MODEL QUESTION PAPER 1

Concrete Technology

Time : 3 Hour *Max.Marks : 75*

PART A

I. Answer all questions in one word or one sentence (9 x 1 = 9 Marks)

1 Which apparatus is used to perform Soundness test of cement

2 Which ingredient controls strength and soundnessto cement.

3 Why gypsum is added while manufacture of cement.

4 According to Abraham's law it is evident that strength of concrete depends only on _____ of the mix.

5 The process of keeping wet environment on and around the surface of hardened concrete is called

6 In the designation of M20 concrete, 20 refers to _____

7 The grade of concrete corresponding to nominal mix proportions of 1:1.5:3 is

8 No vibration is necessary for _____ concrete

9 The concrete made with cement, fine aggregate, coarse aggregate, and discontinuous discrete fibers is known as _____

PART B

II. Answer any eight questions (8 x 3 = 24 Marks)

1 Explain hydration of cement and what are the different types of compounds formed during hydration.

2 Describe the importance of quality of water used in concrete

3 Explain the field tests for cement.

4 Explain slump test for measuring workability of concrete

5 Explain curing and list different methods adopted for curing.

6 Define concrete mix design

7 Distinguish high performance concrete and high strength concrete

8 Explain the functions of chemical admixtures in concrete

9 List various types of special concrete

10 Explain the importance of geopolymer concrete

PART C

Answer ALL questions. Each question carries 7 marks (6 x 7 = 42Marks)

III Explain the properties and uses of rapid hardening cement

OR

IV Explain the precautions to be taken for storing cement

V Explain segregation and how it is prevented

OR

VI Explain the factors affecting durability of concrete

VII Explain the factors affecting workability of concrete

OR

VIII Describe the properties of hardened concrete

IX Explain the objectives of concrete mix design

OR

X List the basic data required for the design of concrete mix

XI Show the procedural steps of concrete mix design process as per IS method

OR

XII Explain the importance of Non-destructive testing of concrete

XIII Explain hot weather concreting

OR

XIV Explain underwater concreting

SCHEME OF VALUATION

Course Title:Concrete Technology

PART A

I. Answer all questions in one word or one sentence (9 x 1 = 9 Marks)

Qst No.	Scoring Indicator	Split up score	Total
1	Le Chateliar apparatus	1	1
2	Lime (CaO)	1	1
3	To slow down the setting time of cement	1	1
4	Water/cement ratio	1	1
5	Curing of concrete	1	1
6	Characteristics compressive strength in N/mm^2	1	1
7	M20	1	1
8	Self-compacting concrete	1	1
9	Fiber reinforced concrete	1	1

PART B

II. Answer any eight questions (8 x 3 = 24 Marks)

Qst No.	Scoring Indicator	Split up score	Total
1	The chemical reaction taken between cement and water is known as hydration of cement Calcium Silicate Hydrate, Calcium Hydroxide, Calcium Aluminate Hydrate	1.5 1.5	3
2	Functions of water in concrete: • Potable water (drinking water can be used) is used in concrete.	Any 3	

	• Amount of water controls Workability of concrete. • Controls Hydration. • Amount of water controls Curing. • Affects strength of concrete. • Affects shrinkage of concrete.	3	3
3	Field tests of cement: • Open the bag and take a good look at the cement - no visible lumps. • Colour - Greenish grey • Should get a cool feeling when thrusted • When we throw the cement on a bucket full of water, before it sinks the particleshould flow	Any 3 3	 3
4	Test to determine workability of concrete. Slump is determined as the difference between the height of the mould and that of the highest point of the specimen being tested.	3	3
5	Curing: • Process of preventing the loss of moisture from the concrete while maintaining a satisfactory temperature. Methods: ❖ Ponding ❖ Sprinkling ❖ Wet coverings ❖ Membrane/plastic sheet ❖ Steam curing ❖ Water based	1.5 Any 3 1.5	 3
6	Mix Design is the art and science of determining the relative proportions of the ingredients of concrete to achieve the desired properties in the most economical way	3	3
7	High-performance concrete • high abrasion resistance • Good compaction without segregation High Strength Concrete • A high-strength concrete is always high-performance concrete, but a high-performance concrete is not always a high-strength concrete	1.5 1.5	3
8	• Speed up rate of development of strength at early days • To keep the concrete workable for longer time • To enhance the workability • To improve penetration and pump ability of concrete • To reduce segregation • To control alkali aggregate reaction • To reduce the heat of hydration	Any 3 3	3
9	1) Light weight concrete 2) Air entrained concrete 3) High Strength concrete 4) High performance concrete 5) Polymer concrete 6) Geo Polymer concrete 7) Steel fiber reinforced Concrete	Any 6 3	3

