

VALLIAMMAI ENGINEERING COLLEGE

SRM Nagar, Kattankulathur – 603 203

DEPARTMENT OF CIVIL ENGINEERING

QUESTION BANK



III SEMESTER

CE8391 – CONSTRUCTION MATERIALS

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Prepared by

Ms. T.Swedha, Assistant Professor/Civil

Ms.M.Saranya, Assistant Professor Civil

Mr.N.Vinoth Kumar, Assistant Professor/Civil



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SUBJECT : CONSTRUCTION MATERIALS

SEM / YEAR:III/II

UNIT I -<u>STONES – BRICKS – CONCRETE BLOCKS</u>			
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 – LIGHT WEIGHT CONCRETE BLOCKS.			
<u>PART A</u>			
Q.No	Questions	BT Level	Competence
1.	Why you choose stone as a building material?	BT -1	Remembering
2.	What is meant by dressing of stones	BT-1	Remembering
3.	Define Light weight clay bricks	BT-1	Remembering
4.	Recall about light weight concrete blocks?	BT-1	Remembering
5.	Tell the uses of bricks	BT-1	Remembering
6.	List the different types of refractory bricks.	BT-1	Remembering
7.	Classify the types of tests on stones.	BT-2	Understanding
8.	Explain deterioration and preservation of stone work.	BT-2	Understanding
9.	Summarize the names of bricks for special use.	BT-2	Understanding
10.	Demonstrate the manufacturing processes of concrete blocks.	BT-2	Understanding
11.	Model the standard size of brick used for construction with neat Sketch.	BT-3	Applying
12.	Plan the processes to be carried out in manufacturing of clay bricks?	BT-3	Applying
13.	Identify any four advantages of bricks as compared with stones.	BT-3	Applying

14.	Analyze the characteristics of good building stone.	BT-4	Analyzing
15.	Examine efflorescence in bricks. How can it be removed?	BT-4	Analyzing
16.	Categorize the tests on bricks and their purposes	BT-4	Analyzing
17.	Bricks are more preferred than stones. Justify that.	BT-5	Evaluating
18.	During the manufacturing of light weight concrete blocks admixtures are added. Evaluate the statement.	BT-5	Evaluating
19.	Design a neat sketch of Hoffman's kiln.	BT-6	Creating
20.	Compile the applications of light weight concrete blocks	BT-6	Creating

PART B

1.	Which are the various types of stones used for building works and give in brief the specifications of a good building stones.	BT-1	Remembering
2.	What are the characteristics to be considered for selection of stones for various civil engineering works.	BT-1	Remembering
3.	List out the types of special bricks? Briefly explain any four of them.	BT-1	Remembering
4.	Name the type of bricks based on use, general, physical requirements and IS classifications.	BT-1	Remembering
5.	Explain the characteristics of good bricks.	BT-2	Understanding
6.	Demonstrate the tests conducted on bricks for their suitability for construction work?	BT-2	Understanding
7.	Summarize the advantage, disadvantage and uses of refractory bricks	BT-2	Understanding
8.	Develop a flow chart showing the steps involved in the preparation of bricks.	BT-3	Applying
9.	Identify the application of concrete blocks and explain its testing procedure in detail.	BT-3	Applying
10.	Categorize the varieties of refractory bricks and explain it in brief.	BT-4	Analyzing
11.	Examine the advantages of concrete blocks and explain its manufacturing process.	BT-4	Analyzing
12.	Analyze the simple field tests that you can carry out to determine the suitability of stone to determine quality of stones?	BT-4	Analyzing
13.	Compare the difference in using bricks and stones in construction works and explain.	BT-5	Evaluating
14.	Elaborate the recent advancements in bricks.	BT-6	Creating

PART C

1.	Describe with neat sketches the manufacturing process of Conventional bricks.	BT-1	Remembering
2.	i) Why is stone called a good building material (5) ii) What are all the advantages and disadvantages of using light (10)	BT-1	Remembering

	weight concrete blocks in construction		
3.	Explain about the purpose and advantages of different construction materials	BT-2	Understanding
4.	Discuss briefly the defects and preservation of stones.	BT-4	Analyzing

