



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)
Dundigal, Hyderabad-500043

CIVIL ENGINEERING

TUTORIAL QUESTION BANK

Course Title	CONCRETE TECHNOLOGY				
Course Code	ACE010				
Programme	B.Tech				
Semester	V	CE			
Course Type	Core				
Regulation	IARE - R16				
Course Structure	Theory			Practical	
	Lectures	Tutorials	Credits	Laboratory	Credits
	3	1	4	3	2
Chief Coordinator	Mr. N Venkat Rao, Associate Professor				
Course Faculty	Mr. N Venkat Rao, Associate Professor Mrs. B. Bhavani, Assistant Professor				

COURSE OBJECTIVES:

The course should enable the students to:	
I	Discuss the physical and chemical properties of cement and admixtures
II	Understand the workability of concrete, manufacturing processes of concrete and the behaviour of the hardened concrete
III	Identify, formulate and solve problems in concrete mix design
IV	Enrich the practical knowledge on mix design principles, concepts and methods.

COURSE OUTCOMES (COs):

CO 1	Understand the basic physical and chemical properties of cement, admixtures and aggregates
CO 2	Describe the properties and factors influencing the workability of fresh concrete
CO 3	Determine the affect of water/cement ratio on the strength of hardened concrete and also the strength of concrete by using NDT testing methods
CO 4	Analyse the mix design of concrete
CO 5	Understand the basic concepts and applications of special concretes at various situations

COURSE LEARNING OUTCOMES (CLOs):

ACE010.01	Explain the different types of cement, grades of cement and hydration process.
ACE010.02	Classify different types of admixture and their usage.
ACE010.03	Understand aggregates and classification of aggregate depending upon shape, size, texture etc.
ACE010.04	Understand the Alkali Aggregate Reaction.
ACE010.05	Understand Sieve Analysis and grading of aggregate.
ACE010.06	Understand the concept of workability of concrete and factors affecting workability.
ACE010.07	Explain the measurement of workability by different test.
ACE010.08	Understand the concept of segregation and bleeding in concrete.
ACE010.09	Explain the various steps involved in the manufacturing process of concrete.
ACE010.10	Understand the importance of quality of mixing water.
ACE010.11	Understand hardened concrete and its properties.
ACE010.12	Explain the importance of water cement ratio, maturity concept in hardened concrete
ACE010.13	Understand the various methods of curing of concrete.
ACE010.14	Explain the different tests involved in testing of hardened concrete.
ACE010.15	Understand the concept of creep and how it effects hardened concrete.
ACE010.16	Explain shrinkage and its effect on concrete.
ACE010.17	Understand the importance of Mix proportions.
ACE010.18	Understand durability and quality control of concrete.
ACE010.19	Explain Acceptance criteria involved in concrete mix proportioning.
ACE010.20	Explain proportioning of concrete method by different methods.
ACE010.21	Design the concrete mix by BIS method.
ACE010.22	Explain the different types of special concrete.
ACE010.23	Explain the effect of fibre in the concrete.

