SRM VALLIAMMAI ENGINEERING COLLEGE
(An Autonomous Institution)

SRM Nagar, Kattankulathur – 603 203

DEPARTMENT OF CIVIL ENGINEERING

QUESTION BANK

III SEMESTER

1903304: CONSTRUCTION MATERIALS

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SUBJECT CODE/NAME : 1903304-CONSTRUCTION MATERIALS

SEM / YEAR: III/II

UNIT I -STONES – BRICKS – CONCRETE BLOCKS
Stone as building material – Criteria for selection – Tests on stones – Deterioration and Preservation of stone work – Bricks – Classification – Manufacturing of clay bricks – Tests on bricks – Compressive Strength – Water Absorption – Efflorescence – Bricks for special use – Refractory bricks – Concrete blocks – Lightweight concrete blocks.

PART A

Q.No	Questions	BT Level	Competence
1.	Explain deterioration and preservation of stone work.	BT-2	Understand
2.	What is meant by dressing of stones?	BT-1	Remember
3.	Define Light weight clay bricks.	BT-1	Remember
4.	Recall about light weight concrete blocks.	BT-1	Remember
5.	Tell the uses of bricks.	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 -1	Remember
9.	Summarize the names of bricks for special use.	BT-2	Understand
10.	Demonstrate the manufacturing processes of concrete blocks.	BT-2	Understand
11.	Model the standard size of brick used for construction with neat sketch.	BT-3	Apply
12.	What are the various reason for deterioration of stones?	BT-3	Apply
13.	Identify any four advantages of bricks as compared with stones.	BT-3	Apply
14.	Analyze the characteristics of good building stone.	BT-4	Analyze

15.	Examine efflorescence in bricks. How it can be removed?	BT-4	Analyze
16.	Categorize the tests on bricks and their purposes.	BT-4	Analyze
17.	Bricks are more preferred than stones. Justify that.	BT-5	Evaluate
18.	During the manufacturing of light weight concrete blocks admixtures are added. Evaluate the statement.	BT-5	Evaluate
19.	Design a neat sketch of Hoffman's kiln.	BT-6	Create
20.	Compile the applications of light weight concrete blocks.	BT-6	Create
21.	What are refractory bricks? Where are they commonly used?	BT-1	Remember
22.	Explain the different classification of bricks.	BT-5	Evaluate
23.	List any four test on stones.	BT-1	Remember
24.	Define efflorescence.	BT-1	Remember
25.	How living organisms affects the stonework?	BT-4	Analyze
	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-1	Remember
3.	List out the types of special bricks. Briefly explain any four of them.	BT-1	Remember
4.	Categorize the type of bricks based on use, general, physical requirements and IS classifications.	BT-3	Apply
5.	Explain the characteristics of good bricks.	BT-2	Understand
6.	Demonstrate the tests conducted on bricks for their suitability in construction work.	BT-2	Understand
7.	Summarize the advantage, disadvantage and uses of refractory bricks.	BT-2	Understand
8.	Develop a flow chart showing the steps involved in the preparation of bricks.	BT- 3	Apply
9.	Identify the application of concrete blocks and explain its testing procedure in detail.	BT-3	Apply
10.	Categorize the varieties of refractory bricks and explain it in brief.	BT-1	Remember
11.	Examine the advantages of concrete blocks and explain its manufacturing process.	BT-4	Analyze

12.	Analyze the simple field tests that you can carry out to determine the suitability of stone to determine quality of stones?	BT-4	Analyze
13.	Compare the usage of bricks and stones in construction works.	BT-5	Evaluate
14.	Explain about the purpose and advantages of different construction materials.	BT-6	Create
	PART C		
1.	Describe with neat sketches, the manufacturing process of Conventional bricks.	BT-1	Remember
2.	i) Why is stone called a good building material (5) ii) What are all the advantages and disadvantages of using light weight concrete blocks in construction. (10)	BT 1	Remember
3.	Elaborate the various test on stones.	BT-6	Create
4.	Discuss briefly the defects and preservation of stones.	BT-4	Analyze

UNIT II : LIME – CEMENT – AGGREGATES – MORTAR

Lime – Preparation of lime mortar – Cement – Ingredients – Manufacturing process – Types and Grades – Properties of cement and Cement mortar – Hydration – Compressive strength – Tensile strength – Fineness– Soundness and consistency – Setting time – fine aggregates – river sand – crushed stone sand – properties – Coarse Aggregates – Crushing strength – Impact strength – Flakiness Index – Elongation Index – Abrasion Resistance – Grading