	8) Self compacting concrete 9)Guniting or shotcreting		
10	• Made from fly ash and alkaline solution • Reduce CO2 emissions • High fire resistance • High compressive strength • Rapid strength gain • Greater corrosion resistance	3	3

PART C

Answer ALL questions. Each question carries 7 marks (6 x 7 = 42Marks)

Qst No.	Scoring Indicator	Split up score	Total
III	**Properties** Contains large proposition of lime than O.P.C High heat of hydration Higher shrinkage coefficient Grinds finer than O.P.C Less curing time **Uses** In case of speedy execution Making pre cast elements where form work can be removed earlier Situations where the structures are to be loaded in short time	4 3	7
IV	Use Jute or gunny bags Storage period should not more than 3 months Stacked in 10 bag piles Care to maintain quality – no moisture content Remove cement bags in order Label date of receipt to find age of cement Use waterproof shed/polyethylene during monsoon.	7	7
V	Separation of constituent materials of concrete mix so that the mix is no longer in homogenous condition is called segregation **Prevention:** o Concrete mix should be properly designed with optimum quantity of water o Field quality control must be maintained while handling, transporting, placing & compacting and finishing concrete. o If at any stage segregation is observed, then remixing should be done to make the concrete again homogeneous. o Admixtures, such as pozzolanic materials or air entraining agent should be used to avoid segregation o Concrete should not be allowed to fall from greater heights. It should be placed as near its final position as possible.	2 5	7
VI	Durable concrete is one that performs satisfactorily in the working environment during the anticipated exposure conditions and during its service life. It is the ability to resist weathering action, chemical attack, abrasion, or any other process of deterioration which will alter the original form and quality. **Factors influencing durability** •Environment (Rain, heat, cold, fire, snow)	2	7

	•Cover to the embedded steel •Type and quality of constituent materials •Cement content and water/cement ratio •Workmanship - compaction and curing •Shape and size of the members •Permeability and abrasion	5	
VII	Workability can be defined as "that property of freshly mixed concrete or mortar which determines the ease and homogeneity with which it can be mixed, placed, compacted and finished." **Factors affecting workability** • Water Content: More the quantity of water, better the workability. But as we increase the quantity of water, the water cement ratio also increases hence the strength of concrete decreases. • Cement Content: Use of more cement increases workability, but leads to uneconomical mix and shrinkage. • Aggregate-Cement Ratio: For high aggregate-cement ratio (i.e. for the lean mix) less paste will be available for lubrication hence, the workability reduces. • Size of Aggregates: Larger the size of aggregates, lesser is the surface area of aggregates and more water will be available for the lubrication hence, better will be the workability. • Shape of Aggregates: Rounded aggregates provide better workability. • Grading of Aggregates: Well-graded aggregates have fewer voids and better workability. • Temperature: Workability decreases with increase of temperature.	1 6	7
VIII	1. Strength • Resistance offered by concrete against failure 2. Stiffness • Resistance of concrete against deformation 3. Poisson's ratio • When a material is stretched in one direction, it tends to get thinner in other two directions. • o Ratio of lateral strain to longitudinal strain 4. Elasticity • The property of a material to regain its original shape even after loading is termed as elasticity. 5. Creep • Permanent deformation with time at constant loading 6.Shrinkage • Contraction due to loss of moisture 7.Durability • Ability to withstand the damaging effects over a long time	7	7
IX	Objectives –To achieve a minimum compressive strength at 28 days period based on the value assumed by the designer so as to comply with the specifications of structural strength.		

