SRM VALLIAMMAI ENGINEERING COLLEGE

(An Autonomous Institution)

SRM Nagar, Kattankulathur – 603 203

DEPARTMENT OF CIVIL ENGINEERING

QUESTION BANK

III SEMESTER

CE 3364 - CONSTRUCTION MATERIALS

Regulation: 2023

Academic Year: 2025-26

Prepared by

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SUBJECT CODE/NAME : CE 3364 - CONSTRUCTION MATERIALS

SEM / YEAR: III/II

UNIT- I: STONES - BRICKS - CONCRETE BLOCKS - LIME

Stone as building material - criteria for selection - Tests on stones - Bricks -Classification - Manufacturing of clay bricks - Tests on bricks - Compressive strength -Water Absorption - Efflorescence - Bricks for special use - Lime - Preparation of lime mortar – Concrete Solid and hollow blocks - Lightweight concrete blocks.

PART A

Q.No	Questions	BT Level	Competence
1.	Explain deterioration and preservation of stone work.	BT-3	Application
2.	What is meant by dressing of stones?	BT-2	Understand
3.	Write the composition of bricks.	BT-1	Remember
4.	Recall about light weight concrete blocks.	BT-1	Remember
5.	Enlist various sizes of hollow block as per IS code.	BT-1	Remember
6.	List the different types of refractory bricks.	BT-1	Remember
7.	Classify the types of tests on stones.	BT-2	Understand
8.	Why you choose stone as a building material?	BT-3	Apply
9.	Summarize the names of bricks for special use.	BT-2	Understand
10.	Demonstrate the manufacturing processes of concrete blocks.	BT-1	Remember
11.	Model the standard size of brick used for construction with neat sketch.	BT-1	Remember
12.	What are the various reason for deterioration of stones?	BT-2	Understand
13.	Identify any four advantages of bricks as compared with stones.	BT-2	Understand
14.	Analyze the characteristics of good building stone.	BT-2	Understand
15.	Examine efflorescence in bricks. How it can be removed?	BT-3	Application
16.	Categorize the tests on bricks and their purposes.	BT-1	Remember
17.	Bricks are more preferred than stones. Justify that.	BT-1	Remember
18.	During the manufacturing of light weight concrete blocks admixtures are	BT-1	Remember

	added. Evaluate the statement.		
19.	Compile the applications of light weight concrete blocks.	BT-1	Remember
20.	What are refractory bricks? Where are they commonly used?	BT-2	Understand
21.	Explain the different classification of bricks.	BT-3	Application
22.	List any four test on stones.	BT-1	Remember
23.	Define efflorescence.	BT-1	Remember
24.	How living organisms affects the stonework?	BT-2	Understand

PART B

1.	List out various types of stones used for building works and give in brief the specifications of a good building stones?	BT-1	Remember
2.	What are the characteristics to be considered for selection of stones for various civil engineering works?	BT-2	Understand
3.	(i) List out the types of special bricks. Briefly explain any four of them. (8) (ii) Summarize the advantage, disadvantage and uses of refractory bricks.(8)	BT-1	Remember
4.	Categorize the type of bricks based on use, general, physical requirements and IS classifications.	BT-1	Remember
5.	Explain the characteristics of good bricks. (8) Discuss briefly reason for the causes of defects in bricks.(8)	BT-3	Application
6.	Demonstrate the tests conducted on bricks for their suitability in construction work.	BT-1	Remember
7.	Develop a flow chart showing the steps involved in the manufacturing of bricks.	BT-2	Understand
8.	Identify the application of concrete blocks and explain its testing procedure in detail.	BT-3	Application
9.	Categorize the varieties of concrete Blocks and explain it in brief.	BT-3	Application
10.	Examine the advantages of concrete blocks and explain its manufacturing process.	BT-3	Application
11.	Analyze the simple field tests that you can carry out to determine the suitability of stone to determine quality of stones?	BT-2	Understand
12.	Compare the usage of bricks and stones in construction works in detail.	BT-2	Understand
13.	Brief about methods of preparation of lime mortar. List out any two major tests to determine the quality of lime.	BT-3	Application
14.	Describe with neat sketches, the manufacturing process of Conventional bricks.	BT-3	Application
15.	(i) Why is stone called a good building material (6) (ii) What are all the advantages and disadvantages of using light weight	BT-2	Understand

	concrete blocks in construction? (10)		
16.	List out the constituents of lime and explain its classification.	BT-1	Remember
17.	(i) Elaborate in detail the various test on stones. (8) (ii) Describe the various tests to determine the suitability of a good stone. (8)	BT-3	Application