TUTORIAL QUESTION BANK

UNIT-I				
CEMENTS ADMIXTURES & AGGREGATES				
Part - A (Short Answer Questions)				
S No	QUESTIONS	Blooms Taxonomy Level	Course Outcomes	Course Learning Outcomes (CLOs)
1	What is the chemical composition of cement?	Remember	CO 1	ACE010.01
2	List various types of cement.	Remember	CO 1	ACE010.02
3	What is grade of cement? List any three grades of cement with their strengths.	Understand	CO 1	ACE010.01
4	Give step by step method of manufacture of cement by wet process.	Understand	CO 1	ACE010.02
5	What is the common classification of aggregates?	Understand	CO 1	ACE010.02
6	What are the properties of Aggregate?	Understand	CO 1	ACE010.02
7	What are the Physical Quality requirements of aggregates?	Remember	CO 1	ACE010.02
8	Distinguish between plasticizers and super plasticizers.	Remember	CO 1	ACE010.02
9	Distinguish between natural and chemical admixtures.	Understand	CO 1	ACE010.01
10	What is meant by hydration of cement?	Remember	CO 1	ACE010.01
11	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?	Remember	CO 1	ACE010.01
12	Which cement is preferred for construction in sea water?	Understand	CO 1	ACE010.01
13	How does alkali aggregate reaction affect the concrete mix?	Understand	CO 1	ACE010.02
14	Why does hydration of cement occur?	Remember	CO 1	ACE010.05
15	At what temperature is slurry burnt in a rotary kiln?	Remember	CO 1	ACE010.05
16	What is the maximum amount of dust which may be permitted in aggregates?	Understand	CO 1	ACE010.05
17	On which factors the bulk density of aggregates does not depend upon?	Remember	CO 1	ACE010.05
18	How does alkali aggregate reaction affect concrete?	Remember	CO 1	ACE010.05
19	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?	Remember	CO 1	ACE010.01
20	If X, Y and Z are the fineness moduli of course, fine and combined aggregates, what is the percentage (P) of fine aggregates to combined aggregates?	Remember	CO 1	ACE010.02
Part - B (Long Answer Questions)				
1	Explain the different types of cement in detail.	Understand	CO 1	ACE010.03
2	Describe the setting time and soundness test of cement.	Understand	CO 1	ACE010.02
3	Explain the bulking phenomenon of aggregates.	Remember	CO 1	ACE010.02
4	Explain the procedure of determining '10 per cent fines value'. What is gap graded aggregate?	Understand	CO 1	ACE010.03
5	Describe the hydration reaction of Bogue's compounds indicating the products of hydration.	Understand	CO 1	ACE010.02
6.	How is compressive strength of cement determined?	Understand	CO 1	ACE010.02
7.	Describe the test done to determine aggregate abrasion value.	Understand	CO 1	ACE010.02
8	Write briefly about Retarders.	Understand	CO 1	ACE010.02
9.	Write short notes on Damp proofing agents	Understand	CO 1	ACE010.02
10	Describe Dry process of cement manufacturing.	Understand	CO 1	ACE010.02
11	Write short notes on Air entraining agents	Understand	CO 1	ACE010.02
12	Describe Wet process of cement manufacturing.	Understand	CO 1	ACE010.02
13	Write briefly about Accelerators.	Understand	CO 1	ACE010.03
14	Explain shape and texture of the aggregate?	Understand	CO 1	ACE010.02
15	Explain different types of admixtures?	Understand	CO 1	ACE010.03
16	Explain mechanical properties of aggregate?	Understand	CO 1	ACE010.02
17	Properties of mineral and chemical admixtures?	Understand	CO 1	ACE010.02
18	Explain Bond and Strength of the aggregate?	Understand	CO 1	ACE010.03

19	Write short note of thermal properties of aggregate?	Understand	CO 1	ACE010.04
20	What is grading of fine and coarse aggregate?	Remember	CO 1	ACE010.04
Part - C (Problem Solving and Critical Thinking Questions)				
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?	Understand	CO 1	ACE010.03
2	If X, Y and Z are the fineness moduli of course, fine and combined aggregates, what is the percentage (P) of fine aggregates to combined aggregates?	Understand	CO 1	ACE010.02
3	Which cement is preferred for construction in sea water?	Understand	CO 1	ACE010.02
4	How does alkali aggregate reaction affect the concrete mix?	Remember	CO 1	ACE010.03
5	Why does hydration of cement occur?	Understand	CO 1	ACE010.03
6	At what temperature is slurry burnt in a rotary kiln?	Understand	CO 1	ACE010.02
7	What is the maximum amount of dust which may be permitted in Aggregates?	Understand	CO 1	ACE010.02
8	On which factors the bulk density of aggregates does not depend upon?	Remember	CO 1	ACE010.03
9	How does alkali aggregate reaction affect concrete?	Remember	CO 1	ACE010.02
10	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?	Understand	CO 1	ACE010.02
UNIT- II				
FRESH CONCRETE				
Part - A (Short Answer Questions)				
1	What is meant by proportioning of concrete?	Remember	CO 2	ACE010.06
2	Can sea water be used for making concrete? Explain.	Remember	CO 2	ACE010.07
3	What is meant by curing of concrete?	Understand	CO 2	ACE010.06
4	What is meant by controlled concrete?	Understand	CO 2	ACE010.07
5	Define Workability.	Remember	CO 2	ACE010.06
6	Mention the Properties of concrete at Early Ages.	Understand	CO 2	ACE010.07
7	What are the Causes of bleeding and segregation?	Remember	CO 2	ACE010.06
8	What are the Methods for Control of Bleeding?	Remember	CO 2	ACE010.07
9	Define segregation of concrete.	Remember	CO 2	ACE010.08
10	Define bleeding of concrete.	Remember	CO 2	ACE010.06
11	What is the effect of temperature on curing of concrete?	Remember	CO 2	ACE010.06
12	How can shrinkage in concrete be reduced?	Remember	CO 2	ACE010.07
13	What is the process of hardening the concrete by keeping its surface moist known as?	Remember	CO 2	ACE010.07
14	Which grade of concrete not recommended by I.S: 456 and why?	Remember	CO 2	ACE010.08
15	What does proper batching ensure?	Remember	CO 2	ACE010.08
16	Which method is used for compacting plain concrete road surface of thickness less than 20 cm?	Remember	CO 2	ACE010.07
17	How does segregation affect concrete?	Remember	CO 2	ACE010.06
18	What is separation of water or water sand cement from a freshly concrete?	Remember	CO 2	ACE010.08
19	How does high temperature affect fresh concrete?	Remember	CO 2	ACE010.07
20	How is workability of concrete mix with low water cement ratio determined?	Remember	CO 2	ACE010.07
Part - B (Long Answer Questions)				
1	What is meant by workability?	Understand	CO 2	ACE010.07
2	Explain Flow test in detail.	Remember	CO 2	ACE010.08
3	What are the methods available for measuring air content in fresh concrete? Explain one of the methods in detail.	Understand	CO 2	ACE010.08
4	What are the effects of time and temperature on workability?	Remember	CO 2	ACE010.08
5	Describe briefly about segregation?	Understand	CO 2	ACE010.07
6	What are the various steps involved in concrete manufacturing?	Remember	CO 2	ACE010.07
7	What is segregation describe briefly?	Understand	CO 2	ACE010.08
8	What is bleeding and how can it be prevented?	Remember	CO 2	ACE010.06
9	How does freeze-thaw damage occur?	Understand	CO 2	ACE010.07
10	What is alkali-aggregate reaction? Explain.	Remember	CO 2	ACE010.07

