1. Group - A (Short Answer Questions)

S. No	Questions	Blooms Taxonomy Level	Program Outcome
	UNIT – I **CEMENT AND ADMIXTURES**		
1	What is the chemical composition of cement?	Remember	a
2	List various types of cement.	Remember	a
3	What is grade of cement? List any three grades of cement with their strengths.	Understand	a
4	Give step by step method of manufacture of cement by wet process.	Understand	a
5	What is the common classification of aggregates?	Understand	a
6	What are the properties of Aggregate?	Remember	a
7	What are the Physical Quality requirements of aggregates?	Remember	a
8	Distinguish between plasticizers and super plasticizers.	Understand	a
9	Distinguish between natural and chemical admixtures.	Understand	a
10	What is meant by hydration of cement?	Understand	a
	UNIT- II **FRESH CONCRETE**		
1	What is meant by proportioning of concrete?	Understand	d

S. No	Questions	Blooms Taxonomy Level	Program Outcome
2	Can sea water be used for making concrete? Explain.	Understand	d
3	What is meant by curing of concrete?	Understand	d
4	What is meant by controlled concrete?	Understand	d
5	Define Workability.	Remember	d
6	Mention the Properties of concrete at Early Ages.	Remember	d
7	What are the Causes of bleeding and segregation?	Understand	d
8	What are the Methods for Control of Bleeding?	Understand	d
9	Define segregation of concrete.	Remember	d
10	Define bleeding of concrete.	Remember	d
	UNIT – III **HARDENED CONCRETE**		
1	Define Water/cement ratio**.**	Remember	e
2	What is meant by gel-space ratio?	Understand	e
3	Why is Elastic Modulii Important for Concrete?	Understand	e
4	Define Shrinkage cracking	Remember	e
5	Define Tension cracking	Remember	e
6	Define Creep.	Remember	e
7	Write short notes on the following: Acid attack	Understand	e
8	Write short notes on the following: Sulphate attack	Understand	e
9	Write short notes on the following: Alkali attack	Understand	e
10	Write short notes on the following: non destructive testing of concrete	Understand	e
	UNIT-IV **MIX DESIGN**		
1	Define Concrete Durability.	Remember	f
2	Define concrete mix design.	Remember	f
3	What are the factors influencing the selection of materials?	Understand	f
4	What are the factors Influencing Consistency?	Understand	f
5	What are the Factors affecting Strength of Hardened concrete?	Understand	f
6	What is the sequence of steps should be followed in ACI method?	Remember	f
7	Mention the Maximum aggregate size to be used in Mix Design as per ACI.	Understand	f
8	What are the Requirements of concrete mix design as per BIS?	Remember	f
9	What are the types of concrete mixes? Explain.	Understand	f
10	What are the Factors affecting the choice of mix proportions?	Understand	f
	UNIT – V **SPECIAL CONCRETES**		
1	Define Aerated Concrete	Remember	g
2	What is the general use of Shotcrete?	Remember	g
3	What is meant by No fine concrete?	Remember	g
4	What do you mean by Fibre Reinforced Concrete?	Remember	g
5	Define ferro-cement.	Remember	g
6	What is self-compacting concrete?	Remember	g
7	What are the uses of polymer concrete?	Remember	g
8	What are the advantages of using high-strength concrete?	Remember	g
9	List the differences between polymer – impregnated concrete, polymer – modified concrete	Understand	g
10	What is SIFCON?	Remember	g

2. Group - II (Long Answer Questions)

S. No	Questions	Blooms Taxonomy Level	Program Outcome
	UNIT – I **CEMENT AND ADMIXTURES**		
1	Explain the different types of cement in detail.	Understand	a
2	Describe the setting time and soundness test of cement.	Understand	a
3	Explain the bulking phenomenon of aggregates.	Understand	a
4	Explain the procedure of determining '10 per cent fines value'. What is gap graded aggregate?	Understand	a
5	Describe the hydration reaction of Bogue compounds indicating the products of hydration.	Understand	a
6	How is compressive strength of cement determined?	Remember	a
7	Describe the test done to determine aggregate abrasion value.	Remember	a
8	Write short notes on: a. Accelerators b. Retarders	Remember	a
9	Write short notes on: a. Air entraining agents b. Damp proofing agents	Remember	a
10	Write short notes on: a. Wet process of cement manufacturing b. Dry process of cement manufacturing	Remember	a
	UNIT – II **FRESH CONCRETE**		
1	What is meant by workability? What are the factors affecting workability of concrete?	Understand	d
2	Explain the following tests: a. Flow test b. Compaction factor test	Remember	d
3	What are the methods available for measuring air content in fresh concrete? Explain one of the methods in detail.	Remember	d
4	What are the various steps involved in concrete manufacturing?	Remember	d
5	What is segregation and how can it be prevented?	Understand	d
6	What is bleeding and how can it be prevented?	Understand	d
7	How does freeze-thaw damage occur?	Understand	d
8	What is alkali-aggregate reaction? Explain.	Understand	d
9	Define re-vibration. What are the various vibration techniques used for concrete vibration?	Remember	d
10	Describe the importance of the quality of water used for concreting.	Understand	d
	UNIT – III **HARDENED CONCRETE**		
1	What is Abram's law? How does it affect concrete?	Understand	e

