 and 3
- (b) 2 and 3
- (c) 2 only
- (d) 1 only

Q 15 Why is super plasticizer added to concrete?

- 1. To reduce the quantity of mixing water.
- 2. To increase the consistency.
- 3. To reduce the quantity of cement.
- 4. To increase resistance to freezing and thawing.

Select the correct answer using the code given below:

- (a) 1, 2 and 4
- (b) 1, 3 and 4
- (c) 2 and 4
- (d) 4 only

Q 16 On which of the following is the working principle of concrete hammer for non- destructive test based ?

- (a) Rebound deflections
- (b) Radioactive waves
- (c) Ultrasonic pulse
- (d) Creep-recovery

Q17 Assertion (A) : Rebound hammer (Schmidt hammer) test gives only approximate estimation of strength of the concrete specimen.

Reason (R): The test represents the hardness of the surface and provides no idea of the concrete inside.

Q 18 Transportation of concrete-mix by pumps is very convenient method, particularly in case of

- (a) Housing complex
- (b) Cement concrete pavement
- (c) Low-rise buildings
- (d) Tunnel-lining

Q 19 What is the correct sequence of operations involved in concrete production?

- (a) Batching - Mixing - Handling – Transportation
- (b) Mixing - Batching - Handling – Transportation
- (c) Transportation-Handling-Mixing- Batching
- (d) Handling- Transportation-Mixing- Batching

Q 20 What is the approximate ratio of the strength of cement concrete at 7 days to that at 28 days curing?

- (a) 0.40
- (b) 0.60
- (c) 0.90
- (d) 1.15

