UNIT-I

1	(a) What is the difference between false set, initial set and final set?	[5M]
	(b) How is consistence of cement paste measured?	[5M]
2	(a) Explain hydrated structure of cement base.	[5M]
	(b) Explain the purpose and action of super plasticizer.	[5M]
3	(a) Write a note on alkali – aggregate reaction.	[5M]
	(b) Explain the influence of grading of aggregates on the concrete in wet state.	[5M]
4	(a) Define the heat of hydration of cement. What are the ingredients in the cement?	[5M]
	(b) Explain Bogue's compound. Also explain the structure of hydrated cement paste.	[5M]
5	Bring out the detailed classification of aggregates and explain each one of them briefly.	[10M]
6	Define workability of concrete. Explain the various factors affecting workability. Explain any one of the laboratory method to measure workability.	[10M]
7	(a) What are the different cements available and explain about PPC and slag cement.	[5M]
	(b) What is the purpose of using admixtures in cement and explain about using super plasticizer in cement.	[5M]
8	(a) Define fineness modulus. Give the practical range of fineness modulus values for coarse and fine aggregates.	[5M]
	(b) Explain about uniform grading and gap grading.	[5M]
9	(a) Explain the classification of mineral and chemical admixtures.	[5M]
	(b) Discuss the properties and uses of any three mineral admixtures.	[5M]
10	(a) What are the methods generally used in laboratory for determining moisture content of aggregates? Explain briefly.	[5M]
	(b) How would you measure the apparent specific gravity of coarse aggregate?	[5M]
	UNIT-II	
11	(a) Explain about applications of polymer concrete.	[5M]
	(b) Describe the effect of incorporating fibers in concrete.	[5M]
12	Explain the term Fiber Reinforced concrete. Explain the different types of fibers used in the production of fiber reinforced concrete. Discuss in detail the applications of steel fiber reinforced	[10M]
13	(a) Briefly discuss proportioning of concrete mixes by various methods.	[5M]
	(b) Write step by step procedure for concrete mix design as per ISI method.	[5M]
14	(a) Discuss the factors governing the choice of mix proportions.	[5M]
	(b) Discuss the step by step procedure for high strength concrete mix design as per ACI method.	[5M]
15	Write the mix design procedure for high strength concrete.	[10M]
16	It is required to design an M 50 grade concrete mix having a slump of the order 25-75 mm for the extreme exposure conditions. The coarse aggregate available is well shaped having nominal maximum size of 12.5 mm, specific inanity of 2.64 dry-rodded mass of 1640 kg/m3, moisture content of 1% and absorption of 0.5%. Whereas fine aggregate to be used has fineness modules of 2.60, specific inanity of 2.62, dry-rodded mass of 1725 kg/m3, moisture content is 4.5%, absorption of 0.6%. The available cement has a specific gravity of 3.15. Use ACI method.	[5M]