UNIT-II: CEMENT – AGGREGATES – MORTAR

Cement – Ingredients – Manufacturing process – Types and Grades – Properties of cement and Cement mortar – Tests on Cement - Fly ash – Properties of fine and coarse aggregates –Bulking of sand.

PART A

Q.No	Questions	BT Level	Competence
1.	List the ingredients of cement.	BT-1	Remember
2.	Name the chemical compounds formed during the setting action of cement.	BT-2	Understand
3.	Brief about grading of aggregate	BT-2	Understand
4.	Define Elongation index.	BT-1	Remember
5.	Recall the tests prescribed for mortar.	BT-1	Remember
6.	Classify the various grades of cement in India.	BT-2	Understand
7.	What is meant by hydration of cement? What is its importance?	BT-2	Understand
8.	Compare lime putty, quicklime and slacked lime.	BT-2	Understand
9.	Illustrate the properties of river sand.	BT-2	Understand
10.	Summarize the importance of the term setting time of cement.	BT-2	Understand
11.	List the different kinds of lime used for construction works.	BT-1	Remember
12.	Identify the functions of sand in mortar.	BT-2	Understand
13.	Select the easiest method of preparation of lime mortar and explain the reason behind.	BT-3	Application
14.	Distinguish fat lime and hydraulic lime.	BT-2	Understand
15.	Enlist the requirements of a good mortar.	BT-1	Remember
16.	List out the desirable properties of cement.	BT-1	Remember
17.	Abrasion test on aggregate is conducted for measuring rate of wear and tear. Justify with proper explanation.	BT-3	Application
18.	Assess the percentage of Pozzolana that can be present in PPC when compared to OPC	BT-2	Understand
19.	Propose the tests that can carried out on coarse aggregate.	BT-3	Application

20.	Compile the reasons for preferring crushed sand over river sand	BT-3	Application
21.	Write the difference between Ordinary Portland Cement and Portland Pozzolana Cement.	BT-1	Remember
22.	State some of the properties of good lime.	BT-1	Remember
23.	What is pozzolana?	BT-2	Understand
24.	What is meant by Grade C-43 cement? What are the main active cementing compounds in OPC?	BT-2	Understand
	PART B		
1.	Explain in detail about the Properties of fine and coarse aggregates.	BT-3	Application
2.	List out the constituents of Fly ash and explain its classification.	BT-1	Remember
3.	Discuss various ingredients required for manufacturing of cement? State their functions and properties of cement.	BT-3	Application
4.	Explain the following tests conducted on aggregate; as per IS codes: (a) Water Absorption (8) (b) Flakiness Index and Elongation Index (8)	BT-3	Application
5.	Illustrate the following tests (a) Fineness Test on cement (8) (b) Setting time test on cement (8)	BT-2	Understand
6.	Discuss the step by step procedure to perform the tensile strength test and compressive strength of cement.	BT-3	Application
7.	Describe the procedure of manufacturing cement by wet process.	BT-3	Application
8.	Analyze the properties of fine aggregate and also Discuss the difference between fine and coarse aggregate.	BT-3	Application
9.	Categorize the different types of cement and explain any four in brief.	BT-3	Application
10.	Examine the different tests that can be carried out to identify the quality of sand.	BT-3	Application
11.	(a) Determine the chemical compounds that are formed during the setting action of cement and explain their importance. (8) (b) Evaluate the use of high alumina cement with its pros and cons. (8)	BT-3	Application
12.	(a) (a) Explain the process of hydration of cement. (8) (b) (b) Classify the grades of cement and give their specification details. (8)	BT-3	Application
13.	Construct a flow diagram for manufacture of cement by dry process with brief explanation.	BT-3	Application
14.	(i) Compare and explain the properties of river sand and crushed sand. (8) (ii) Explain in detail about the Bulking of sand.(8)	BT-3	Application