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.	What is meant by hydration of cement? What is its importance?	BT-1	Remembering
2.	List the ingredients of cement.	BT-1	Remembering
3.	Name the chemical compounds formed during the setting action of cement?	BT-1	Remembering
4.	Tell about grading of aggregate	BT-1	Remembering
5.	Define Elongation index.	BT-1	Remembering
6.	Recall the tests prescribed for mortar?	BT-1	Remembering
7.	Classify the various grades of cement in India.	BT-2	Understanding
8.	Compare lime putty, quicklime and slacked lime.	BT-2	Understanding
9.	Illustrate the properties of river sand.	BT-2	Understanding
10.	Summarize the importance of the term setting time of cement.	BT-2	Understanding
11.	Choose the different kinds of lime used for construction works	BT-3	Applying
12.	Identify the functions of sand which is responsible for its use in mortar.	BT-3	Applying
13.	Select the easiest method of preparation of lime mortar and explain the reason behind.	BT-3	Applying
14.	Distinguish fat lime and hydraulic lime.	BT-4	Analyzing

15.	Categorize the requirements of a good mortar.	BT-4	Analyzing
16.	Discover and list out the desirable properties of cement.	BT-4	Analyzing
17.	Abrasion test on aggregate is conducted for measuring rate of wear and tear. Justify with proper explanation.	BT-5	Evaluating
18.	Assess the percentage of Pozzolana that can be present in PPC when compared to OPC	BT-5	Evaluating
19.	Propose the tests that can be carried out on coarse aggregate.	BT-6	Creating
20.	Compile the reasons for preferring crushed sand over river sand	BT-6	Creating

PART B

1.	Name the methods of preparation of lime mortar and explain it clearly .List out any two major tests to determine the quality of lime.	BT-1	Remembering
2.	List the constituents of lime, its classification. Explain in brief.	BT-1	Remembering
3.	What is grading . What are the different grading of aggregates. Explain the factors involved in grading.	BT-1	Remembering
4.	Tell the various ingredients required for manufacturing of cement? State their functions and properties of cement.	BT-1	Remembering
5.	Explain the following tests conducted on aggregate; as per IS codes: (a)Water Absorption(5marks) (b)Flakiness Index and Elongation Index(8marks)	BT-2	Understanding
6.	Illustrate the following tests (a) Aggregate Abrasion Value(6marks) (b) setting time test on cement(7marks)	BT-2	Understanding
7.	Compare and contrast the advantages and disadvantages of using lime and cement in engineering works.	BT-2	Understanding
8.	Develop a step by step procedure to perform the tensile strength test and compressive strength of cement. Also explain the procedure for the fineness of cement.	BT-3	Applying
9.	Model a flow chart and Describe the procedure of manufacturing cement by wet process.	BT-3	Applying
10.	Analyze the properties of fine aggregate? Discuss the difference between fine and coarse aggregate.	BT-4	Analyzing
11.	Categorize the different types of cement and explain any four in brief.	BT-4	Analyzing
12.	Examine the different tests that can be carried out to identify the quality of sand	BT-4	Analyzing
13.	(a) Determine the chemical compounds that are formed during the setting action of cement and explain their importance. (7marks) (b) Evaluate the use of high alumina cement with its pros and cons. (6marks)	BT-5	Evaluating
14.	Construct a flow diagram for dry process of manufacture	BT-6	Creating

	of cement with brief explanation.		
<u>PART C</u>			
1.	(a)Examine and explain the process of hydration of cement. (8marks) (b)Classify the grades of cement and give their specification details. (7marks)	BT-4	Analyzing
2.	Compare and explain the properties of river sand and crushed sand.	BT-5	Evaluating
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	Applying
4.	Explain briefly about (a)Consistency test on cement (4marks) (b)Soundness of cement (3marks) (c)Crushing strength of aggregate (4marks) (d)Impact strength of aggregate (4marks)	BT-2	Understanding

UNIT 3- CONCRETE

CONCRETE – INGREDIENTS – MANUFACTURING PROCESS – BATCHING PLANTS – MIXING – TRANSPORTING – PLACING – COMPACTION OF CONCRETE – CURING AND FINISHING – READY MIX CONCRETE – MIX SPECIFICATION.

PART A

Q.No	Questions	BT Level	Competence
1.	Define concrete.	BT-1	Remembering
2.	Name the methods of mix proportioning of concrete.	BT-1	Remembering
3.	Write the list of special concrete.	BT-1	Remembering
4.	List the steps involved in concrete manufacturing process.	BT-1	Remembering
5.	How compaction factor is defined.	BT-1	Remembering
6.	What is meant by durability.	BT-1	Remembering
7.	Describe SCC.	BT-2	Understanding

