University of Mumbai
Examination First Half 2022

Program: **BE Civil** Curriculum Scheme: **Rev2019**
Examination: SE Semester: **IV** Course Code: **CEC 404**
Course Name: **BMCT**

Question bank

Multiple Choice Questions

Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1	In machine mixing of concrete, the drum of concrete mixer is rotated to make about
Option A:	35 rotations
Option B:	50 rotations
Option C:	65 rotations
Option D:	80 rotations
2	Gypsum is added during the manufacture of cement
Option A:	while mixing the raw materials
Option B:	during burning in the kiln
Option C:	at the beginning of grinding the clinker
Option D:	after grinding the clinker
3	Plasticizers are used in situations _____
Option A:	Where high degree of workability is required
Option B:	Where medium degree of workability is required
Option C:	Where very low degree of workability is required
Option D:	Where low degree of workability is required
4	While compacting the concrete by a mechanical vibrator, the slump should not exceed
Option A:	2.5 cm
Option B:	5.0 cm
Option C:	7.5 cm
Option D:	10 cm
5	The compound responsible for initial setting of cement is
Option A:	Tricalcium aluminate
Option B:	Tricalcium silicate
Option C:	Dicalcium silicate
Option D:	Tetra alumino ferrite
6.	An ultrasonic pulse velocity test is an _____
Option A:	Ex-situ, nondestructive test
Option B:	In-situ, nondestructive test
Option C:	Ex-situ, destructive test
Option D:	In-situ, destructive test

7	Bulletproof glass has
Option A:	a number of layers all of same thickness
Option B:	outer layers thinner than inner layers
Option C:	outer layers thicker than inner layers
Option D:	inner layers with steel wires
8.	For one cubic metre of brick masonry, number of bricks required, is
Option A:	400
Option B:	425
Option C:	450
Option D:	500
9	Field test for strength of good bricks is to drop it from a height of _____ and they should not break.
Option A:	0.75 m
Option B:	1.0 m
Option C:	1.2 m
Option D:	1.5 m
10	Following method gives the best result for optimum dose of superplasticizer
Option A:	Slump cone test
Option B:	Marsh cone test
Option C:	Flow table test
Option D:	Compaction factor test
11	Di-calcium silicate (C2S)
Option A:	hydrates rapidly
Option B:	generates less heat of hydration
Option C:	hardens rapidly
Option D:	provides less ultimate strength to cement
12	Initial setting of cement is caused due to
Option A:	Tri-calcium silicate
Option B:	Di-calcium silicate
Option C:	Tri-calcium aluminate
Option D:	Tetra calcium alumino ferrite.
13	If 1500 g of water is required to have a cement paste 1875 g of normal consistency, the percentage of water is
Option A:	20%
Option B:	25%
Option C:	30%
Option D:	40%
14	The aggregate impact value of the aggregate is a measure of its
Option A:	Strength.
Option B:	Abrasion resistance
Option C:	Ductility.
Option D:	Toughness.

15	In volume batching 1:3:6 concrete, ingredients required per 50 kg bag of cement are:
Option A:	70 litres of sand and 120 litres of aggregates
Option B:	70 kg of sand and 140 litres of aggregates
Option C:	105 litres of sand and 140 litres of aggregates
Option D:	105 litres of sand and 210 litres of aggregates
16	While compacting concrete by a mechanical vibrator, the slump should not exceed
Option A:	2.5 cm
Option B:	5.0 cm
Option C:	7.5 cm
Option D:	10 cm
17	Workability can be improved by adding
Option A:	air-entraining agent
Option B:	foaming agent
Option C:	oily-agent
Option D:	air-entraining, foaming as well as oily agent.
18	The commonly used raw material in the manufacture of cement, is
Option A:	slate
Option B:	sand stone
Option C:	lime stone
Option D:	basalt.
19	Knots in timber are
Option A:	Defects caused by crushing fibres
Option B:	Splits radiating from the Centre
Option C:	Speckled strains
Option D:	Signs of branches cut off
20	For a concrete mix 1:3:6 and water cement ratio 0.6 both by weight, the quantity of water required per bag, is
Option A:	10 kg
Option B:	12 kg
Option C:	14 kg
Option D:	16 kg
21	Dressing of the stone is made
Option A:	immediately after quarrying
Option B:	after three months of quarrying
Option C:	just before using for building works
Option D:	after seasoning
22	Which type of glass is regarded as the most heat resistant?
Option A:	Fused silica
Option B:	Aluminosilicate
Option C:	96% silica
Option D:	Borosilicate