11	Define re-vibration briefly?	Understand	CO 2	ACE010.10
12	Describe the importance of the quality of water used for concreting.	Remember	CO 2	ACE010.08
13	What is mixing and vibration of concrete?	Understand	CO 2	ACE010.07
14	Describe briefly about bleeding?	Remember	CO 2	ACE010.07
15	Explain Compaction factor test in detail.	Understand	CO 2	ACE010.06
16	What are the factors affecting workability of concrete?	Remember	CO 2	ACE010.07
17	Define measurement of workability by different tests?	Understand	CO 2	ACE010.07
18	Explain how can we be prevented segregation?	Remember	CO 2	ACE010.08
19	Describe the setting time of concrete?	Understand	CO 2	ACE010.08
20	What are the various vibration techniques used for concrete	Remember	CO 2	ACE010.08

Part - C (Problem Solving and Critical Thinking Questions)

1	How does water cement ratio affect the properties of hardened concrete?	Understand	CO 2	ACE010.08
2	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?	Remember	CO 2	ACE010.06
3	Which factors lead to strength in hardened concrete?	Understand	CO 2	ACE010.07
4	In carrying out compression test for concrete, should test cubes or test cylinders be adopted?	Remember	CO 2	ACE010.06
5	How does gel space ratio affect the properties of hardened concrete?	Understand	CO 2	ACE010.08
6	Discuss the relationship between time and creep.	Remember	CO 2	ACE010.06
7	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?	Understand	CO 2	ACE010.07
8	Why is the compressive strength of hardened concrete determined after 28 days?	Remember	CO 2	ACE010.07
9	What is the purpose of conducting Non-destructive tests?	Understand	CO 2	ACE010.08
10	How does creep affect hardened concrete?	Remember	CO 2	ACE010.09

UNIT-III

HARDENED CONCRETE AND ITS TESTING

Part - A (Short Answer Questions)

1	Define Water/cement ratio.	Understand	CO 3	ACE010.11
2	What is meant by gel-space ratio?	Remember	CO 3	ACE010.12
3	Why is Elastic Moduli Important for Concrete?	Understand	CO 3	ACE010.12
4	Define Shrinkage cracking	Remember	CO 3	ACE010.12
5	Define Tension cracking	Understand	CO 3	ACE010.12
6	Define Creep.	Remember	CO 3	ACE010.12
7	Write short notes on the following: Acid attack	Understand	CO 3	ACE010.12
8	Write short notes on the following: Sulphate attack	Remember	CO 3	ACE010.12
9	Write short notes on the following: Alkali attack	Understand	CO 3	ACE010.12
10	Write short notes on the following: Non-destructive testing of concrete	Remember	CO 3	ACE010.12