S. No	Questions	Blooms Taxonomy Level	Program Outcome
2	What are the various factors affecting strength of hardened concrete?	Understand	e
3	What is curing? What are the different methods of curing?	Remember	e
4	Write a short note on: a. Compression test b. Tension test	Remember	e
5	Write a short note on: a. Flexural test b. Split tensile test	Remember	e
6	Explain nondestructive tests. What are the codal provisions for NDT	Understand	e
7	Write a short note on: a. Elasticity of concrete b. Shrinkage	Remember	e
8	Write a short note on: a. Creep b. Durability of concrete	Remember	e
9	What is creep of concrete? What are the factors influencing creep? What is the relation between creep & time? What are effects of creep?	Understand	e
10	What is shrinkage? What are the types of shrinkage?	Remember	e
	UNIT – IV **MIX DESIGN**		
1	Describe ACI method of mix design in detail.	Understand	f
2	Describe Indian standard method of mix design in detail.	Understand	f
3	Describe about the Sampling and Acceptance criteria	Understand	f
4	Design the concrete mix for grade M20 with suitable conditions. Find the quantities of constituents of the mix for a bag of cement.	Evaluate	f
5	Explain the factors that influence the choice of mix design.	Understand	f
6	Explain in detail about the statistical quality control and acceptance criteria of concrete.	Understand	f
7	Design the concrete mix for grade M30 with suitable conditions. Find the quantities of constituents of the mix for a bag of cement.	Evaluate	f
8	Explain the procedure of selection of constituent materials of concrete.	Analyze	f
9	Define Nominal Mixes and Standard mixes. What are Designed Mixes?	Understand	f
10	Describe the recent trends in concrete mix design.	Understand	f
	UNIT – V **SPECIAL CONCRETES**		
1	How can high-strength concrete be classified? Explain.	Understand	g
2	List the differences between polymer – impregnated concrete, polymer – modified concrete, and polymer concrete.	Analyze	g
3	What are the various quality control tests done to ensure good performance of polymer concrete?	Analyze	g
4	What are the basic properties of fiber – reinforced concrete which can	Analyze	g

S. No	Questions	Blooms Taxonomy Level	Program Outcome
	be advantageously made use of in the design of structural elements?		
5	In what way the behavior of FRC can be used for seismic – resistant design?	Analyze	g
6	Explain in detail the method of design of light weight concreting.	Understand	g
7	Describe the procedure of Shotcrete& Grouting.	Understand	g
8	Explain the properties of polymer Impregnated Concrete.	Understand	g
9	Explain the design aspects of aerated concrete.	Understand	g
10	Explain the various methods of polymer concrete.	Understand	g