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-1	Remember
3.	Brief about grading of aggregate	BT-1	Remember
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-1	Remember
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-3	Apply
12.	Identify the functions of sand in mortar.	BT-3	Apply
13.	Select the easiest method of preparation of lime mortar and explain the reason behind.	BT-3	Apply
14.	Distinguish fat lime and hydraulic lime.	BT-4	Analyze
15.	Enlist the requirements of a good mortar.	BT-4	Analyze
16.	List out the desirable properties of cement.	BT-4	Analyze
17.	Abrasion test on aggregate is conducted for measuring rate of wear and tear. Justify with proper explanation.	BT-5	Evaluate
18.	Assess the percentage of Pozzolana that can be present in PPC when compared to OPC	BT-5	Evaluate
19.	Propose the tests that can carried out on coarse aggregate.	BT-6	Create
20.	Compile the reasons for preferring crushed sand over river sand	BT-6	Create
21.	What is slaking?	BT-1	Remember
22.	State some of the properties of good lime.	BT-1	Remember
23.	What is pozzolana?	BT-1	Remember
24.	Illustrate setting of cement.	BT-2	Understand
25.	What is meant by Grade C-43 cement? What are the main active cementing compounds in OPC?	BT-1	Remember
	PART B		
1.	Brief about methods of preparation of lime mortar.List out any two major tests to determine the quality of lime.	BT-1	Remember
2.	List out the constituents of lime and explain its classification.	BT-1	Remember
3.	Define the following and Discuss its effects. (a) Grading of aggregates (5)	BT-4	Analyze

	(b) Bulking of sand (8)		
4.	Discuss various ingredients required for manufacturing of cement? State their functions and properties of cement.	BT-3	Apply
5.	Explain the following tests conducted on aggregate; as per IS codes: (a)Water Absorption (5) (b)Flakiness Index and Elongation Index (8)	BT-2	Understand
6.	Illustrate the following tests (a) Fineness Test on cement (6) (b) Setting time test on cement (7)	BT-2	Understand
7.	Compare the advantages and disadvantages of usinglime and cement in engineering works.	BT-6	Create
8.	Discuss the step by step procedure to perform the tensile strength test and compressive strength of cement.	BT-3	Apply
9.	Describe the procedure of manufacturing cement by wet process.	BT-3	Apply
10.	Analyze the properties of fine aggregate and also Discuss the difference between fine and coarse aggregate.	BT-4	Analyze
11.	Categorize the different types of cement and explain any four in brief.	BT-4	Analyze
12.	Examine the different tests that can be carried out to identify the quality of sand	BT-4	Analyze
13.	(a) Determine the chemical compounds that are formed during the setting action of cement and explain their importance. (7) (b) Evaluate the use of high alumina cement with its pros and cons. (6)	BT-5	Evaluate
14.	(a)Explain the process of hydration of cement. (6) (b)Classify the grades of cement and give their specification details. (7)	BT-4	Analyze
PART C			

1.	Construct a flow diagram for manufacture of cement by dry process with brief explanation.	BT-6	Create
2.	Compare and explain the properties of river sand and crushed sand.	BT-5	Evaluate
3.	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-3	Apply
4.	Explain briefly about (a)Consistency test oncement (4) (b)Soundness of cement (3) (c)Crushing strength ofaggregate (4) (d)Impact strength ofaggregate (4)	BT-3	Apply

UNIT 3-: CONCRETE

Concrete – Ingredients – Manufacturing Process – Batching plants –mixing – transporting –placing – compaction of concrete –curing and finishing – Ready mix Concrete – Mix specification. Physical properties of materials required for Mix Design - Design Mix and Nominal Mix - BIS Method of Mix Design - Mix Design Examples.

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-4	Analyze
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-1	Remember
7.	Describe SCC.	BT-2	Understand
8.	Compare between HPC and HSC.	BT-2	Understand
9.	Interpret the slump value with respect to degree of workability.	BT-2	Understand

10.	Relate the cause for segregation and bleeding.	BT-2	Understand
11.	Identify how the compressive test on concrete cube is conducted.	BT-3	Apply
12.	Organize and list the common defects in concrete.	BT-3	Apply
13.	Experiment the relationship between strength and ageing of concrete.	BT-3	Apply
14.	State the functions of coarse aggregate in a concrete.	BT-4	Analyze
15.	Examine the properties of hardened concrete.	BT-4	Analyze
16.	Compare nominal mix with design mix.	BT-4	Analyze
17.	Explain the composition of concrete.	BT-5	Evaluate
18.	Does the strength of concrete affect if water content is increased for achieving required workability?	BT-5	Evaluate
19.	Predict when RMC is recommended?	BT-6	Create
20.	Invent the type of curing for vertical and horizontal member of a framed structure.	BT-6	Create
21.	What are the methods for transportation of concrete?	BT-1	Remember
22.	Examine the functions of water in concrete.	BT-4	Analyze
23.	What are the standard size of bars as per IS code?	BT-1	Remember
24.	What precautions would you take in curing PPC concrete?	BT-3	Apply
25.	What is meant by grade of concrete? What is the lowest grade of concrete allowed for structural works in concrete?	BT-5	Evaluate

