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Q : 1) The main role of dicalcium silicate compound in cement is:

A : For flash set

B : To retard the flash setting of cement

C : To provide ultimate later-age strength

D : Both, for slash set and to provide ultimate later-age strength

Q : 2) Ultimate strength of cement is provided by:

A : Tri-calcium silicate

B : Di-calcium silicate

C : Tetra calcium aluminate

D : All of the above options

Q : 3) Which of the following is correct if they are arranged in decreasing order of heat of hydration?

A : $C_3A > C_4AF > C_3S > C_2S$

B : $C_3A > C_4AF > C_2S > C_3S$

C : $C_3A > C_3S > C_4AF > C_2S$

D : None of the above

Q : 4) In cement, following compounds can be used as accelerators except

A : CaCl_2

B : CaSO_4

C : NaCl

D : NaSO_4

Q : 5) Which of the following is not a non-destructive test?

A : Rebound hammer test

B : Surface hardness test

C : Ultrasonic pulse velocity test

D : Soundness test

Q : 6) The addition of pozzolana to Portland cement may cause-

A : Decrease in early strength

B : Increase in early strength

C : Decrease in curing time

D : Increase in permeability

Q : 7) Rotary kiln used in manufacturing cement rotates at a speed of-

A : 1 r.p.m. – 3 r.p.m.

B : 10 r.p.m. – 12 r.p.m.

C : 18 r.p.m. – 22 r.p.m.

D : More than 25 r.p.m.

Q : 8) Gauged cement mortar consists of-

A : Cement and sand

B : Cement, surkhi and sand

C : Cement, lime and sand

D : Cement, cinder and sand

Q : 9) The apparatus used for determining the soundness of cement is

A : Slump cone

B : Le chatelier apparatus

C : Vicat's needle

D : UTM

Q : 10) The role of super plasticizer in a cement paste is to

A : Disperse the particle

B : Disperse the particles and to remove air bubbles

C : Disperse the particles, remove air bubbles and to retard setting

D : Retard setting

Q : 11) Match List-I (Type of cement) with List-II (Property / Characteristics) and select the correct answer using the codes given below the lists:

List-I (Type of cement)	List-II (Property/characteristics)
A. High strength Portland cement	1. Should not be used with any admixture
B. Super sulphated cement	2. Is extremely resistance to chemical attack
C. High alumina cement	3. Gives a higher rate of heat development during hydration of cement
D. Rapid hardening Portland cement	4. Has a higher content of tricalcium silicate

A : 3, 2, 1, 4

B : 3, 1, 2, 4

C : 4, 1, 2, 3

D : 4, 2, 1, 3

Q : 12) Loss on ignition in Portland cement shall not be greater than:

A : 4%

B : 5%

C : 6%

D : 3.5%

Q : 13) Which cement has higher corrosion resistance?

A : Having higher C_3A

B : Having higher C_2S

C : Having higher C_3S

D : Having higher Na_2O

Q : 14) For complete hydration of cement, the water cement ratio is:

A : Less than 0.35

B : More than 0.25 but less than 0.35

C : More than 0.35 but less than 0.45

D : More than 0.45 but less than 0.60

Q : 15) Refractory cement is rich in:

A : Calcium

B : Magnesium

C : Iron

D : Aluminum

Q : 16) Fineness of cement is measured in the units of:

A : Volume/Mass

B : Mass/volume

C : Area/Mass

D : Mass/Area

Q : 17) Loss of strength of cement stored in bags in go downs for 3 months is about

A : 30%

B : 50%

C : 15%

D : 0%

Q : 18) The In excess makes the cement unsound and causes the cement to expand and disintegrate

A : Silica

B : Alumina

C : Magnesia

D : Lime

Q : 19) According to IS 4031 (Part 5), the set time of cement is measured at

A : Room temperature and humidity

B : 25-29 degree C and 90-100% Rel. humidity

C : 23-27 degree C and 95% Rel. humidity

D : 25-29 degree C and 60-70% Rel. humidity

E : 25-30 degree C and 65% Rel. humidity

Q : 20) Vicat's apparatus is used to determine all of the following except

A : Normal consistency of cement

B : Fineness modulus of cement

C : Initial setting time of cement

D : Final setting time of cement

Q : 21) Air entrainment Portland cement-

(i) Offers great resistance to sulphate attack

(ii) Offers great resistance to freezing and thawing

(iii) Reduces the possibility of shrinkage and crack formation in the concrete surface

