VALLIAMMAI ENGINEERING COLLEGE

SRM Nagar, Kattankulathur – 603 203

DEPARTMENT OF CIVIL ENGINEERING

QUESTION BANK

IV SEMESTER

CE6401 – CONSTRUCTION MATERIALS

Regulation – 2013

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SUBJECT : CONSTRUCTION MATERIALS

SEM / YEAR: IV/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 – CEMENT, CONCRETE BLOCKS – LIGHT WEIGHT CONCRETE BLOCKS.

PART A

Q.No	Questions	BT Level	Competence
1.	Why you choose stone as a building material?	BT-1	Remembering
2.	Analyzing the characteristics of good building stone.	BT-4	Analyzing
3.	List out the types of tests on stones.	BT-1	Remembering
4.	Write down the tests on bricks and their purposes.	BT-2	Understanding
5.	Define the term frog.	BT-1	Remembering
6.	Differentiate deterioration and preservation of stone work.	BT-2	Understanding
7.	Summarize the names of bricks for special use.	BT-2	Understanding
8.	Explain shortly about light weight concrete blocks.	BT-2	Understanding
9.	Show the standard size of brick used for construction with neat sketch.	BT-3	Applying
10.	How will you classify bricks? Write down the types of bricks.	BT-1	Remembering
11.	Illustrate the processes in manufacturing of clay bricks?	BT-3	Applying
12.	Define efflorescence in bricks. How can it be removed?	BT-4	Analyzing
13.	State the applications of hollow blocks.	BT-4	Analyzing
14.	State any four advantages of bricks as compared with stones.	BT-1	Remembering

15.	List the different types of refractory bricks.	BT-1	Remembering
16.	Bricks are more preferred than stones. Justify that.	BT-5	Evaluating
17.	Demonstrate the manufacturing processes of concrete blocks.	BT-3	Applying
18.	Recommend the dimensions and tolerances in the concrete blocks according to B.I.S.	BT-6	Creating
19.	During the manufacturing of light weight concrete blocks admixtures are added. Justify the statement.	BT-5	Evaluating
20.	Recommend the tests usually prescribed for concrete blocks.	BT-6	Creating
PART B			
1.	Explain the various types of stones which are used for building works and give in brief the specifications of a good building stones.	BT-1	Remembering
2.	Develop a flow chart of various operations involved in the making of bricks. Explain them.	BT-1	Remembering
3.	Enumerate the characteristics to be considered for selection of stones for various civil engineering works.	BT-1	Remembering
4.	Explain the classification of rocks in detail.	BT-2	Understanding
5.	Briefly explain the tests conducted on bricks for their suitability for construction work?	BT-2	Understanding
6.	List out the types of special bricks? Briefly explain any four of them.	BT-2	Understanding
7.	Demonstrate the varieties of refractory bricks in brief.	BT-3	Applying
8.	Write in detail about the manufacturing of concrete blocks. Also tell the advantages.	BT-3	Applying
9.	What are the simple field tests that you can carry out to determine the suitability of stone to determine quality of stones?	BT-4	Analyzing
10.	Explain the recent advancements in bricks.	BT-4	Analyzing
11.	Describe in brief methods used for quarrying stones for building work.	BT-5	Evaluating
12.	(i) Write in details of qualities of good bricks. (5) (ii) Classify the types of bricks based on use, general physical requirements and IS classifications. (8)	BT-6	Creating

13.	Explain the testing of concrete blocks in detail.	BT-5	Evaluating
14.	Enumerate the characteristics to be considered for selection of stones for various civil engineering works.	BT-1	Remembering
PART C			
1.	What are the different tests conducted on stones? Explain in detail with neat sketches.	BT-1	Remembering
2.	Discuss briefly the defects and preservation of stones.	BT-4	Analyzing
3.	Describe with neat sketches the manufacturing process of conventional bricks.	BT-1	Remembering
4.	Discuss various tests on bricks.	BT-2	Understanding

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 – INDUSTRIAL BYPRODUCTS – FLY ASH – AGGREGATES – NATURAL STONE AGGREGATES – CRUSHING STRENGTH – IMPACT STRENGTH – FLAKINESS INDEX – ELONGATION INDEX – ABRASION RESISTANCE – GRADING – SAND BULKING.