3. Group - III (Analytical Questions)

S. No	Questions	Blooms Taxonomy Level	Program Outcome
	UNIT – I **CEMENT AND ADMIXTURES**		
1	What is the percentage of water required, if 1500 g of water is required to have a cement paste of 1875 g of normal consistency?	Analyze	a
2	Which cement is preferred for construction in sea water?	Analyze	a
3	How does alkali aggregate reaction affect the concrete mix?	Analyze	a
4	Why does hydration of cement occur?	Analyze	a
5	At what temperature is slurry burnt in a rotary kiln?	Analyze	a
6	What is the maximum amount of dust which may be permitted in aggregates?	Analyze	a
7	On which factors the bulk density of aggregates does not depend upon?	Analyze	a
8	How does alkali aggregate reaction affect concrete?	Analyze	a
9	If 20 kg of coarse aggregate is sieved through 80 mm, 40 mm, 20 mm, 10 mm, 4.75 mm, 2.36 mm, 1.18 mm, 600 micron, 300 micron and 150 micron standard sieves and the weights retained are 0 kg, 2 kg, 8 kg, 6 kg, 4 kg respectively, what is the fineness modulus of the aggregate?	Analyze	a
10	If X, Y and Z are the fineness moduli of coarse, fine and combined aggregates, what is the percentage (P) of fine aggregates to combined aggregates?	Analyze	a
	UNIT – II **FRESH CONCRETE**		
1	W_p and W_f are the weights of a cylinder containing partially compacted and fully compacted concrete. If the compaction factor $\frac{Wp}{Wf}$ is 0.95, what is the workability of concrete?	Analyze	d
2	How can shrinkage in concrete be reduced?	Analyze	d
3	What is the process of hardening the concrete by keeping its surface moist known as?	Analyze	d
4	Which grade of concrete not recommended by I.S. : 456 and why?	Analyze	d
5	What does proper batching ensure?	Analyze	d

S. No	Questions	Blooms Taxonomy Level	Program Outcome
6	Which method is used for compacting plain concrete road surface of thickness less than 20 cm?	Analyze	d
7	How does segregation affect concrete?	Analyze	d
8	What is separation of water or water sand cement from a freshly concrete?	Analyze	d
9	How does high temperature affect fresh concrete?	Analyze	d
10	How is workability of concrete mix with low water cement ratio determined?	Analyze	D
	UNIT-III **HARDENED CONCRETE**		
1	Which factors lead to strength in hardened concrete?	Analyze	e
2	How does water cement ratio affect the properties of hardened concrete?	Analyze	e
3	How does gel space ratio affect the properties of hardened concrete?	Analyze	e
4	In concrete compression test, normally 150mmx150mmx150mm concrete cube samples are used for testing. Why isn't 100mmx100mmx100mm concrete cube samples used in the test instead of 150mmx150mmx150mm concrete cube samples?	Analyze	e
5	Is it desirable to use concrete of very high strength i.e. exceeding 60MPa? What are the potential problems associated with such high strength concrete?	Analyze	e
6	In carrying out compression test for concrete, should test cubes or test cylinders be adopted?	Analyze	e
7	Discuss the relation between creep and time.	Analyze	e
8	Why is the compressive strength of hardened concrete determined after 28 days?	Analyze	e
9	What is the purpose of conducting non destructive tests?	Analyze	e
10	How does creep affect hardened concrete?	Analyze	e
	UNIT-IV		
1	Design the concrete mix for grade M20 with suitable conditions. Find the quantities of constituents of the mix for a bag of cement.	Analyze	f
2	Design the concrete mix for grade M30 with suitable conditions. Find the quantities of constituents of the mix for a bag of cement.	Analyze	f
3	Design the concrete mix for the following data: characteristic compressive strength= 20MPa, maximum size of aggregate = 20mm (angular), Degree of workability = 0.9 CF, Degree of quality control = good and type of exposure = severe. Water absorption by CA = 0.5% and moisture content in FA = 2.0%. Assume any suitable missing data.	Analyze	f
4	Design the concrete mix for the following data: characteristic compressive strength = 35MPa, maximum size of aggregate = 20mm (angular), Degree of workability = 0.9 CF, Degree of quality control = good and type of exposure = severe. Water absorption by CA = 1% and moisture content in FA = 1.5%.Assume any suitable missing data.	Analyze	f
5	Design the concrete mix for the following date: characteristic compressive strength=35mpa, maximum size of aggregate =20mm (angular), degree of workability=0.9CF, degree of quality control =good and type of exposure=severe. Water absorption by CA=1%	Analyze	f

S. No	Questions	Blooms Taxonomy Level	Program Outcome
	and moisture content in FA =1.5%. Assume any suitable missing data		
6	Design the concrete mix for the following data: characteristic compressive strength=20mpa, maximum size of aggregate =20mm (angular), degree of workability =0.9CF, degree of quality control =good and type of exposure=severe. Water absorption by CA =0.5% and moisture concrete FA=2.0%. Assume any suitable missing data.	Analyze	f
UNIT –V SPECIAL CONCRETES			
1	Distinguish between light weight concrete and high density concrete.	Analyze	g
2	What are the different types fibres used in FRC and how do they affect the properties of concrete?	Analyze	g
3	Distinguish between high performance concrete and self compacting concrete.	Analyze	g
4	Distinguish between self consolidating concrete and conventional concrete.	Analyze	g