23	In lean mixes larger aggregate gives …… strength while in rich mixes the smaller aggregate which yields ……. strength
Option A:	Higher, Higher
Option B:	Lower, Lower
Option C:	Higher, lower
Option D:	Lower, Lower
24	The cement to dry sand proportion recommended for plastering concrete surface is
Option A:	1 : 3
Option B:	1 : 6
Option C:	1 : 8
Option D:	1 : 10
25	Bulking of sand is due to
Option A:	water films
Option B:	swelling of sand
Option C:	added mass of water
Option D:	Presence of air
26	Target mean strength (N/sqmm) of M45 grade of concrete is
Option A:	45.00
Option B:	50.00
Option C:	53.25
Option D:	67.5
27	When Pulse velocity by cross-probing is between 3.5 to 4.5 km/sec, concrete quality is considered as ..
Option A:	Excellent
Option B:	Good
Option C:	Medium
Option D:	low
28	The finishing of stone in which the exposed face is not dressed, only the projections greater than 80mm removed by light hammering is called
Option A:	Punched finish
Option B:	Vermiculated finish
Option C:	Quarry faced finish
Option D:	Combed finish
29	If the water cement ratio to be used is 0.5, then water to be added to one bag of cement is
Option A:	30 Litre
Option B:	25 Litre
Option C:	20 Litre
Option D:	18 Litre
30	The clay to be used for manufacturing bricks for a large project, is dugout and allowed to weather throughout
Option A:	the monsoon
Option B:	the winter
Option C:	the summer

Option D:	none of these
31	What is the ideal range of slump in mm as per IS code for sections with congested reinforcement not suitable for vibration?
Option A:	50-75
Option B:	25-50
Option C:	75-100
Option D:	100-150
32	Honeycomb and cracks may occur in timber due to
Option A:	erroneous conversion
Option B:	erroneous seasoning
Option C:	attack by fungi
Option D:	contact with water for a long time

Subjective questions (10 marks each) for Q No 2,3 and 4

1	Calculate how much quantities of ingredients of concrete in 'Kg' are required if the nominal mix proportions for M20 grade of concrete by ratio are 0.6 : 1 : 1.67 : 3.33 is used. Take Density of concrete is 2350Kg/m3
2	Explain following nondestructive testing methods : a) Rebound Hammer Test b) Ultrasonic Pulse Velocity Test
3	Explain Damp proofing, water proofing and Termite proofing.
4	Explain Laboratory tests on durability of concrete a) Permeability test, b) Rapid chloride penetration test (RCPT)
5	Explain step by step procedure to design concrete mix for compressive strength as per IS 10262.
6	Explain the dry process of manufacture of cement.
7	Explain various operations involved in RMC PLANT during concreting.
8	Design a concrete mix M30 to be used in structural elements by IS method for following requirements. (i) Maximum size of the available aggregate 20 mm (ii) Shape of coarse aggregate angular (iii) Degree of workability desired, compacting factor 0.85 (iv) Degree of quality control good (v) Type of exposure moderate (vi) Test data for Concrete Making Materials a. Specific gravity of cement 3.15 b. Specific gravity of coarse aggregate 2.72 c. Specific gravity of fine aggregate 2.66 d. Water absorption (air dry to saturated surface dry) in coarse aggregate, per cent 0.5 e. Surface moisture Coarse aggregate nil f. Fine aggregate, per cent 2, Sand zone III.
9	Explain various tests carried on lime.
10	What are the defects in timber? Describe briefly.

11	What are the types of concrete mixes as per IS: 456? What information is required for mix design from the site of the work? Describe the advantages of Ready Mix Concrete.
12	Which IS code is required to perform compressive strength test on burnt clay brick? Explain step by step procedure to determine compressive strength of brick in the lab as per IS code.
13	Make a list of 15 materials used in building construction. Explain any four of them in detail.
14	Write a note on Glass with details of its Properties, types and uses
15	Write a note on Paints and Varnishes:

Subjective questions (5 marks each) for Q no., 2,3 and 4

1	Explain defects in painting.
2	Write note on RMC
3	Explain demerits of distemper as compared to paints.
4	Explain different types of mortars.
5	Explain in brief fineness modulus of course and fine aggregates.
6	Explain slip form work.
7	Explain Ultrasonic pulse velocity test.
8	Explain which field tests are conducted in the field on cement?
9	Explain manufacturing process of cement
10	State engineering properties of ceramics with its uses.
11	Explain –Quality control of concrete
12	What are retarders and accelerators? Explain their uses.
13	Write short note on Autoclaved Aerated Concrete (AAC) blocks
14	Write short note on glass fibre reinforced plastic
15	Write short note on sound insulating materials.