PART A

Q.No	Questions	BT Level	Competence
1.	Illustrate the different kinds of lime available for use in construction works.	BT-3	Applying
2.	What is meant by hydration of cement? What is its importance?	BT-1	Remembering
3.	Bulking occurs in fine aggregate (Sand). Justify that.	BT-5	Evaluating
4.	List the ingredients of cement.	BT-1	Remembering
5.	Explain the composition of Ordinary Portland cement.	BT-2	Understanding
6.	Formulate the functions of sand in a mortar.	BT-6	Creating
7.	What are Bogue's compounds in cement? State its functions.	BT-1	Remembering
8.	Differentiate Fat lime from Hydraulic lime.	BT-4	Analyzing
9.	Compare lime putty, quicklime and slacked lime.	BT-4	Analyzing

10.	What is bulking of sand? Why it is important?	BT-2	Understanding
11.	Define Elongation index.	BT-2	Understanding
12.	List out the types of tests for lime. Give some examples.	BT-1	Remembering
13.	List out the various grades of cement in India.	BT-1	Remembering
14.	Define the term setting time of cement.	BT-2	Understanding
15.	What do you understand by Transition Zone?	BT-6	Creating
16.	Differentiate the initial and final setting time of cement.	BT-4	Analyzing
17.	Write down the chemical and physical characteristics of flyash.	BT-3	Applying
18.	Abrasion test on aggregate is conducted for measuring rate of wear and tear. Justify with proper explanation.	BT-5	Evaluating
19.	Write down the tests for coarse aggregate.	BT-3	Applying
20.	What are the tests prescribed for mortar?	BT-1	Remembering
PART B			
1.	Construct a flow diagram for dry and wet process of manufacture of cement with brief explanation.	BT-1	Remembering
2.	Enumerate the methods of preparation of lime mortar. Describe ay two major tests to determine the quality of lime.	BT-1	Remembering
3.	Describe the procedure of manufacture of lime mortar.	BT-1	Remembering
4.	List out the different types of lime mortar? Mention their properties.		
5.	Explain with codal provisions for testing of conventional coarse aggregate.	BT-2	Understanding
6.	Compare and contrast the advantages and disadvantages of using lime and cement in engineering works.	BT-2	Understanding
7.	What are the various ingredients required for manufacturing cement? State their functions.	BT-2	Understanding
8.	Compare the various types of cement produced in India.	BT-3	Applying
9.	How do you perform the compression strength of cement mortar cube? Also explain the procedure for the fineness of cement.	BT-3	Applying
10.	Explain how the following tests are conducted on aggregate; as per IS codes:	BT-4	Analyzing

	(a) Water Absorption and Specific gravity (b) Flakiness Index and Elongation Index (c) Aggregate Abrasion Value		
11.	What do you understand by pozzolanic materials? Explain briefly their properties and uses.	BT-6	Creating
12.	Discuss different tests for quality of sand.	BT-5	Evaluating
13.	Explain the usual tests prescribed for mortars.	BT-5	Evaluating
14.	What are different sources of obtaining sand?	BT-6	Creating
PART C			
1.	(a) Add a note on the process of hydration of cement. (b) How do you perform the soundness test of cement? Why it is important?	BT-3	Applying
2.	Describe the manufacturing process of cement.	BT-1	Remembering
3.	What are the tests to be conducted for conventional coarse aggregates? Explain any four tests in detail.	BT-5	Evaluating
4.	Explain briefly about (a) Consistency test on cement (b) Soundness of cement (c) Crushing strength of aggregate (d) Impact strength of aggregate	BT-1	Remembering

UNIT 3- CONCRETE

CONCRETE – INGREDIENTS – MANUFACTURING PROCESS – BATCHING PLANTS – RMC – PROPERTIES OF FRESH CONCRETE – SLUMP – FLOW AND COMPACTION FACTOR – PROPERTIES OF HARDENED CONCRETE – COMPRESSIVE, TENSILE AND SHEAR STRENGTH – MODULUS OF RUPTURE – TESTS – MIX SPECIFICATION – MIX PROPORTIONING – BIS METHOD – HIGH STRENGTH CONCRETE AND HPC – SELF COMPACTING CONCRETE – OTHER TYPES OF CONCRETE – DURABILITY OF CONCRETE.