15.	Develop a flow diagram for grinding and burning process in the formation of cement. Also explain about ball mills and tube mills. What are different sources of obtaining sand?	BT-2	Understand
16.	Explain briefly about (a) Consistency test on cement (4) (b) Soundness of cement (4) (c) Crushing strength of aggregate (4) (d)Impact strength of aggregate (4)	BT-3	Application
17.	What are tests to be conducted for conventional courses aggregates ? explain any four tests in detail.	BT-2	Understand

UNIT-III: CONCRETE

Concrete – Ingredients - Manufacturing Process - Batching plants – RMC - Properties of fresh concrete - Slump , Flow and Compaction factor - Properties of Hardened concrete – Non-destructive testing - Mix Specification - Mix proportioning - BIS method – High Strength Concrete and High Performance Concrete - Self Compacting Concrete.

PART A

Q.No	Questions	BT Level	Competence
1.	Define compaction factor.	BT-1	Remember
2.	Name the methods of mix proportioning of concrete.	BT-1	Remember
3.	Write the various types of special concrete.	BT-1	Remember
4.	List the steps involved in concrete manufacturing process.	BT-1	Remember
5.	Define concrete.	BT-1	Remember
6.	What is meant by durability.	BT-2	Understand
7.	Describe SCC.	BT-3	Application
8.	Compare between HPC and HSC.	BT-2	Understand
9.	Interpret the slump value with respect to degree of workability.	BT-3	Application
10.	Relate the cause for segregation and bleeding.	BT-3	Application
11.	Identify how the compressive test on concrete cube is conducted.	BT-2	Understand
12.	Organize and list the common defects in concrete.	BT-1	Remember
13.	Experiment the relationship between strength and ageing of concrete.	BT-1	Remember

14.	State the functions of coarse aggregate in a concrete.	BT-1	Remember
15.	Examine the properties of hardened concrete.	BT-3	Application
16.	Compare nominal mix with design mix.	BT-2	Understand
17.	Explain the composition of concrete.	BT-3	Application
18.	Does the strength of concrete affect if water content is increased for achieving required workability?	BT-2	Understand
19.	Predict when RMC is recommended?	BT-3	Application
20.	What are the methods for transportation of concrete?	BT-2	Understand
21.	Examine the functions of water in concrete.	BT-3	Application
22.	What are the standard size of bars as per IS code?	BT-2	Understand
23.	What precautions would you take in curing PPC concrete?	BT-2	Understand
24.	What is meant by grade of concrete? What is the lowest grade of concrete allowed for structural works in concrete?	BT-2	Understand
	PART B		
1.	Show the manufacture of concrete in detail	BT-2	Understand
2.	What are the applications of concrete and explain briefly?	BT-2	Understand
3.	List the types of mixing of concrete and write brief note on it.	BT-1	Remember
4.	Demonstrate the curing methods and its importance.	BT-2	Understand
5.	Explain the methods of transport of concrete.	BT-3	Application
6.	Classify the types of concrete and explain.	BT-2	Understand
7.	Identify the test on fresh concrete and describe about it.	BT-3	Application
8.	Illustrate the tests on hardened concrete.	BT-2	Understand
9.	Examine the design procedure for Mix specification of concrete using IS method.	BT-3	Application
10.	Briefly summarize and describe about (i) Weight Batching (4) (ii) Volume Batching (4) (iii) Segregation (4) (iv) Bleeding (4)	BT-2	Understand
11.	List the benefits of RMC and also write a short note on Ready Mix Concrete.	BT-1	Remember