8.	Compare between HPC and HSC.	BT-2	Understanding
9.	Interpret the slump value with respect to degree of workability.	BT-2	Understanding
10.	Relate the cause for segregation and bleeding	BT-2	Understanding
11.	Identify how the compressive test on concrete cube is conducted.	BT-3	Applying
12.	Organize and list the common defects in concrete.	BT-3	Applying
13.	Experiment the relationship between strength and ageing of concrete.	BT-3	Applying
14.	State the functions of coarse aggregate in a concrete.	BT-4	Analyzing
15.	Examine the properties of hardened concrete.	BT-4	Analyzing
16.	Compare nominal mix with design mix.	BT-4	Analyzing
17.	Explain the composition of concrete.	BT-5	Evaluating
18.	Determine the strength of concrete if water content is increased for achieving required workability?	BT-5	Evaluating
19.	Predict when RMC is recommended?	BT-6	Creating
20.	Invent the type of curing for vertical and horizontal member of a framed structure.	BT-6	Creating
<u>PART B</u>			
1.	Show the manufacture of concrete in detail.	BT-1	Remembering
2.	What are the applications of concrete and explain briefly?	BT-1	Remembering
3.	List the types of mixing of concrete and write brief note on it.	BT-1	Remembering
4.	What is the importance of quality control of concrete?	BT-1	Remembering
5.	Demonstrate the curing methods and its importance.	BT-2	Understanding
6.	Explain the methods of transport of concrete.	BT-2	Understanding
7.	Classify the types of concrete and explain.	BT-4	Analyzing
8.	Identify the test on fresh concrete and describe about it.	BT-3	Applying
9.	Illustrate the tests on hardened concrete.	BT-3	Applying
10.	Examine the design procedure for Mix specification of concrete using IS method.	BT-4	Analyzing
11.	Explain the terms (i) Segregation (7) (ii) Bleeding (6)	BT-5	Evaluating

12.	Discuss the different types of mixers based on operations?	BT-6	Creating
13.	Briefly summarize and describe about (i) Weight Batching (7) (ii) Volume Batching (6)	BT-2	Understanding
14.	List the benefits of RMC and also write a short note on Ready Mix Concrete.	BT-4	Analyzing

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 =good and *type of exposure=severe. Water absorption by CA =0.5% and moisture content FA=2.0%. Assume any suitable missing data.	BT-6	Creating
2.	With neat sketches investigate the efficient manufacturing process of Concrete.	BT-4	Analyzing
3.	Briefly describe about compaction of concrete and its methods.	BT-2	Understanding
4.	Discuss the various factors to be considered during transportation Of concrete.	BT-6	Creating

UNIT 4- TIMBER AND OTHER MATERIALS

TIMBER – MARKET FORMS – INDUSTRIAL TIMBER– PLYWOOD – VENEER – THERMOCOL – PANELS OF LAMINATES – STEEL – ALUMINUM AND OTHER METALLIC MATERIALS – COMPOSITION – ALUMINIUM COMPOSITE PANEL – MARKET FORMS – MECHANICAL TREATMENT – PAINTS – VARNISHES – DISTEMPERS – BITUMENS

PART A

Q.No	Questions	BT Level	Competence
1.	Define seasoning of timber and defects in timber.	BT-1	Remembering
2.	Tellabout annealing of steel.	BT-1	Remembering
3.	When and where distemper is used?	BT-1	Remembering
4.	What is blown bitumen?	BT-1	Remembering
5.	Name the methods through which galvanized coatings is given to GI Sheets.	BT-1	Remembering

6.	List the advantages of Thermacole.	BT-1	Remembering
7.	Differentiate between dry distemper and oil distemper.	BT-2	Understanding
8.	Discuss the causes of decay of wood work.	BT-2	Understanding
9.	Summarize the merits of aluminum in construction.	BT-2	Understanding
10.	Distinguish the different paints used for building construction.	BT-2	Understanding
11.	Write about the test on penetration of bitumen.	BT-3	Applying
12.	Illustrate the various rolled steel sections.	BT-3	Applying
13.	Interpret the chemical reaction between iron and other atmospheric agents which cause corrosion.	BT-3	Applying
14.	List the various market forms of timber and steel.	BT-4	Analyzing
15.	Arrange in order the type of steel based on their carbon content.	BT-4	Analyzing
16.	Simplify the characteristics of an ideal paint.	BT-4	Analyzing
17.	Explain the composition of duralumin.	BT-5	Evaluating
18.	Develop a flow chart for the manufacturing process of paint.	BT-6	Creating
19.	Asses the advantages of using veneer?	BT-5	Evaluating
20.	Recommend methods for painting on surfaces.	BT-6	Creating