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.	Define compaction factor.	BT-1	Remembering
6.	Define durability.	BT-1	Remembering
7.	Describe SCC.	BT-2	Understanding
8.	Differentiate between HPC and HSC.	BT-2	Understanding
9.	Interpret the slump value with respect to degree of workability.	BT-2	Understanding
10.	Discuss the cause for segregation and bleeding	BT-2	Understanding
11.	Demonstrate the compressive test on concrete cube.	BT-3	Applying
12.	Calculate the material quantity required for M20 grade concrete for per cubic metre.	BT-3	Applying
13.	Establish the relationship between strength and ageing of concrete.	BT-3	Applying
14.	Explain the properties of fresh concrete.	BT-4	Analyzing
15.	Explain the properties of hardened concrete.	BT-4	Analyzing
16.	Compare nominal mix with design mix.	BT-4	Analyzing
17.	Write composition of concrete.	BT-5	Evaluating
18.	What happens to the strength of concrete if water content is increased for achieving required workability?	BT-5	Evaluating
19.	When RMC is recommended?	BT-6	Creating
20.	Recommend the type of curing for vertical and horizontal member of a framed structure.	BT-6	Creating
PART B			
1.	Describe manufacture of concrete in detail.	BT-1	Remembering
2.	Describe the test on workability of concrete.	BT-1	Remembering
3.	Describe the mixing of concrete.	BT-1	Remembering
4.	Write the importance of quality control of concrete.	BT-1	Remembering
5.	Discuss the curing methods and its importance	BT-2	Understanding

6.	Discuss the methods of transport of concrete.	BT-2	Understanding
7.	Explain the types of concrete.	BT-4	Analyzing
8.	Demonstrate the test on fresh concrete.	BT-3	Applying
9.	Demonstrate the test on hardened concrete.	BT-3	Applying
10.	Explain the design procedure for IS method of concrete.	BT-4	Analyzing
11.	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-5	Evaluating
12.	Explain i) HSC (7) ii) HPC. (6)	BT-6	Creating
13.	Discuss slump test in detail.	BT-2	Understanding
14.	Describe manufacture of concrete in detail.	BT-1	Remembering
	PART C		
1.	Discuss SCC in detail.	BT-2	Understanding
2.	With neat sketches investigate the efficient manufacturing process of concrete	BT-4	Analyzing
3.	Prioritize and make a comparative study on the various tests on hardened concrete.	BT-5	Evaluating
4.	Compose 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 – THERMACOLE – PANELS OF LAMINATES – STEEL – ALUMINUM AND OTHER METALLIC MATERIALS – COMPOSITION – ALUMINUM COMPOSITE PANEL – USES – MARKET FORMS – MECHANICAL TREATMENT – PAINTS – VARNISHES – DISTEMPERS – BITUMENS.

PART A			
Q.No	**Questions**	**BT Level**	**Competence**
1.	Define seasoning of timber.	BT-1	Remembering
2.	Define annealing of steel.	BT-1	Remembering
3.	Define distemper.	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 market forms of steel	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.	Discuss the defects in timber.	BT-2	Understanding
10.	Distinguish the different paints used for building construction.	BT-2	Understanding
11.	Demonstrate penetration of bitumen.	BT-3	Applying
12.	Classify various rolled steel sections.	BT-3	Applying
13.	Show the chemical reaction between iron and other atmospheric agents which cause corrosion.	BT-3	Applying
14.	Explain the consideration to be made in choosing paints	BT-4	Analyzing
15.	Arrange in order the type of steel based on their carbon content.	BT-4	Analyzing
16.	Explain the characteristics of an ideal paint.	BT-4	Analyzing
17.	Write the composition of duralumin.	BT-5	Evaluating
18.	Creating a flow chart for the manufacturing process of paint.	BT-5	Evaluating
19.	Assess the pigment volume concentration if the volume of pigment is 1200 ml and total volume of nonvolatile components is 2800 ml.	BT-6	Creating
20.	Recommend methods for painting on surfaces.	BT-6	Creating
PART B			
1.	List and explain the various methods of seasoning of timber.	BT-1	Remembering
2.	Name the various methods of manufacture of steel and explain the bessemer process.	BT-1	Remembering
3.	Describe the types of hot rolled steel sections and cold formed steel sections.	BT-1	Remembering