17	Design a M45 concrete mix using IS method (10262-2009) of Mix Design for the following data.(i) Maximum size of aggregate - 20 mm (Angular) (ii) Degree of workability - 100 mm slump(iii) Quality control - good (iv) Type of exposure - severe (v) Specific gravity: (a) Cement OPC 43 grade - 3.12 (b) Sand - 2.63 (c) Coarse aggregate - 2.66(vi) Water absorption: (a) Coarse aggregate - 0.5% (b) Fine aggregate - 1.0% (vii) Free surface moisture: (a) Coarse aggregate - Nil (b) Fine aggregate - 2.2%	[10M]
18	Design a M 30 grade concrete as per IS method. Assume any data if found missing. Design of workability – 0.85, Degree of quality control – Fair, Degree of exposure – severe, Zone of sand – II Aggregate size – 20 mm, Sp.gravity of CA = 2.65 & FA = 2.60 shape of aggregate – angular,	[10M]
19	(a) Discuss the durability aspects in concrete mix-design as per IS 456-2000.	[5M]
	(b) Explain the step by step procedure for normal concrete mix-design as per BIS method.	[5M]
20	Explain in detail about the design procedure of Road note No:4	[10M]
	UNIT-III	
21	(a) What are the modern methods on trends in concrete manufacture and placement technique?	[5M]
	(b) Write a note on steam curing.	[5M]
22	(a) Explain Abram law as regard to water-cement ratio and compressive strength of concrete.	[5M]
	(b) Explain relationship between the compressive & tensile strength of concrete.	[5M]
23	(a) DefineMaturity concept of concreteand Griffith's hypothesis.	[5M]
	(b) List and explain the various factors affecting the strength of concrete.	[5M]
24	(a) Explain the methods of transportation of concrete.	[5M]
	(b)Explain the vacuum dewatering of concrete.	[5M]
25	(a) What are the precautions to be taken while transportation of concrete?	[5M]
	(b) Explain the underwater concrete method.	[5M]
26	(a) Explain how do you determine the splitting strength of concrete.	[5M]
	(b) Explain about Griffith model for cracking of concrete.	[5M]
27	(a) Explain the corrosion mechanism and if control in concrete.	[5M]
	(b) What is creep and shrinkage of concrete and list the factors affecting shrinkage and creep of concrete?	[5M]
28	(a) Draw a typical stress-strain curve for concrete under compression. From this, how dynamic modules of elasticity and types of the static elastic modules are determined.	[5M]
	(b)Which are the factors affect creep and why?	[5M]
29	(a) Explain how dynamic modulus of concrete can be determined.	[5M]
	(b) What are the factors that affect the shrinkage of concrete?	[5M]
30	(a) Explain the phenomenon of gain of strength of concrete with age.	[5M]
	(b) Explain different methods of placing concrete.	[5M]
	UNIT-IV	
31	(a) Explain the terms.Grouting and Coding of concrete.	[5M]
	b) Explain the NDT methods of testing of concrete.	[5M]
32	Explain the various non destructive tests on concrete with the help of neat sketches.	[10M]
33	(a) Discuss the hardened properties of concrete by destructive methods	[5M]
	(b) Write a note on petrography studies on concrete.	[5M]
34	(a) Discuss the fresh properties of concrete.	[5M]
	(b) Explain any two non-destructive testing methods to evaluate the quality of concrete.	[5M]

35	Explain about “corrosion protection and fire resistance” .	[10M]
36	What are the different non-destructive method of testing concrete and also mention their uses?	[10M]
37	Explain in brief about rebound hammer test with a neat sketch?	[10M]
38	Explain about the dynamic or vibration methods of non-destructive testing of concrete.	[10M]
39	What is the use usefulness of resonant frequency method of NDT?	[10M]
40	How the creep is measured experimemtally? Explain in detail.	[10M]
	UNIT-V	
41	What is the role of special concretes in the modern construction industry? Discuss.	[10M]
42	Define the term ready mixed concrete. And explain its advantages over conventional concrete.	[10M]
43	(a) Write short notes on Precast concrete and Ferrocement	[5M]
	(b) Explain the terms: Fibre reinforced concrete and Polymer concrete	[5M]
44	(a) Explain about applications of polymer concrete.	[5M]
	(b) Describe the effect of incorporating fibers in concrete.	[5M]
45	(a) How fibre reinforced concrete is is different from ordinary concrete in its mechanical properties? List the practical applications of fibre reinforced concrete.	[5M]
	(b) Define polymer concrete, latex modified concrete & polymer impregnated concrete.	[5M]
46	(a) Explain about Fibre reinforced concrete and types of fibres used.	[5M]
	(b)Light weight aggregate concrete and its uses.	[5M]
47	Explain the properties and used of fibre reinforced concrete.	[10M]
48	(a) Discuss the properties of various fibres and their effect on concrete.	[5M]
	(b) Write a note on polymers in concrete and structural elastometric bearings.	[5M]
49	Explain the polymer concrete.	[10M]
50	What is " light weight concrete"? How is it produced?	[10M]

	Subjet Name with Code: Advanced Concrete Technology (16CE2001)	
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