PART B

1.	Define and brief the following i) Various methods of seasoning of timber. (7) ii) Characteristics of good timber (6)	BT-1	Remembering
2.	Name the various methods of manufacture of steel and explain the bessemer process.	BT-1	Remembering
3.	What are the types of hot rolled steel sections and cold formed steel sections.	BT-1	Remembering
4.	Write the various uses of aluminum with respect to construction works.	BT-1	Remembering
5.	(i) Summarize the various causes of decay of wood work and their preservation.(7) (ii) Illustrate with diagram for various defects in timber(6)	BT-2	Understanding
6.	Explain in detail about (i) Plywood(7) (ii) Thermacole (6)	BT-2	Understanding

7.	Analyze the various considerations to be made in choosing paints and also explain about the types of paints.	BT-4	Analyzing
8.	Identify the various types of heat treatment of steel and its purpose.	BT-3	Applying
9.	Construct the flowchart and explain step by step the manufacture of TMT bars.	BT-3	Applying
10	Discover the following terms: (i) Aluminum composite panel(4) (ii) Distemper(4) (iii) Paint(5)	BT-4	Analyzing
11	(i) Assess the characteristic features of varnishes. (7) (ii) Determine the reasons for the causes of defects in painting work? (6)	BT-5	Evaluating
12	Elaborate the various forms of steel in detail.	BT-6	Creating
13	List the various applications of aluminium and describe briefly.	BT-4	Analyzing
14	Summarize the mechanical treatment of paint in detail.	BT-2	Understanding
<u>PART C</u>			
1.	Explain the various test performed on timber as per Indian standards.	BT-2	Understanding
2.	What are the commonly used industrial timber products.	BT-1	Remembering
3.	Discuss the manufacturing process and civil engineering applications of steel.	BT-6	Creating
4.	List out the paints commonly used in buildings? Explain.	BT-2	Understanding

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	Remembering
2.	What are the properties and uses of Glass?	BT-1	Remembering

3.	Define the term Refractories.	BT-1	Remembering
4.	Show the characteristic feature of ceramic materials.	BT-1	Remembering
5.	Why and where Sealant is used?	BT-1	Remembering
6.	List the uses of ceramics?	BT-1	Remembering
7.	Explain about FGRP?	BT-2	Understanding
8.	Differentiate geo membrane and geo textiles.	BT-2	Understanding
9.	Summarize any four properties of clay products?	BT-2	Understanding
10.	Illustrate the uses of Clay products?	BT-2	Understanding
11.	Identify any four properties of Refractories?	BT-3	Applying
12.	Describe the characteristics of good sealants?	BT-3	Applying
13.	Write about composite materials?	BT-3	Applying
14.	Classify the types of composite materials?	BT-4	Analyzing
15.	Examine about laminar composites?	BT-4	Analyzing
16.	List out the applications of laminar composites?	BT-4	Analyzing
17.	Explain the term Geo Membrane?	BT-5	Evaluating
18.	Enumerate the uses of Geo membrane?	BT-5	Evaluating
19.	Discuss about Fibre textile?	BT-6	Creating
20.	Elaborate about Earth reinforcement?	BT-6	Creating

PART B

1.	What is Glass? Explain the various properties of Glass?	BT-1	Remembering
2.	State the process of manufacturing of Glass? What are the Uses of glass in construction industry?	BT-1	Remembering
3.	(i) Show the various forms of commercial glass. (7) (ii) Write an explanatory note on Mechanical properties of ceramics (6)	BT-1	Remembering
4.	Explain in detail about fibre glass reinforced plastic.	BT-2	Understanding
5.	Describe the properties and uses of Reinforced Plastics?	BT-2	Understanding
6.	Give detail about Composite materials and its Uses?	BT-3	Applying
7.	Illustrate in detail about Refractories? What are the different types of refractory Bricks?	BT-3	Applying
8.	Write about the term Geosynthesis? How are they classified? What are the advantages & applications?	BT-3	Applying

9.	Inspect the functions of Terracotta. How it is manufactured?	BT-4	Analyzing
10	Experiment in detail about Earth reinforcement using Geomembrane?	BT-4	Analyzing
11	Prioritize the various applications of (i)Laminar Composites (7) (ii)Geo textiles (6)	BT-5	Evaluating
12	Illustratethe properties of plastics and explain it.	BT-2	Understanding
13	Discuss the various applications of geotextiles in geotechnical engineering works. And also explain the properties of geotextiles.	BT-6	Creating
14	Write a short note on Ceramic products? What are the various applications of ceramic products?	BT-1	Remembering

PART C

1.	Summarize the properties and uses of glasses? Explain the different forms available.	BT-2	Understanding
2.	Discuss in detail about refractories.	BT-6	Creating
3.	What are composite materials? Explain its role and uses in construction industry.	BT-1	Remembering
4.	Explain the Recent applications of glass in construction industry for architectural purpose	BT-2	Understanding