	–The concrete mix should be cohesive for preventing the possibility of honeycombing and segregation and capable of being mixed, transported and compacted efficiently as possible. –The provision of sufficient workability for obtaining full compaction with the available compacting equipment. –Durability, which is associated with compressive strength, the greater the strength, the more durable the concrete. –The mix should be designed to achieve the desired strength in the hardened stage. –The mix should be designed in such a way that minimum quantity of cement is used as it is the costliest material, so that the mix is economical. –To achieve satisfactory appearance.	7	7
X	Basic Data for design of concrete mix •Grades of concrete •Type of cement •Type and size of aggregate •Nominal maximum size of aggregates •Maximum/Minimum cement content •Type of mixing and curing •Maximum free water-cement ratio •Degree of workability of concrete •Air content •Type of admixture •Water absorption and surface moisture conditions of aggregate	7	7
XI	**Step 1:** Determination of target mean strength as f'ck = fck+ 1.65 s **Step 2:** Selection of water-cement ratio Adopt a water-cement ratio lesser than the maximum water-cement ratio given in Table 5 of IS 456 for the given exposure condition **Step 3:** Estimation of air content **Step 4:** Selection of water content and fine to total aggregate ratio **Step 5:** Calculation of cement content by dividing water content by w/c ratio **Step 6:** Calculation of aggregate content **Step 7:**Mix Calculations (Volume) **Step 8:**Mix Proportions for trial 1 (Weight calculations)	7	7
XII	Non-destructive testing (NDT) defines a discontinuityas an interruption in the normal physical structure orconfiguration of a part, such as a crack or porosity NDT increases the safety and reliability of the structure during operation. It decreases the cost of the product by reducing scrap and conserving materials, labour and energy. The purpose of NDT can serve to analyse an existing failure or be used to prevent future failures.	7	7
XIII	• Concreting done at atmospheric temperature above 40˚C. **•Problems in hot weather concreting:** –Reduction in ultimate strength –Accelerated setting, causing reduction in handling time. –Rapid evaporation during curing, affecting hydration and strength. –Increased tendency to crack, due to rapid evaporation.	3.5	7

	•**Precautions to be taken:** –Proportioning of concrete: Low heat cement is preferred. –Plasticizers and retarders may be used. Accelerators must not be used. –Production and delivery: Time between mixing and delivery must be kept minimum.	3.5	
XIV	Placing concrete underwater special precautions should be selected o Slump = 15 − 18 cm **Methods:** ❖ Tremie method ❖ Bucket placing ❖ Placing in bags ❖ Pre-packed concrete and Placing in dewatered caissons **Requirements:** • Workability and self-compaction • Low heat of hydration • Controlled set time • Compressive strength and adequate bond strength	3.5 3.5	7

Course:**Concrete Technology**

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MarkDistribution

Module	hr/ Module	Marks/Module ($h_i/\sum H_i$)*123(±5%)	TypeofQuestions							
			PartA		Part B		PartC		Total	
			NoofQuestions	Marks	NoofQuestions	Marks	NoofQuestions	Marks	NoofQuestions	Marks
1	10	29	3	3	3	9	2	14	8	26
2	11	32	2	2	2	6	4	28	8	36
3	11	31	2	2	1	3	4	28	7	33
4	11	31	2	2	4	12	2	14	8	28
Total	43	123	9	9	10	30	12	84	31	123

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CognitiveLevelMarkDistribution

CognitiveLevel	Marks	%ofMarks
Remembering	22	18
Understanding	94	76
Applying	7	6
Analysing		
Evaluating		
Creating		
Total	123	100

Question wise analysis

Course:**Concrete Technology**

Q.No	ModuleOutcome	CognitiveLevel	Marks	Time
I.1	M 1.02	Remembering	1	2
I.2	M 1.01	Remembering	1	2
I.3	M 1.02	Remembering	1	2
I.4	M 2.02	Remembering	1	2
I.5	M 2.03	Remembering	1	2
I.6	M 3.01	Remembering	1	2
I.7	M 3.01	Remembering	1	2
I.8	M 4.02	Remembering	1	2
I.9	M 4.02	Remembering	1	2
II.1	M 1.02	Understanding	3	8
II.2	M 1.04	Understanding	3	8
II.3	M 1.02	Understanding	3	8
II.4	M 2.02	Understanding	3	8
II.5	M 2.03	Understanding	3	8
II.6	M 3.02	Remembering	3	8
II.7	M 4.02	Understanding	3	8
II.8	M 4.01	Understanding	3	8
II.9	M 4.02	Remembering	3	8
II.10	M 4.02	Understanding	3	8
III.	M 1.01	Understanding	7	16
IV.	M 1.02	Understanding	7	16
V.	M 2.02	Understanding	7	16
VI.	M 2.02	Understanding	7	16
VII.	M 2.02	Understanding	7	16
VIII.	M 2.02	Understanding	7	16
IX.	M 3.01	Understanding	7	16
X.	M 3.01	Remembering	7	16
XI.	M 3.02	Applying	7	16
XII.	M 3.03	Understanding	7	16
XIII.	M 4.04	Understanding	7	16
XIV.	M 4.02	Understanding	7	16