12.	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 is good and Exposure is severe. Water absorption by CA =0.5% and moisture content FA=2.0%. Assume any suitable missing data.	BT-4	Analyze
13.	With neat sketches investigate the efficient manufacturing process of Concrete.	BT-4	Analyze
14.	Briefly describe about compaction of concrete and its methods.	BT-3	Application
15.	Discuss the different types of mixers based on operations. (8) Discuss the various factors to be considered during transportation of concrete.(8)	BT-3	Application
16.	Design the concrete mix for grade M30 with suitable conditions. Find the quantities of constituents of the mix for a bag of cement.	BT-4	Analyze
17.	Discuss in details about the statistical quality control of concrete.	BT-3	Application

UNIT-IV: TIMBER AND OTHER MATERIALS

Timber – Market forms – Industrial timber– Plywood – Veneer – Thermocol – Panels of laminates – Steel – Aluminum and Other Metallic Materials – Composition – Aluminum composite panel –Market forms – Mechanical treatment – Paints – Varnishes – Distempers – Bitumen.

PART A

Q.No	Questions	BT Level	Competence
1.	Define seasoning in timber.	BT-1	Remember
2.	Tell about annealing of steel.	BT-2	Understand
3.	When and where distemper is used?	BT-2	Understand
4.	What is blown bitumen?	BT-2	Understand
5.	Name the methods through which galvanized coatings is given to GI Sheets.	BT-1	Remember
6.	List the advantages of Thermocole.	BT-1	Remember
7.	Differentiate between dry distemper and oil distemper.	BT-2	Understand
8.	Discuss the causes of decay of wood work.	BT-3	Application
9.	Summarize the merits of aluminum in construction.	BT-2	Understand
10.	List out the different paints used for building construction.	BT-1	Remember
11.	Write about the test on penetration of bitumen.	BT-1	Remember
12.	Illustrate the various rolled steel sections.	BT-2	Understand

13.	Interpret the chemical reaction between iron and other atmospheric agents which cause corrosion.	BT-2	Understand
14.	List the various market forms of timber and steel.	BT-1	Remember
15.	Arrange in order the type of steel based on their carbon content.	BT-3	Application
16.	What are the characteristics of an ideal paint?	BT-2	Understand
17.	Explain the composition of duralumin.	BT-3	Application
18.	Develop a flow chart for the manufacturing process of paint.	BT-2	Understand
19.	Asses the advantages of using veneer.	BT-3	Application
20.	Recommend methods for painting on surfaces.	BT-3	Application
21.	Explain the constituents of the varnish.	BT-3	Application
22.	What is meant by distempering?	BT-2	Understand
23.	What are the basic components of paint?	BT-2	Understand
24.	What are exterior paints? Explain their use in buildings.	BT-2	Understand
PART B			
1.	Define and brief the following i) Various methods of seasoning of timber. (8) ii) Characteristics of good timber (8)	BT-1	Remember
2.	Name the various methods of manufacture of steel and explain the bessemer process.	BT-3	Application
3.	What are the types of hot rolled steel sections and cold formed steel sections?	BT-2	Understand
4.	Write the various uses of aluminum with respect to construction works.	BT-1	Remember
5.	(i) Summarize the various causes of decay of wood work and their preservation. (8) (ii) Illustrate with diagram various defects in timber (8)	BT-2	Understand
6.	Explain in detail about (i) Plywood (8) (ii) Thermocol (8)	BT-3	Application
7.	Analyze the various considerations to be made in choosing paints and also explain the types of paints.	BT-3	Application
8.	Identify the various types of heat treatment of steel and its purpose.	BT-2	Understand
9.	Construct the flowchart and explain step by step the manufacture of TMT bars.	BT-3	Application
10.	Describe the following terms:	BT-3	Application