(iv) Is suitable for mass concreting

A: Only (i)

B: (i) and (ii)

C: (i), (ii) and (iii)

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

Q : 22) The percentage of the slag component of Portland-slag cement varies from:

A : 10 to 40%

B : 40 to 70%

C : 70 to 80%

D : 80 to 90%

Q : 23) The percentage of the residue left after sieving good Portland cement in 90 micron sieve should not exceed.

A : 50%

B : 10%

C : 20%

D : 30%

Q : 24) Cement type used for canal lining is _____.

A : Rapid hardening cement

B : Sulphate resistance cement

C : Pozzolana cement

D : Quick setting cement

Q : 25) Hydration of which compound is responsible for increase in strength of cement in later age?

A : Tri-calcium aluminate (C_3A)

B : Tetra-calcium aluminoferrite (C_4AF)

C : Tri-calcium silicate (C_3S)

D : Di-calcium silicate (C_2S)

Q : 26) Which one of the following statements is not correct with respect to the properties of cement?

A : Highly reactive pozzolanas enhance the early age strength of the composite cement

B : Pozzolanic activity refines pore structure which decreases electrolytic resistance of concrete

C : The expansion due to alkali-silica reaction can be controlled by replacement of as high as 60% of OPC with high-calcium pozzolana

D : Such high amounts of replacement cements result in higher accelerated carbonation depths compared to pure use of OPC only

Q : 27) Consider the following statements:

- 1. Hydrophobic cement grains possesses low wetting ability**
- 2. Rapid-hardening cement is useful in concreting under static, or running water**
- 3. Quick-setting cement helps concrete to attain high strength in the initial period**
- 4. White cement is just a variety of ordinary cement free of colouring oxides**

Which of the above statements are connect?

A : 1 and 4 only

B : 1 and 3 only

C : 2 and 4 only

D : 2 and 3 only

Q : 28) Which of the following cements is expected to have the highest compressive strength after 3 days?

A : Ordinary Portland cement

B : Rapid hardening cement

C : High alumina cement

D : Sulphate resisting cement

Q : 29) Which one of the following stone is produced by moulding a mixture of iron slag and Portland cement?

A : Imperial stone

B : Garlic stone

C : Ransom stone

D : Victoria stone

Q : 30) Which one of the following cement s is a deliquescent?

A : Quick setting Portland cement

B : White and coloured cement

C : Calcium chloride cement

D : Water repellent cement

Q : 31) Indian standard code IS : 10262-1982 presents guidelines for mix design of:

A : Air entrained medium and high strength concrete

B : Non air entrained medium and high strength concrete

C : Air entrained medium mixes

D : Both for 'a' and 'b'

Q : 32) In testing final setting time of cement a needle of

A : 1 mm square section is used

B : 1 mm diameter is used

C : 2 mm square section is used

D : 5 mm square section is used

Q : 33) The minimum compressive strength (Mpa) of 53 grade ordinary Portland cement after 72 hours should not be less than

A : 10

B : 15.69

C : 27

D : 53

Q : 34) Based on the heat released upon hydraulic, arrange the following four compounds of the cement (1. C_3S , 2. C_2S 3. C_3A 4. C_4AF) in the descending order:

A : 1, 2, 3, 4

B : 3, 1, 4, 2

C : 3, 4, 1, 2

D : 3, 4, 2, 1

Q : 35) In fineness test of rapid hardening Portland cement (RHPC) the residue on IS sieve No. 9 should not be more than

A : 1.0%

B : 5%

C : 10%

D : 15%

Q : 36) Total Sulphur content of cement is less than

A : 0.025%

B : 2.5%

C : 0.25%

D : 5.0%

Q : 37) The total percentage of dicalcium silicate and tricalcium silicate in all types of Portland cement is around

A : 50%

B : 60%

C : 70%

D : 90%

Q : 38) Correct match of column I (Types of cement) with column II (Properties or preparation) is