4.	Associate the various uses of aluminum with respect to construction works.	BT-1	Remembering
5.	Summarize the various causes of decay of wood work and their preservation.	BT-2	Understanding
6.	Illustrate with diagram for various defects in timber	BT-2	Understanding
7.	Analyse the various considerations to be made in choosing paints and also explain about the types of paints.	BT-4	Analyzing
8.	Explain in detail the heat treatment of steel.	BT-3	Applying
9.	Prepare a flowchart and explain step by step the manufacture of TMT bars.	BT-3	Applying
10	Explain the tests made for steel which is used in RCC construction.	BT-4	Analyzing
11	Assess the characteristic features of varnishes.	BT-5	Evaluating
12	Compose the various forms of steel in detail.	BT-6	Creating
13	Investigate the various applications of aluminium.	BT-4	Analyzing
14	Discuss the mechanical treatment of paint in detail.	BT-2	Understanding
PART C			
1.	Explain the various test performed on timber as per Indian standards.	BT-2	Understanding
2.	Compose the commonly used industrial timber products.	BT-6	Creating
3.	Examine in detail about the principle process involved in heat treatment of steel.	BT-4	Analyzing
4.	List out the paints commonly used in buildings? Explain.	BT-1	Remembering

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.	What are the constituents of Glass?	BT-1	Remembering
2.	What are the properties of Glass?	BT-1	Remembering
3.	What are the uses of Glass?	BT-1	Remembering
4.	What is the characteristic feature of ceramic materials?	BT-1	Remembering
5.	What is Sealent and where it is used?	BT-1	Remembering
6.	List the uses of ceramics?	BT-1	Remembering
7.	Write a short note on FGRP?	BT-2	Understanding
8.	What are the uses of FGRP?	BT-2	Understanding
9.	Write any four properties of clay products?	BT-2	Understanding
10.	What are the uses of Clay products?	BT-2	Understanding
11.	State any four properties of Refractories?	BT-3	Applying
12.	Write a short note on Refractories?	BT-3	Applying
13.	What do you mean by composite materials?	BT-3	Applying
14.	What are the types of composite materials?	BT-4	Analyzing
15.	What are laminar composites?	BT-4	Analyzing
16.	What are the applications of laminar composites?	BT-4	Analyzing
17.	What is Geo Membrane?	BT-5	Evaluating
18.	What are the uses of Geo membrane?	BT-5	Evaluating
19.	Define Fibre textile?	BT-6	Creating
20.	What do you mean by Earth reinforcement?	BT-6	Creating
PART B			
1.	What is Glass? Explain the various properties of Glass?	BT-1	Remembering
2.	Describe the process of manufacturing of Glass? What are the Uses of glass in construction industry?	BT-1	Remembering
3.	What are the classifications of Glass?	BT-1	Remembering
4.	Write a short note on Ceramic products? What are the various applications of ceramic products?	BT-2	Remembering
5.	Explain in detail about Reinforced Plastics? What are the properties and uses?	BT-2	Understanding

6.	Explain in detail about Composite materials and its Uses?	BT-3	Understanding
7.	Explain in detail about Refractories? What are the different types of refractory Bricks?	BT-3	Analyzing
8.	What are Geosynthesis? How are they classified? What are the advantages & applications?	BT-4	Applying
9.	What is Terra cota? How it is manufactures?	BT-4	Analyzing
10	Write in detail about Earth reinforcement using Geomembrane?	BT-4	Analyzing
11	What is Glass? Explain the various properties of Glass?	BT-5	Evaluating
12	Describe the process of manufacturing of Glass? What are the Uses of glass in construction industry?	BT-2	Understanding
13	What are the classifications of Glass?	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.	What are the properties and uses of glasses? Explain the different forms available.	BT-2	Understanding
2.	Explain in detail about refractories.	BT-6	Creating
3.	What are composite materials? Explain its role and uses in construction industry.	BT-4	Analyzing
4.	Explain about geotextiles with neat sketches.	BT-1	Remembering

S.no	Unit		BT1	BT2	BT3	BT4	BT5	BT6	Total Question
1	Unit-1	Part-A	6	4	3	3	2	2	20
		Part-B	4	3	2	3	1	1	14
		Part-C	2	-	1	-	-	1	4
2	Unit-2	Part-A	6	4	3	3	2	2	20
		Part-B	4	3	2	3	1	1	14
		Part-C	3	1	-	-	-	-	4
3	Unit-3	Part-A	6	4	3	3	2	2	20
		Part-B	4	3	2	3	1	1	14
		Part-C	2	2	-	-	-	-	4
4	Unit-4	Part-A	6	4	3	3	2	2	20
		Part-B	4	3	2	3	1	1	14
		Part-C	2	-	2	-	-	-	4
5	Unit-5	Part-A	6	4	3	3	2	2	20
		Part-B	4	3	2	3	1	1	14
		Part-C	1	2	1	-	-	-	4

TOTAL NO OF QUESTIONS IN EACH PART

PART A	**100**
PART B	**70**
PART C	**20**
TOTAL	**190**