	(i) Aluminum composite panel (6) (ii) Distemper (5) (iii) Paint (5)		
11.	State the process of manufacturing of Glass? What are the Uses of glass in construction industry?	BT-3	Application
12.	List the various applications of aluminum and describe briefly. (8) List out the paints commonly used in buildings? Explain. (8)	BT-1	Remember
13.	Explain the various test performed on timber as per Indian standards.	BT-3	Application
14.	What are the commonly used industrial timber products?	BT-2	Understand
15.	Discuss the manufacturing process and civil engineering applications of steel.(10) Elaborate the various forms of steel in detail.(6)	BT-3	Application
16.	Recall the physical and mechanical properties of the following (i) Aluminum (6) (ii) Copper (5) (iii) Lead (5)	BT-1	Remember
17.	What are varnishes and describe the types of varnishes?	BT-2	Understand

UNIT-V: MODERN MATERIALS

Glass – Ceramics – Sealants for joints – Glass fibre reinforced plastic – Clay products – Refractories – Composite materials – Types – Applications of laminar composites – Fibre textiles – Geo membranes and Geotextiles for earth reinforcement.

PART A

Q.No	Questions	BT Level	Competence
1.	Name the constituents of Glass.	BT-1	Remember
2.	What are the properties of Glass?	BT-2	Understand
3.	Define the term Refractories.	BT-1	Remember
4.	Show the characteristic feature of ceramic materials.	BT-3	Application
5.	Why and where Sealant is used?	BT-3	Apply
6.	List the uses of ceramics.	BT-1	Remember

7.	Explain about FGRP.	BT-3	Application
8.	Differentiate geo membrane and geo textiles.	BT-2	Understand
9.	Summarize any four properties of clay products.	BT-2	Understand
10.	Illustrate the uses of Glass.	BT-3	Application
11.	Identify any four properties of Refractories.	BT-3	Application
12.	Describe the characteristics of good sealants.	BT-3	Application
13.	Write about composite materials.	BT-1	Remember
14.	Classify the types of composite materials?	BT-2	Understand
15.	Examine about laminar composites.	BT-3	Application
16.	List out the applications of laminar composites.	BT-1	Remember
17.	Explain the term Geo Membrane.	BT-3	Application
18.	Enumerate the uses of Geo membrane.	BT-1	Remember
19.	Discuss about Fibre textile.	BT-3	Application
20.	Define glazing.	BT-1	Remember
21.	What are the uses of fibre textiles?	BT-2	Understand
22.	Name some of the clay products used in building construction. explain in detail	BT-3	Application
23.	Explain the term ceramics.	BT-3	Application
24.	What are the characteristics of good floor tile?	BT-2	Understand

PART B

1.	State the process of manufacturing of Glass? What are the Uses of glass in construction industry?	BT-1	Remember
2.	(i) Show the various forms of commercial glass. (8) (ii)Write a note on Mechanical properties of ceramics (8)	BT-1	Remember
3.	Explain in detail about fibre glass reinforced plastic.	BT-3	Application
4.	Describe the properties and uses of Reinforced Plastics.	BT-3	Application
5.	Give in detail about Composite materials and its Uses.	BT-2	Understand
6.	Illustrate in detail about Refractories. What are the different types of refractory Bricks?	BT-2	Understand
7.	Write about the term Geo synthetics? How are they classified? What are its advantage and applications?	BT-2	Understand
8.	Inspect the functions of Terracotta. How it is manufactured?	BT-2	Understand

9.	Elaborate about Earth reinforcement using Geo membrane.	BT-3	Application
10.	Discuss the various applications of (i) Laminar Composites (8) (ii) Geo textiles (8)	BT-3	Application
11.	Discuss the various applications of geotextiles in geotechnical engineering works. And also explain the properties of geotextiles.	BT-3	Application
12.	Summarize the properties and uses of glasses? Explain the different forms available.	BT-3	Application
13.	Write a short note on Ceramic products? What are the various applications of ceramic products?	BT-2	Understand
14.	What are composite materials? Explain its role and uses in construction industry.	BT-2	Understand
15.	Explain the Recent applications of glass in construction industry for architectural purpose	BT-3	Application
16.	Explain the types of Ceramics and their application.	BT-3	Application
17.	Explain the function and application of Geotextiles in Construction.	BT-3	Application