PART B

1.	Show the manufacture of concrete in detail.	BT-1	Remember
2.	What are the applications of concrete and explain briefly?	BT-3	Apply
3.	List the types of mixing of concrete and write brief note on it.	BT-1	Remember
4.	What is the importance of quality control of concrete?	BT-1	Remember
5.	Demonstrate the curing methods and its importance.	BT-4	Analyze
6.	Explain the methods of transport of concrete.	BT-2	Understand
7.	Classify the types of concrete and explain.	BT-4	Analyze
8.	Identify the test on fresh concrete and describe about it.	BT-3	Apply

9.	Illustrate the tests on hardened concrete.	BT-3	Apply
10.	Examine the design procedure for Mix specification of concrete using IS method.	BT-4	Analyze
11.	Explain the terms (i) Segregation (7) (ii) Bleeding (6)	BT-5	Evaluate
12.	Discuss the different types of mixers based on operations?	BT-6	Create
13.	Briefly summarize and describe about (i) Weight Batching (7) (ii) Volume Batching (6)	BT-2	Understand
14.	List the benefits of RMC and also write a short note on Ready Mix Concrete.	BT-4	Analyze
	PART C		
1.	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 is good and Exposure is severe. Water absorption by CA =0.5% and moisture content FA=2.0%. Assume any suitable missing data.	BT-6	Create
2.	With neat sketches investigate the efficient manufacturing process of Concrete.	BT-4	Analyze
3.	Briefly describe about compaction of concrete and its methods.	BT-2	Understand
4.	Discuss the various factors to be considered during transportation of concrete.	BT-6	Create
	UNIT 4: 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.	Tellabout annealing of steel.	BT-2	Understand
3.	When and where distemper is used?	BT-3	Apply
4.	What is blown bitumen?	BT-1	Remember
5.	Name the methods through which galvanized coatings is given to GI Sheets.	BT-1	Remember
6.	List the advantages of Thermocole.	BT-3	Apply
7.	Differentiate between dry distemper and oil distemper.	BT-5	Evaluate
8.	Discuss the causes of decay of wood work.	BT-2	Understand
9.	Summarize the merits of aluminum in construction.	BT-3	Apply
10.	List out the different paints used for building construction.	BT-1	Remember
11.	Write about the test on penetration of bitumen.	BT-3	Apply
12.	Illustrate the various rolled steel sections.	BT-3	Apply
13.	Interpret the chemical reaction between iron and other atmospheric agents which cause corrosion.	BT-5	Evaluate
14.	List the various market forms of timber and steel.	BT-4	Analyze
15.	Arrange in order the type of steel based on their carbon content.	BT-4	Analyze
16.	What are the characteristics of an ideal paint?	BT-1	Remember
17.	Explain the composition of duralumin.	BT-5	Evaluate
18.	Develop a flow chart for the manufacturing process of paint.	BT-6	Create
19.	Asses the advantages of using veneer.	BT-5	Evaluate
20.	Recommend methods for painting on surfaces.	BT-6	Create
21.	Explain the constituents of the varnish.	BT-2	Understand
22.	What is meant by distempering?	BT-1	Remember
23.	What are the basic components of paint?	BT-1	Remember
24.	What are exterior paints? Explain their use in buildings.	BT-5	Evaluate
25.	What are the different types of adhesives?	BT-1	Remember
PART B			
1.	Define and brief the following	BT-1	Remember

