

QUESTION BANK

SUBJECT : 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 – CEMENT, CONCRETE BLOCKS – LIGHT WEIGHT CONCRETE BLOCKS.

PART A

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

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

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

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

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

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| | (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. | | Creating |
| 12. | Discuss different tests for quality of sand. | | Evaluating |
| 13. | Explain the usual tests prescribed for mortars. | | Evaluating |
| 14. | What are different sources of obtaining sand? | | Creating |
| <u>PART C</u> | | | |
| 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? | | Applying |
| 2. | Describe the manufacturing process of cement. | | Remembering |
| 3. | What are the tests to be conducted for conventional coarse aggregates? Explain any four tests in detail. | | Evaluating |
| 4. | Explain briefly about (a) Consistency test on cement (b) Soundness of cement (c) Crushing strength of aggregate (d) Impact strength of aggregate | | 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 | | Competence |
|-------------|--|--|-------------------|
| 1. | Define concrete. | | Remembering |
| 2. | Name the methods of mix proportioning of concrete. | | Remembering |
| 3. | Write the list of special concrete. | | Remembering |
| 4. | List the steps involved in concrete manufacturing process. | | Remembering |
| 5. | Define compaction factor. | | Remembering |
| 6. | Define durability. | | Remembering |
| 7. | Describe SCC. | | Understanding |
| 8. | Differentiate between HPC and HSC. | | Understanding |
| 9. | Interpret the slump value with respect to degree of workability. | | Understanding |
| 10. | Discuss the cause for segregation and bleeding | | Understanding |
| 11. | Demonstrate the compressive test on concrete cube. | | Applying |
| 12. | Calculate the material quantity required for M20 grade concrete for per cubic metre. | | Applying |
| 13. | Establish the relationship between strength and ageing of concrete. | | Applying |
| 14. | Explain the properties of fresh concrete. | | Analyzing |
| 15. | Explain the properties of hardened concrete. | | Analyzing |
| 16. | Compare nominal mix with design mix. | | Analyzing |
| 17. | Write composition of concrete. | | Evaluating |
| 18. | What happens to the strength of concrete if water content is increased for achieving required workability? | | Evaluating |
| 19. | When RMC is recommended? | | Creating |
| 20. | Recommend the type of curing for vertical and horizontal member of a framed structure. | | Creating |

PART B

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| 1. | Describe manufacture of concrete in detail. | | Remembering |
| 2. | Describe the test on workability of concrete. | | Remembering |
| 3. | Describe the mixing of concrete. | | Remembering |
| 4. | Write the importance of quality control of concrete. | | Remembering |
| 5. | Discuss the curing methods and its importance | | Understanding |

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| 6. | Discuss the methods of transport of concrete. | | Understanding |
| 7. | Explain the types of concrete. | | Analyzing |
| 8. | Demonstrate the test on fresh concrete. | | Applying |
| 9. | Demonstrate the test on hardened concrete. | | Applying |
| 10. | Explain the design procedure for IS method of concrete. | | 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. | | Evaluating |
| 12. | Explain i)HSC (7) ii)HPC. (6) | | Creating |
| 13. | Discuss slump test in detail. | | Understanding |
| 14. | Describe manufacture of concrete in detail. | | Remembering |
| <u>PART C</u> | | | |
| 1. | Discuss SCC in detail. | | Understanding |
| 2. | With neat sketches investigate the efficient manufacturing process of concrete | | Analyzing |
| 3. | Prioritize and make a comparative study on the various tests on hardened concrete. | | Evaluating |
| 4. | Compose the various factors to be considered during transportation of concrete. | | 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 | | Competence |
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| 1. | Define seasoning of timber. | | Remembering |
| 2. | Define annealing of steel. | | Remembering |
| 3. | Define distemper. | | Remembering |
| 4. | What is blown bitumen? | | Remembering |
| 5. | Name the methods through which galvanized coatings is given to GI sheets. | | Remembering |
| 6. | List the market forms of steel | | Remembering |
| 7. | Differentiate between dry distemper and oil distemper. | | Understanding |
| 8. | Discuss the causes of decay of wood work. | | Understanding |
| 9. | Discuss the defects in timber. | | Understanding |
| 10. | Distinguish the different paints used for building construction. | | Understanding |
| 11. | Demonstrate penetration of bitumen. | | Applying |
| 12. | Classify various rolled steel sections. | | Applying |
| 13. | Show the chemical reaction between iron and other atmospheric agents which cause corrosion. | | Applying |
| 14. | Explain the consideration to be made in choosing paints | | Analyzing |
| 15. | Arrange in order the type of steel based on their carbon content. | | Analyzing |
| 16. | Explain the characteristics of an ideal paint. | | Analyzing |
| 17. | Write the composition of duralumin. | | Evaluating |
| 18. | Creating a flow chart for the manufacturing process of paint. | | Evaluating |
| 19. | Assess the pigment volume concentration if the volume of pigment is 1200 ml and total volume of nonvolatile components is 2800 ml. | | Creating |
| 20. | Recommend methods for painting on surfaces. | | Creating |
| <u>PART B</u> | | | |
| 1. | List and explain the various methods of seasoning of timber. | | Remembering |
| 2. | Name the various methods of manufacture of steel and explain the bessemer process. | | Remembering |
| 3. | Describe the types of hot rolled steel sections and cold formed steel sections. | | Remembering |