11	Which factors lead to strength in hardened concrete?	Understand	CO 3	ACE010.13
12	How does water cement ratio affect the properties of hardened concrete?	Remember	CO 3	ACE010.13
13	How does gel space ratio affect the properties of hardened concrete?	Understand	CO 3	ACE010.13
14	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?	Remember	CO 3	ACE010.13
15	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?	Understand	CO 3	ACE010.13
16	In carrying out compression test for concrete, should test cubes or test cylinders be adopted?	Remember	CO 3	ACE010.13
17	Discuss the relation between creep and time.	Understand	CO 3	ACE010.12
18	Why is the compressive strength of hardened concrete determined after 28 days?	Remember	CO 3	ACE010.12
19	What is the purpose of conducting Non-destructive tests?	Understand	CO 3	ACE010.12
20	How does creep affect hardened concrete?	Remember	CO 3	ACE010.12

Part – B (Long Answer Questions)				
1	What is Abram's law? How does it affect concrete?	Understand	CO 3	ACE010.12
2	What are the various factors affecting strength of hardened concrete?	Remember	CO 3	ACE010.12
3	What is curing? What are the different methods of curing?	Understand	CO 3	ACE010.12
4	Explain briefly about Tension test?	Remember	CO 3	ACE010.12
5	Write a short note on Flexural test	Understand	CO 3	ACE010.12
6	Explain nondestructive tests.	Remember	CO 3	ACE010.13
7	Write a short note on Elasticity of concrete	Understand	CO 3	ACE010.12
8	Write a short note on Creep	Understand	CO 3	ACE010.12
9	What is creep of concrete?	Remember	CO 3	ACE010.13
10	What is shrinkage?	Understand	CO 3	ACE010.13
11	Explain briefly about Compression test?	Understand	CO 3	ACE010.13
12	Describe briefly about Split tensile test	Remember	CO 3	ACE010.13
13	Write a short note on Shrinkage	Understand	CO 3	ACE010.13
14	Write a short note on Durability of concrete	Remember	CO 3	ACE010.14
15	What are the factors influencing creep?	Understand	CO 3	ACE010.13
16	What is the relation between creep & time?	Remember	CO 3	ACE010.13
17	What are effects of creep?	Understand	CO 3	ACE010.13
18	What are the types of shrinkage?	Remember	CO 3	ACE010.13
19	What are the codal provisions for NDT?	Understand	CO 3	ACE010.13
20	Describe types of NDT tests?	Remember	CO 3	ACE010.14
Part – C (Problem Solving and Critical Thinking)				
1	Which factors lead to strength in hardened concrete?	Understand	CO 3	ACE010.14
2	How does water cement ratio affect the properties of hardened concrete?	Remember	CO 3	ACE010.12
3	How does gel space ratio affect the properties of hardened concrete?	Understand	CO 3	ACE010.13
4	In concrete compression test, normally 150mm x 150mm x 150mm concrete cube samples are used for testing. Why isn't 100mmx100mmx100mm concrete cube samples used in the test instead of 150mmx150mmx150mm concrete cube samples?	Remember	CO 3	ACE010.13
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?	Understand	CO 3	ACE010.14
6	Discuss the relation between creep and time.	Understand	CO 3	ACE010.14
7	Why is the compressive strength of hardened concrete determined after 28 days?	Remember	CO 3	ACE010.13
8	What is the purpose of conducting Non-destructive tests?	Understand	CO 3	ACE010.13
9	How does creep affect hardened concrete?	Remember	CO 3	ACE010.12
10	Which factors lead to strength in hardened concrete?	Understand	CO 3	ACE010.14
UNIT-IV				
MIX DESIGN				
Part – A (Short Answer Questions)				
1	Define Concrete Durability.	Understand	CO 4	ACE010.16
2	Define concrete mix design.	Remember	CO 4	ACE010.17
3	What are the factors influencing the selection of materials?	Understand	CO 4	ACE010.16
4	What are the factors Influencing Consistency?	Remember	CO 4	ACE010.17
5	What are the Factors affecting Strength of Hardened concrete?	Understand	CO 4	ACE010.16
6	What is the sequence of steps should be followed in ACI method?	Remember	CO 4	ACE010.17
7	Mention the Maximum aggregate size to be used in Mix Design as per ACI.	Understand	CO 4	ACE010.16
8	What are the Requirements of concrete mix design as per BIS?	Remember	CO 4	ACE010.16
9	Factors that influence the choice of mix design.	Understand	CO 4	ACE010.16
10	What are the Factors affecting the choice of mix proportions?	Remember	CO 4	ACE010.16
11	Describe about Sampling criteria	Understand	CO 4	ACE010.17
12	What is statistical quality control?	Remember	CO 4	ACE010.16
13	What is M20 Mix concrete?	Understand	CO 4	ACE010.16
14	Describe Acceptance criteria	Remember	CO 4	ACE010.17