Column I	Column II
P. Portland pozzolana cement	1. Ordinary Portland cement with less than 5% tricalcium aluminate
Q. Sulphate resisting Portland cement	2. Contains 25 to 60% slag which offers good sulphate resistance
R. Portland slag cement	3. Grinding the clinkers with oleic acid
S. Hydrophobic cement	4. Requires longer curing time than ordinary Portland cement

A : P-4, Q-1, R-2, S-3 B : P-1, Q-4, R-2, S-3

C : P-3, Q-1, R-4, S-2 D : P-2, Q-1, R-4, S-3

Q : 39) Bulking of sand is maximum if moisture content is approximately

A : 4%

B : 7%

C : 10%

D : 15%

Q : 40) If the fineness modulus of fine aggregate is 2.51, it can be graded as:

A : Fine sand

B : Medium sand

C : Very fine sand

D : None of the above

Q : 41) A phenomenon commonly observed in river sands for which adequate precautions need to be taken estimating, measuring and receiving sands at constructions sites is:

A : Blistering

B : Silting

C : Hydration

D : Bulking

Q : 42) The minimum period before stripping the framework for props to slabs spanning 6 m is

A : 16-24 h

B : 3 days

C : 7 days

D : 21 days

E : 14 days

Q : 43) Grading of aggregate in the concrete mix is necessary to achieve

A : Adequate workability

B : Higher density

C : Reduction in voids

D : Better durability

Q : 44) In the context of air entrainment in fresh concrete the following statements:

Statement-1: Air entrainment is required in cases when concrete is likely to be subjected to alkali aggregate reaction.

Statement-2: Air entrainment has the effect of increasing the workability of concrete at the same unit water content.

Which of the following is correct?

A : Statement-1 is TRUE and Statement-2 is FALSE

B : Both statements are FALSE

C : Both statements are TRUE

D : Statement-1 is FALSE and statement-2 is TRUE

Q : 45) AS per IS 383, code of specifications, the desirable limit for crushing value of coarse aggregates used for concrete other than wearing surface is _____.

A : 10%

B : 45%

C : There is no recognized limit have been laid down for crushing value

D : 25%

Q : 46) Match the items in List 1 (Property of cement) with those in List 2 (Method for conduct of test) using the codes in the list.

List 1	List 2
P. Soundness test	1. Vicat's apparatus test
Q. Fineness	2. Le-chatelier apparatus
R. Setting time	3. Briquette test
S. Tensile strength	4. Air permeability method

A : P-3, Q-4, R-2, S-1

B : P-4, Q-2, R-3, S-1

C : P-2, Q-4, R-1, S-3

D : P-1, Q-4, R-2, S-3

Q : 47) The required workability of concrete in terms of slump for an ordinary reinforced cement concrete (RCC) work for beams and slabs is:

A : 25-30 mm

B : 40-45 mm

C : 50-100 mm

D : 120-150 mm

E : More than 150 mm

Q : 48) Which of the following pairs in respect of ordinary Portland cement are correctly matched?

(i) Initial setting times: 30 minutes

(ii) Final setting times : 10 hours

(iii) Normal consistency : 10%

A : (i), (ii) and (iii)

B : (ii) and (iii)

C : (i) and (ii)

D : (i) and (iii)

E : None of the above options

Q : 49) The minimum stripping time before striking of formwork in case of reinforced (RC) column:

A : 3 days

B : 7 days

C : 14 days

D : 21 days

E : None of the above options

Q : 50) The value of pulse velocity of good quality concrete should be:

A : More than 3.5 km/s

B : Less than 3.5 km/s

C : Less than 2.0 km/s

D : None of the above

Q : 51) Compaction factor of 0.85 indicates a mix of:

A : Low workability

B : High workability

C : Very low workability

D : None of the above

Q : 52) Common sugar added to concrete:

A : Increases the strength of concrete

B : Retards the setting of concrete

C : Accelerates the setting of concrete

D : Gives colour to concrete

Q : 53) Which of the following is not a test for measuring workability of concrete?

A : Slump test

B : Flow test

C : Std. consistency test

D : Kelly ball test

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