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| 4. | Associate the various uses of aluminum with respect to construction works. | | Remembering |
| 5. | Summarize the various causes of decay of wood work and their preservation. | | Understanding |
| 6. | Illustrate with diagram for various defects in timber | | Understanding |
| 7. | Analyse the various considerations to be made in choosing paints and also explain about the types of paints. | | Analyzing |
| 8. | Explain in detail the heat treatment of steel. | | Applying |
| 9. | Prepare a flowchart and explain step by step the manufacture of TMT bars. | | Applying |
| 10 | Explain the tests made for steel which is used in RCC construction. | | Analyzing |
| 11 | Assess the characteristic features of varnishes. | | Evaluating |
| 12 | Compose the various forms of steel in detail. | | Creating |
| 13 | Investigate the various applications of aluminium. | | Analyzing |
| 14 | Discuss the mechanical treatment of paint in detail. | | Understanding |
| <u>PART C</u> | | | |
| 1. | Explain the various test performed on timber as per Indian standards. | | Understanding |
| 2. | Compose the commonly used industrial timber products. | | Creating |
| 3. | Examine in detail about the principle process involved in heat treatment of steel. | | Analyzing |
| 4. | List out the paints commonly used in buildings? Explain. | | 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 | | Competence |
|----------------------|--|------|---------------|
| 1. | What are the constituents of Glass? | | Remembering |
| 2. | What are the properties of Glass? | | Remembering |
| 3. | What are the uses of Glass? | | Remembering |
| 4. | What is the characteristic feature of ceramic materials? | | Remembering |
| 5. | What is Sealent and where it is used? | | Remembering |
| 6. | List the uses of ceramics? | | Remembering |
| 7. | Write a short note on FGRP? | | Understanding |
| 8. | What are the uses of FGRP? | | Understanding |
| 9. | Write any four properties of clay products? | | Understanding |
| 10. | What are the uses of Clay products? | | Understanding |
| 11. | State any four properties of Refractories? | | Applying |
| 12. | Write a short note on Refractories? | | Applying |
| 13. | What do you mean by composite materials? | | Applying |
| 14. | What are the types of composite materials? | | Analyzing |
| 15. | What are laminar composites? | | Analyzing |
| 16. | What are the applications of laminar composites? | | Analyzing |
| 17. | What is Geo Membrane? | | Evaluating |
| 18. | What are the uses of Geo membrane? | | Evaluating |
| 19. | Define Fibre textile? | | Creating |
| 20. | What do you mean by Earth reinforcement? | | Creating |
| <u>PART B</u> | | | |
| 1. | What is Glass? Explain the various properties of Glass? | | Remembering |
| 2. | Describe the process of manufacturing of Glass? What are the Uses of glass in construction industry? | | Remembering |
| 3. | What are the classifications of Glass? | | Remembering |
| 4. | Write a short note on Ceramic products? What are the various applications of ceramic products? | | Remembering |
| 5. | Explain in detail about Reinforced Plastics? What are the properties and uses? | BT-2 | Understanding |

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| 6. | Explain in detail about Composite materials and its Uses? | Understanding |
| 7. | Explain in detail about Refractories? What are the different types of refractory Bricks? | Analyzing |
| 8. | What are Geosynthesis? How are they classified? What are the advantages & applications? | Applying |
| 9. | What is Terra cota? How it is manufactures? | Analyzing |
| 10 | Write in detail about Earth reinforcement using Geomembrane? | Analyzing |
| 11 | What is Glass? Explain the various properties of Glass? | Evaluating |
| 12 | Describe the process of manufacturing of Glass? What are the Uses of glass in construction industry? | Understanding |
| 13 | What are the classifications of Glass? | Creating |
| 14 | Write a short note on Ceramic products? What are the various applications of ceramic products? | Remembering |
| 1. | What are the properties and uses of glasses? Explain the different forms available. | Understanding |
| 2. | Explain in detail about refractories. | Creating |
| 3. | What are composite materials? Explain its role and uses in construction industry. | Analyzing |
| 4. | Explain about geotextiles with neat sketches. | |