15	Define Standard mixes.	Understand	CO 4	ACE010.16
16	What are the types of concrete mixes? Explain.	Remember	CO 4	ACE010.16
17	What is M30 Mix concrete?	Understand	CO 4	ACE010.17
18	What are Designed Mixes?	Remember	CO 4	ACE010.16
19	What is an acceptance criterion of concrete?	Understand	CO 4	ACE010.16
20	Define Nominal Mixes?	Remember	CO 4	ACE010.17
Part – B (Long Answer Questions)				
1	Describe ACI method of mix design in detail.	Understand	CO 4	ACE010.16
2	Describe Indian standard method of mix design in detail.	Remember	CO 4	ACE010.17
3	Describe about the Sampling criteria?	Understand	CO 4	ACE010.16
4	Design the concrete mix for grade M20 with suitable conditions. Find the quantities of constituents of the mix for a bag of cement.	Remember	CO 4	ACE010.16
5	Explain the factors that influence the choice of mix design.	Understand	CO 4	ACE010.17
6	Explain in detail about the statistical quality control and acceptance criteria of concrete.	Remember	CO 4	ACE010.16
7	Design the concrete mix for grade M30 with suitable conditions. Find the quantities of constituents of the mix for a bag of cement.	Understand	CO 4	ACE010.16
8	Explain the procedure of selection of constituent materials of concrete.	Remember	CO 4	ACE010.17
9	Define Nominal Mixes and Standard mixes. What are Designed Mixes?	Understand	CO 4	ACE010.16
10	Describe the recent trends in concrete mix design.	Remember	CO 4	ACE010.16
11	Describe quality control of concrete?	Understand	CO 4	ACE010.17
12	Describe about Acceptance criteria?	Remember	CO 4	ACE010.16
13	What is BIS method of mix design?	Understand	CO 4	ACE010.16
14	Design the concrete mix for grade M20 with suitable conditions. Find the quantities of constituents of the mix for a bag of cement.	Remember	CO 4	ACE010.17
15	Design the concrete mix for grade M30 with suitable conditions. Find the quantities of constituents of the mix for a bag of cement.	Understand	CO 4	ACE010.16
16	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.	Remember	CO 4	ACE010.17
17	Describe briefly about durability of concrete?	Understand	CO 4	ACE010.16
18	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.	Remember	CO 4	ACE010.17
19	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% and moisture content in FA =1.5%. Assume any suitable missing data.	Understand	CO 4	ACE010.16
20	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.	Remember	CO 4	ACE010.17
Part – C (Problem Solving and Critical Thinking)				
1	Design the concrete mix for grade M20 with suitable conditions. Find the quantities of constituents of the mix for a bag of cement.	Understand	CO 4	ACE010.17
2	Design the concrete mix for grade M30 with suitable conditions. Find the quantities of constituents of the mix for a bag of cement.	Remember	CO 4	ACE010.16

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.	Understand	CO 4	ACE010.16
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.	Remember	CO 4	ACE010.17
5	Design the concrete mix for the following data: 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% and moisture content in FA =1.5%. Assume any suitable missing data	Understand	CO 4	ACE010.16
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.	Remember	CO 4	ACE010.16
7	Design the concrete mix for the following data: characteristic compressive strength=25mpa, 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 =0.6% and moisture concrete FA=2.0%. Assume any suitable missing data.	Understand	CO 4	ACE010.17
8	Design the concrete mix for grade M50 with suitable conditions. Find the quantities of constituents of the mix for a bag of cement.	Remember	CO 4	ACE010.16
9	Design the concrete mix for grade M55 with suitable conditions. Find the quantities of constituents of the mix for a bag of cement.	Understand	CO 4	ACE010.16
10	Design the concrete mix for the following data: characteristic compressive strength=40mpa, 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 =0.6% and moisture concrete FA=2.0%. Assume any suitable missing data.	Remember	CO 4	ACE010.17

UNIT-V

SPECIAL CONCRETE

Part - A (Short Answer Questions)