	i) Various methods of seasoning of timber. (7) ii) Characteristics of good timber (6)		
2.	Name the various methods of manufacture of steel and explain the bessemer process.	BT-3	Apply
3.	What are the types of hot rolled steel sections and cold formed steel sections?	BT-1	Remember
4.	Write the various uses of aluminum with respect to construction works.	BT-5	Evaluate
5.	(i) Summarize the various causes of decay of wood work and their preservation. (7) (ii) Illustrate with diagram various defects in timber (6)	BT-2	Understand
6.	Explain in detail about (i) Plywood (7) (ii) Thermocol (6)	BT-2	Understand
7.	Analyze the various considerations to be made in choosing paints and also explain the types of paints.	BT-4	Analyze
8.	Identify the various types of heat treatment of steel and its purpose.	BT-3	Apply
9.	Construct the flowchart and explain step by step the manufacture of TMT bars.	BT-6	Create
10	Describe the following terms: (i) Aluminum composite panel (4) (ii) Distemper (4) (iii) Paint (5)	BT-4	Analyze
11	(i) Assess the characteristic features of varnishes. (7) (ii)Determine the reasons for cause of defects in painting? (6)	BT-5	Evaluate
12	Elaborate the various forms of steel in detail.	BT-6	Create
13	List the various applications of aluminium and describe briefly.	BT-4	Analyze
14	List out the paints commonly used in buildings? Explain.	BT-2	Understand

PART C

1.	Explain the various test performed on timber as per Indian standards.	BT-2	Understand
2.	What are the commonly used industrial timber products?	BT-1	Remember
3.	Discuss the manufacturing process and civil engineering applications of steel.	BT-6	Create
4.	Summarize the mechanical treatment of paint in detail.	BT-3	Apply

UNIT V :MODERN MATERIALS

Glass – Ceramics – Sealants for joints – Fibre glass reinforced plastic – Clay products –Refractories - Composite materials – Types – Applications of laminar composites – Fibre textiles–Geomembranes 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-3	Apply
3.	Define the term Refractories.	BT-1	Remember
4.	Show the characteristic feature of ceramic materials.	BT-5	Evaluate
5.	Why and where Sealant is used?	BT-2	Understand
6.	List the uses of ceramics.	BT-3	Apply
7.	Explain about FGRP.	BT-2	Understand
8.	Differentiate geo membrane and geo textiles.	BT-4	Analyze
9.	Summarize any four properties of clay products.	BT-2	Understand
10.	Illustrate the uses of Glass.	BT-2	Understand
11.	Identify any four properties of Refractories.	BT-3	Apply
12.	Describe the characteristics of good sealants.	BT-1	Remember
13.	Write about composite materials.	BT-3	Apply
14.	Classify the types of composite materials?	BT-4	Analyze
15.	Examine about laminar composites.	BT-5	Evaluate
16.	List out the applications of laminar composites.	BT-3	Apply

17.	Explain the term Geo Membrane.	BT-5	Evaluate
18.	Enumerate the uses of Geo membrane.	BT-5	Evaluate
19.	Discuss about Fibre textile.	BT-6	Create
20.	Elaborate about Earth reinforcement.	BT-6	Create
21.	Define glazing.	BT-1	Remember
22.	What are the uses of fibre textiles?	BT-2	Understand
23.	Name some of the clay products used in building construction.	BT-1	Remember
24.	Explain the term ceramics.	BT-5	Evaluate
25.	What are the characteristics of good floor tile?	BT-1	Remember
	PART B		
1.	What is Glass? Explain the various properties of Glass?	BT-1	Remember
2.	State the process of manufacturing of Glass? What are the Uses of glass in construction industry?	BT-3	Apply
3.	(i) Show the various forms of commercial glass. (7) (ii)Write a note on Mechanical properties of ceramics (6)	BT-1	Remember
4.	Explain in detail about fibreglass reinforced plastic.	BT-2	Understand
5.	Describe the propertiesand uses of Reinforced Plastics.	BT-3	Apply
6.	Give in detail about Composite materials and its Uses.	BT-4	Analyze
7.	Illustrate in detail about Refractories. What are the different types ofrefractory Bricks?	BT-3	Apply
8.	Write about the term Geosynthestics? How are they classified? What are its advantage and applications?	BT-3	Apply
9.	Inspect the functions of Terracotta. How it is manufactured?	BT-4	Analyze
10	Elaborate about Earth reinforcement using Geomembrane.	BT-4	Analyze
11	Prioritize the various applications of (i)Laminar Composites (7) (ii)Geo textiles (6)	BT-5	Evaluate
12	Illustrate the properties of plastics and explain it.	BT-2	Understand
13	Discuss the various applications of geotextiles in geotechnical engineering works. And also explain the properties of geotextiles.	BT-6	Create

14	Summarize the properties and uses of glasses? Explain the different forms available.	BT-2	Understand
	PART C		
1.	Write a short note on Ceramic products? What are the various applications of ceramic products?	BT-1	Remember
2.	Discuss in detail about refractories.	BT-6	Create
3.	What are composite materials? Explain its role and uses inconstruction industry.	BT-1	Remember
4.	Explain the Recent applications of glass in construction industry for architectural purpose	BT-6	Create

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