MODEL QUESTION PAPER 2

Concrete Technology

Time : 3 Hour *Max.Marks : 75*

PART A

I. Answer all questions in one word or one sentence (9 x 1 = 9 Marks)

1 Increase in volume of fine aggregates due to presence of moisture content is known as _____

2 List the functions of lime in cement

3 Which apparatus is used to determine consistency, initial setting time and final setting times of cement.

4 The property of freshly mixed concrete or mortar which determines the ease and homogeneity with which it can be mixed, placed, compacted and finished is called_____

5 List any two tests on hardened concrete

6 The grade of concrete corresponding to nominal mix proportions of 1:3:6 is

7 _____ is the art and science of determining the relative proportions of the ingredients of concrete to achieve the desired properties in the most economical way

8 List any two types of special concrete

9 Admixture which causes an increase in the rate of hydration of cement is called _____

PART B

II. Answer any eight questions (8 x 3 = 24 Marks)

1 Explain the properties of sulphate resisting cement

2 Describe fineness modulus of aggregate

3 Describe the methods of storing cement

4 Explain durability of concrete

5 Differentiate between weigh batching and volume batching

6 Explain importance and need of waterproofing

7 List various methods of proportioning mix design

8 Differentiate between characteristic compressive strength and target strength

9 State the importance of Non-destructive testing of concrete

10 Explain the precautions to be taken in mass concreting

PART C

Answer ALL questions. Each question carries 7 marks (6 x 7 = 42Marks)

III Explain briefly the ingredients of concrete and their functions

OR

IV Explain briefly the properties of different types of cement

V Define segregation and bleeding of concrete

OR

VI Describe slump test for measuring workability of concrete

VII Explain the importance of curing and list different methods of curing

OR

VIII Explain various methods of compaction of concrete

IX Draw a flow chart showing steps of concrete mix design as per IS method

OR

X Explain the purpose and requirement of concrete mix design

XI Describe the properties of geopolymer concrete

OR

XII Explain the precautions to be taken in cold weather concreting

XIII Explain the properties of self - compacting concrete

OR

XIV Explain the functions of admixtures in concrete

SCHEME OF VALUATION

Course Title:Concrete Technology

PART A

I. Answer all questions in one word or one sentence (9 x 1 = 9 Marks)

Qst No.	Scoring Indicator	Split up score	Total
1	Bulking of fine aggregate	1	1
2	1. Control strength and soundness 2. Its deficiency reduces strength and setting time	1	1
3	Vicat's apparatus	1	1
4	Workability of Concrete	1	1
5	1. Compressive strength test 2. Flexural strength test 3. Tensile strength test	Any 2 1	1
6	M10	1	1
7	Concrete mix design	1	1
8	Light weight concrete, Air-entrained concrete, High strength concrete, High performance concrete, Polymer concrete, Geo polymer concrete etc.	Any 2 1	1
9	Accelerators	1	1

PART B

II. Answer any eight questions (8 x 3 = 24 Marks)

Qst No.	Scoring Indicator	Split up score	Total
1	• To resist sulphate attack • Volume of concrete increases due to reaction of cement with	3	3

	sulphatecontaining solution. • Uses: Marine structures, foundations, sewage treatment units,hydraulic structures		
2	Fineness modulus: A numerical index, which gives general idea about the coarseness (mean size) of aggregates. Fineness Modulus = **∑Cumulativepercentageretainedoneachsieve/100**	3	3
3	Methods of storing cement: 1. Jute or gunny bags 2. Storage period = 3 months 3. Stacked in 10 bag piles 4. Care to maintain quality – no moisture content 5. Remove cement bags in order 6. Label – date of receipt – to find age of cement 7. Use waterproof shed/polyethylene during monsoon.	Any 6 3	3
4	Durability: • Time for which the structure can fulfil its desired objectives. • Ability to withstand the damaging effects over a long time. • Resistance to deterioration.	3	3
5	Measurement of materials for making concrete. **Volume Batching:** In volume batching, materials are measured in terms of their volume. **Weigh Batching:** In weigh batching, materials are measured in terms of their weights.	1 1 1	3
6	**Water proofing** is the protection to prevent water entering in internal and externalbuilding structures like toilets, swimming pools, water tanks,retaining walls, roofs etc <u>Common Water Damage problems</u> • Corrosion of steel reinforcement in concrete • Blistering of paint • Dampness on walls, roofs & Floors • Leakage in water tanks	1.5 Any 2 1.5	3
7	• IS Method • ACI Method • Road Note-4 Method • IRC-44 method • Arbitrary method • Max density method • Fineness modulus method • Surface area method • Mix design for high strength concrete • DOE mix design method	Any 6 3	3
8	**Compressive strength** is given in terms of characteristic compressive strength of 150mm size cubes tested at 28 days. Defined as strength of concrete below which not more than 5 % of test results areexpected to fall **Target strength:** Strength for which a mix is designed	3	3
9	• It is a method of testing existing concrete structures toassess the strength and durability of concrete structure. • In NDT without loading the specimen to failure we	3	