1	What are the different types of polymer concrete?	Understand	CO 5	ACE010.20
2	Write brief note on polymer concrete?	Remember	CO 5	ACE010.19
3	Explain about polymer – modified concrete?	Understand	CO 5	ACE010.18
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.	Remember	CO 5	ACE010.18
5	Define Ferro-cement.	Understand	CO 5	ACE010.20
6	What is self-compacting concrete?	Remember	CO 5	ACE010.20
7	What are the uses of polymer concrete?	Understand	CO 5	ACE010.20
8	What are the advantages of using high-strength concrete?	Remember	CO 5	ACE010.19
9	What is polymer – modified concrete?	Understand	CO 5	ACE010.19
10	What is SIFCON?	Remember	CO 5	ACE010.20
11	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% and moisture content in FA =1.5%. Assume any suitable missing data.	Understand	CO 5	ACE010.20

12	What are materials of self-compacting concrete?	Remember	CO 5	ACE010.19
13	What are the types of polymer concrete?	Understand	CO 5	ACE010.18
14	What is the aggregate cement ratio of No-fine Concrete?	Remember	CO 5	ACE010.18
15	Factors effecting properties of Fibre Reinforced Concrete?	Understand	CO 5	ACE010.20
16	What are minerals of self-compacting concrete?	Remember	CO 5	ACE010.20
17	What is the water cement ratio of No-fine Concrete?	Understand	CO 5	ACE010.20
18	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.	Remember	CO 5	ACE010.19
19	What polymer – impregnated concrete?	Understand	CO 5	ACE010.19
20	What are the types of self-compacting concrete	Remember	CO 5	ACE010.20
Part - B (Long Answer Questions)				
1	How can high-strength concrete be classified? Explain.	Understand	CO 5	ACE010.20
2	List the differences between polymer – impregnated concrete, polymer – modified concrete, and polymer concrete.	Remember	CO 5	ACE010.21
3	What are the various quality control tests done to ensure good performance of polymer concrete?	Understand	CO 5	ACE010.19
4	What are the basic properties of fibre – reinforced concrete which can be advantageously made use of in the design of structural elements?	Remember	CO 5	ACE010.20
5	In what way the behavior of FRC can be used for seismic –resistant design?	Understand	CO 5	ACE010.20
6	Explain in detail the method of design of light weight concreting.	Remember	CO 5	ACE010.20
7	Describe the procedure of Shotcrete& Grouting.	Understand	CO 5	ACE010.20
8	Explain the properties of polymer Impregnated Concrete.	Remember	CO 5	ACE010.21
9	Explain the design aspects of aerated concrete.	Understand	CO 5	ACE010.22
10	Explain the various methods of polymer concrete.	Remember	CO 5	ACE010.20
11	Distinguish between light weight concrete and high density concrete.	Understand	CO 5	ACE010.21
12	What are the different types of fibres used in FRC and how do they affect the properties of concrete?	Remember	CO 5	ACE010.22
13	Distinguish between high performance concrete and self-compacting concrete.	Understand	CO 5	ACE010.20
14	Distinguish between self-consolidating concrete and conventional concrete.	Remember	CO 5	ACE010.21
15	Explain briefly about the types of fiber reinforced concrete?	Understand	CO 5	ACE010.22
16	Write a brief note on self-compacting concrete?	Remember	CO 5	ACE010.20
17	What are the different types of polymer concrete?	Understand	CO 5	ACE010.21
18	Write brief note on polymer concrete?	Remember	CO 5	ACE010.22
19	Explain about polymer – modified concrete?	Understand	CO 5	ACE010.20
20	Explain about polymer – impregnated concrete?	Remember	CO 5	ACE010.21
Part – C (Problem Solving and Critical Thinking)				
1	Distinguish between light weight concrete and high density concrete.	Understand	CO 5	ACE010.20
2	What are the different types fibres used in FRC and how do they affect the properties of concrete?	Remember	CO 5	ACE010.20
3	Distinguish between high performance concrete and self-compacting concrete.	Understand	CO 5	ACE010.21
4	Distinguish between self-consolidating concrete and conventional concrete.	Remember	CO 5	ACE010.22
5	Describe the procedure of Shotcrete & Grouting.	Understand	CO 5	ACE010.20
6	Explain the properties of polymer Impregnated Concrete.	Remember	CO 5	ACE010.20
7	Explain the design aspects of aerated concrete.	Understand	CO 5	ACE010.20
8	Explain the various methods of polymer concrete.	Remember	CO 5	ACE010.20
9	Describe the procedure of Grouting.	Understand	CO 5	ACE010.21
10	Describe the procedure of Shotcrete.	Remember	CO 5	ACE010.22

Prepared by:

Mr. N Venkat Rao, Associate Professor

HOD, CE