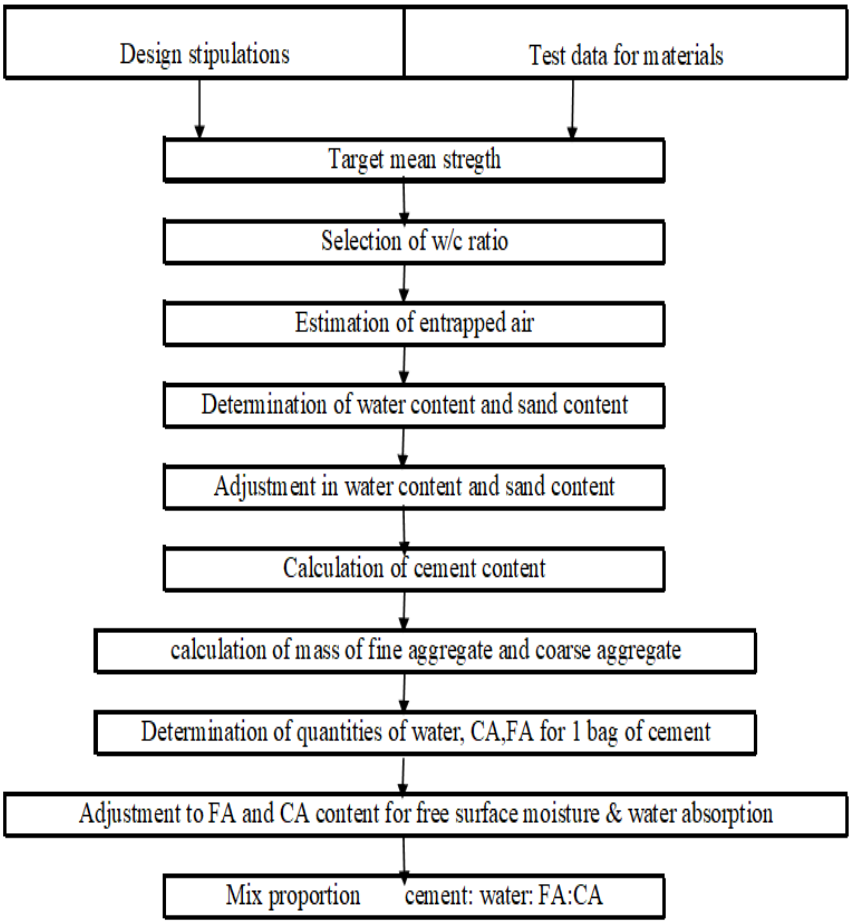
	canmeasure strength of concrete. • This method helps us to investigate crack depth, microcracks and deterioration of concrete.		
10	• shrinkage cracks can be prevented by using low heat cements and by continuous proper curing of concrete. • Circulation of cold water through the pipes buried in the concrete mass, performing concreting in the winter season, pre-cooling of aggregates, etc can be adopted.	3	3

PART C

Answer ALL questions. Each question carries 7 marks (6 x 7 = 42Marks)

Qst No.	Scoring Indicator	Split up score	Total
III	**Cement** –Binds the aggregate into a solid mass, fills up voids present in aggregates and gives strength to concrete on setting and hardening when mixed with water. **Fine aggregates (particle size less than 4.75 mm)** –Reduces shrinkage and cracking, fills voids present in coarse aggregates and helps in hardening of cement. **Coarse aggregates (particle size greater than 4.75 mm)** –Increases the crushing strength of concrete, makes concrete solid hard mass and reduces the cost of concrete as it occupies the major volume in concrete. **Water** –Reacts chemically with cement and causes setting and hardening, makes the concrete workable and facilitates spreading of cement over the fine aggregate. **Admixtures** –Improve specific properties of concrete.	1.5 1.5 1.5 1.5 1	7
IV	**Ordinary Portland Cement (OPC):** General-purpose cement, most commonly used.33 Grade, 43 Grade, and 53 Grade **Rapid Hardening Portland Cement (RHPC):** Has higher C3S content. Gains strength more quickly. Used where formwork has to be removed early and where high early strength is required. **Low Heat Portland Cement:** Has lower C3S and C3A contents, but higher C2S. Has lower evolution of heat and is used in large mass concrete works such as dams, bridges, etc. **Sulphate Resisting Cement:** C3A is kept below 5 percent and it results in the increase in resistance against sulphate attacks. **High Alumina Cement:** It is produced by grinding clinkers formed by calcining bauxite and lime. It resists the action of acids and can withstand high temperature	Any 5 7	7
V	**<u>Segregation</u>** Separation of ingredients in a concrete mix. •<u>Reasons</u> –Large quantity of water. –Improper grading of aggregates. –Dropping of concrete from greater height. –Over-compaction of concrete.	3.5	7

	–Too vibratory or too long transporting methods of concrete. –Leakage of mortar through formworks. **<u>Bleeding</u>** •Special case of segregation, where the cement paste or water gets separated from the concrete mix by rising to the surface. •<u>Reasons</u> –Highly wet mix with bad proportion of ingredients or insufficient mixing. –Over-compaction or over-trowelling of concrete. –High alkali or high C3A content. –Thin sections of concrete members.	3.5	
VI	<u>Slump test</u> Preferred for medium workability concrete mix and is not suitable for very wet or very dry concrete mixes. •A metallic mould in the form of frustum of cone is placed on a metal plate and concrete is filled in four layers with 25 strokes using tamping rod. •After the top layer has been rodded, the concrete shall be struck off level with a trowel. •The mould is removed from the concrete immediately by raising it slowly and carefully in a vertical direction. •Slump is determined as the difference between the height of the mould and that of the highest point of the specimen being tested. –The slump can be measured only in the case of true slump. –Shear slump indicates that the mix has a tendency to segregate. –Collapse slump indicates that the concrete mix is very wet or lean.	7	7
VII	**Curing:** o Process of preventing the loss of moisture from the concrete whilemaintaining o a satisfactory temperature. o Concrete gain strength by hydration. o To avoid loss of moisture o Prevents concrete from cracking **<u>Methods:</u>** • Ponding • Sprinkling • Wet coverings • Membrane/plastic sheet • Steam curing • Water based	3.5 3.5	7
VIII	Compaction - Process of expelling entrapped air from the concrete. 1.**Hand Compaction:** • Rodding • Ramming • Tamping 2.**Compaction by Vibration:** • Internal vibrator (Needle vibrator) – e.g. column, beam, slab, footing. • External vibrator (Formwork vibrator) – e.g. column, thin sections.	1 1.5 3.5	7

	• Table vibrator – e.g. cube testing. • Platform vibrator – e.g. pre-cast units. • Surface vibrator (Screed vibrator) – e.g. concrete roads, industrial flooring. 3.Compaction by Pressure and Jolting – e.g. blocks, tiles, etc. 4.Compaction by Spinning – e.g. cement pipes	1	
IX	**FLOW CHART OF MIX DESIGN STEPS** 	7	7
X	**<u>Purposes of concrete mix design</u>** • Properly designed concrete mix for the specified strength requirements should have minimum cement content to make the mix economical • Complies with the specifications of structural strength laid down, which is usually stated in terms of the compressive strength of standard test specimen • Complies with the durability requirements to resist the environment in which the structure will serve its functional life • Capable of being mixed, transported, compacted as efficiently as possible	7	7
XI	**Geopolymer concrete** is an innovative and eco-friendly construction material and an alternative to Portland cement concrete. Use of geopolymer reduces the demand of Portland cement which is responsible for high CO2 emission <u>Properties:</u>	2	7

	–Gains compressive strength rapidly. –Strength after 24 hours is found to be more than 25 MPa and after28 days is found to be 60 to 70 MPa. –It has lesser drying shrinkage and produces lower heat of hydration. –It has better fire resistance. –It has lesser chloride permeability. –It has very high acid resistance	5	
XII	<u>Precautions to be taken</u> –Storage of materials: All materials are to be stored on secured surfaces like wooden platforms and properly covered with tarpaulins etc. –Proportioning of concrete: Additional quantity of cement may be used to increase the heat of hydration. –Temperature control of ingredients: The temperature at the time of setting of concrete can be raised by heating the ingredients of the concrete mix –Use of insulating formwork: Insulating formworks, made of timber, clean straw, blankets, tarpaulins, plastic sheeting, etc., can preserve the heat of hydration for maintaining the required temperature of the mix. –Placement and Curing: The surface on which the concrete is to be placed should be sufficient warm. Water curing is not to be used during the periods of freezing or in near freezing conditions. –Removal of Formwork: As the rate of gain of strength is slow during the cold weather, the formwork and props have to be kept in place for a longer time than the normal concreting.	Any 5 7	7
XIII	<u>Self-compacting concrete</u> Highly flowable or self-levelling, cohesive concrete that can spread through and around dense reinforcement under its own weight. •Adequately fills voids without segregation or bleeding. •It does not require compaction through vibrators while placing. •Useful in situations where vibration is difficult and reinforcing steel is highly congested. Produced by increasing the fine material like fly ash, limestone filler etc. and by the use of suitable admixtures. •Relatively low w/c ratio results in rapid strength development, improved quality, strength and durability. •Produces good surface finish particularly for slabs. •Reduces noise of vibration and provides better working environment. •Requires more mixing time and slower casting rate	Any 5 7	7
XIV	Functions of admixtures: • Speed up rate of development of strength at early days • To keep the concrete workable for longer time • To enhance the workability • To improve penetration and pump ability of concrete • To reduce segregation • To increase strength • To decrease capillary flow of water	Any 7 7	7

	• To control alkali aggregate reaction • To reduce the heat of hydration • To enhance bond between concrete and steel • To reduce weight of concrete, etc		

Course:**Concrete Technology**

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MarkDistribution

Module	hr/ Module	Marks/Module ($h_i/\sum H_j$)*123(±5%)	TypeofQuestions							
			PartA		Part B		PartC		Total	
			NoofQuestions	Marks	NoofQuestions	Marks	NoofQuestions	Marks	NoofQuestions	Marks
1	10	29	3	3	3	9	2	14	8	26
2	11	32	2	2	2	6	4	28	8	36
3	11	31	2	2	4	12	2	14	8	28
4	11	31	2	2	1	3	4	28	7	33
Total	43	123	9	9	10	30	12	84	31	123

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CognitiveLevelMarkDistribution

CognitiveLevel	Marks	%ofMarks
Remembering	22	18
Understanding	94	76
Applying	7	6
Analysing		
Evaluating		
Creating		
Total	123	100

Question wise analysis

Course:**Concrete Technology**

Q.No	ModuleOutcome	CognitiveLevel	Marks	Time
I.1	M 1.03	Remembering	1	2
I.2	M 1.02	Remembering	1	2
I.3	M 1.02	Remembering	1	2
I.4	M 2.02	Remembering	1	2
I.5	M 2.02	Remembering	1	2
I.6	M 3.01	Remembering	1	2
I.7	M 3.02	Remembering	1	2
I.8	M 4.02	Remembering	1	2
I.9	M 4.01	Remembering	1	2
II.1	M 1.01	Understanding	3	8
II.2	M 1.03	Understanding	3	8
II.3	M 1.02	Understanding	3	8
II.4	M 2.02	Understanding	3	8
II.5	M 2.03	Understanding	3	8
II.6	M 3.04	Understanding	3	8
II.7	M 3.02	Remembering	3	8
II.8	M 3.01	Understanding	3	8
II.9	M 3.03	Remembering	3	8
II.10	M 4.02	Understanding	3	8
III.	M 1.03	Understanding	7	16
IV.	M 1.01	Understanding	7	16
V.	M 2.02	Remembering	7	16
VI.	M 2.02	Understanding	7	16
VII.	M 2.03	Understanding	7	16
VIII.	M 2.03	Understanding	7	16
IX.	M 3.02	Applying	7	16
X.	M 3.01	Understanding	7	16
XI.	M 4.02	Understanding	7	16
XII.	M 4.03	Understanding	7	16
XIII.	M 4.02	Understanding	7	16
XIV.	M 4.01	Understanding	7	16