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Objective Solved
Questions

Volume-2

Building Materials and Construction
Surveying Engineering
Hydrology & Irrigation

MCOQ

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DIRECTOR'S *Message*

To reach heights one must start climbing and if the journey is difficult then perseverance is the key to success. As a teacher we have realized over past years that success in any competitive exam requires hard work and proper guidance. **Engineers Academy** with its unique teaching methodologies has always proved that we meet the expectations of thousands of students and parents to make their dreams come true. With changing patterns, we have adapted ourselves to deliver the best and ensure better results.

This book has been organized and executed with a lot of care, dedication and passion for lucidity. A conscious attempt has been made to simplify the concepts to facilitate better understanding of the subject.

Engineers Academy has many successful stories of students who secured All India Rank in ESE, GATE, PSUs and JEn. Now we invite you to become a part of Engineers Academy to explore and achieve ultimate goal of your life. We promise to provide you quality guidance with competitive environment which is far advanced and ahead than the reach of other institution.

We would feel satisfied if the book meets the needs of the students for whom it is meant.

Lastly, we are thankful to all the engineers, authors whose work has been the source of enlightenment, inspiration and guidance in presenting this book.

It is hoped that the book in its new form will enjoy its ever increasing popularity.

Regards

Dr. Pankaj Goyal



Preface

This book has been written to meet the growing requirements of candidates appearing for BSNL, DRDO, ISRO, BARC, ECIL, TTA, RRB-JE, State and Public Sector Engineering Examinations. Though every candidate has ability to succeed but competitive environment, in-depth knowledge, quality guidance, time management and good source of study is required to achieve goals.

This book includes Multiple Choice Questions (MCQ) which works as a mock exam practice for the reader. Questions of all the subject have been organized in systematic, concepts oriented and error less manner so that it become easy and interesting for even a beginner to understand. It is a very convenient book and must be solved by candidate aiming for competitive exams.

After solving this booklet students can feel encouraged and develop confidence to attempt each and every type of numerical as well as theoretical problems. Each problems explains solving approach so that at the end, so the reader is well equipped to be able to apply any type of problem solving requirement and distinctly choose one strategy or type from the other.

We hope this book will be proved an important tool to succeed in BSNL, DRDO, ISRO, BARC, ECIL, TTA, RRB-JE, State and Public Sector Engineering Examinations.

It is earnestly hoped that with the extensive additions and revisions, the present edition will facilitate the students not only in preparing themselves for competitive examinations but also in preparing for their regular examinations and prove more useful to the students than the earlier editions.

Even though, enough readings were given for correcting the error and printing mistakes, due to human tendency there could be some minor types in the book. If any such types found, they will be highly appreciated and in incorporated in the next edition. Also, please provide your valuable suggestions at : engineers.academy.india@gmail.com

Wish you all the best. Have a nice reading.

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Engineers Academy Publications

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UNIT-I

BUILDING MATERIALS AND CONSTRUCTION

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BRICKS

OBJECTIVE QUESTIONS

1. The process of mixing sand with the powdered natural soil to improve the quality is known as
 - (a) Moulding
 - (b) Tempering
 - (c) Drying
 - (d) Blending
2. Lime is mixed with brick earth
 - (a) To impart plasticity
 - (b) To increase durability
 - (c) To prevent shrinkage
 - (d) To increase impermeability
3. Maximum percentage of water absorption of II-class bricks in 24 hours should be limited to
 - (a) 10%
 - (b) 15%
 - (c) 20%
 - (d) 22%
4. The over ground continuous kiln is
 - (a) Bull's trench kiln
 - (b) Hoffman's kiln
 - (c) Tunnel kiln
 - (d) All of these
5. Fire bricks should be laid in
 - (a) Lime mortar
 - (b) Fire cement mortar
 - (c) Fire clay mortar
 - (d) All of these
6. Bullnose bricks are not used in
 - (a) Walls
 - (b) Rounding off sharp corners
 - (c) Arches
 - (d) Pillars
7. Terracotta is used in buildings for
 - (a) Ornamental work
 - (b) Insulation
 - (c) Storage
 - (d) None of these
8. If rain water falls on hot bricks, then shape of the bricks gets deformed, the defect is known as
 - (a) Efflorescence
 - (b) Bloating
 - (c) Chuffs
 - (d) Nodules
9. The moulded bricks are dried before burning to an approximate moisture content of
 - (a) 3%
 - (b) 6%
 - (c) 10%
 - (d) 20%
10. Hollow brick is
 - (a) Sound proof
 - (b) Heat proof
 - (c) About 1/3 in weight of standard brick
 - (d) All of the above
11. The compressive strength of burnt clay bricks as per IS 1077-1992 is
 - (a) 105 kg/cm²
 - (b) 150 kg/cm²
 - (c) 105–150 kg/cm²
 - (d) 35–350 kg/cm²
12. Consider the following statements:

A good soil for making bricks should contain

 1. About 30% alumina.
 2. About 10% lime nodules.
 3. A small quantity of iron oxides, 5 to 6%.
 4. About 5% magnesia.

Of these statements

 - (a) 1 and 2 are correct
 - (b) 1 and 3 are correct
 - (c) 1, 3 and 4 are correct
 - (d) 1 and 4 are correct

13. Consider the following statements:-
For the manufacture of good quality bricks it is essential to
1. Use a reverberatory kiln.
 2. Blend the soil with clay or sand as deemed appropriate.
 3. Knead the soil in a ghani.
 4. Temper the soil in a pug mill.
- Of these correct statements are
- (a) 1 and 3 (b) 2 and 4
(c) 1, 3 and 4 (d) 2, 3 and 4
14. The raw bricks shrink during drying and warp during burning because of
- (a) Less lime in brick earth
(b) Less silica and excess magnesia in brick earth
(c) Excess of alumina
(d) Alkalies in bricks earth
15. In brick masonry the frog of the brick is generally kept on
- (a) Top face
(b) Bottom face
(c) Exposed face
(d) Interior face
- [Punjab JE - 2014,
PHED-RAJ., Chandigarh JE - 2016]
16. The approximate weight of a brick should be
- (a) 2.5 kg (b) 4.5 kg
(c) 5.1 kg (d) 3.2 kg
- [Punjab JE - 2014,
PEB.SUB ER. - 2017, DMRC - 2018]
17. Which one is the correct sequence of various operations of preparation of Brick-Earth.
I. Blending II. Digging III. Weathering IV. Unsoiling V. Tempering
- (a) IV, II, III, V, I (b) IV, II, III, I, V
(c) II, IV, V, III, I (d) II, III, IV, V, I
- [RPSC]
18. What is the nominal size of standard modular brick-tile?
- (a) 19 cm × 9 cm × 4 cm
(b) 19 cm × 9 cm × 9 cm
(c) 20 cm × 10 cm × 10 cm
(d) 20 cm × 10 cm × 5 cm
- [PEB-SUB ER. - 2017]
19. What is the unit weight of broken bricks ?
- (a) 1520 kg/m³ (b) 1630 kg/m³
(c) 1800 kg/m³ (d) 1420 kg/m³
- [PEB-SUB ER. - 2017]
20. The compressive strength of first class bricks should not be less than
- (a) 7 N/mm² (b) 10.5 N/mm²
(c) 12 N/mm² (d) 15 N/mm²
21. The term 'frog' means :
- (a) An apparatus to lift the brick
(b) Soaking brick in water
(c) A depression on the face of the brick
(d) Vertical joint in a brick work
- [PEB-SUB ER. - 2017,
LMRC JE, AEC-2017]
22. How many bricks will be required for 1 cubic meter of brick masonry?
- (a) 100 (b) 500
(c) 250 (d) 400
- [PEB-SUB ER. - 2017,
MPSC - 2012, ISRO - 2013]
23. Efflorescence is
- (a) Formation of white patches on the surface of bricks due to the presence of insoluble salts in the clay used for making bricks
(b) Swelling of bricks due to the presence of carbonaceous matter and gas
(c) Deformation arising out of exposure to the weather
(d) Presence of impurities in the clay used for making bricks that show up after burning
- [GESCOM-AE, PMB- JE - 2018]

24. Jhama bricks are
 (a) Under burnt (b) Over burnt
 (c) Not burnt (d) None of these
[KPSC-AE, KPSC-JE]
25. What is the content of clay and silt in good brick earth ?
 (a) 20% (b) 30%
 (c) 40% (d) 50%
[KPSC-AE]
26. The presence of excess alumina in the clay is reflected in the bricks as
 (a) Makes the bricks brittle and weak
 (b) Makes the bricks crack and warp on drying
 (c) Changes the colour of the brick from red to yellow
 (d) Improves impermeability and durability of the brick
[KPSC-JE]
27. Water absorption for Ist class bricks should not be more than _____.
 (a) 12% (b) 15%
 (c) 20% (d) 25%
[KPSC-JE, ISRO - 2013]
28. Which of the following constituent in earth gives plasticity to mould bricks in suitable shape?
 (a) Silica (b) Lime
 (c) Alumina (d) Magnesia
[KPSC-JE]
29. Bricks are burnt at a temperature range of _____
 (a) 500 – 700°C (b) 700 – 900°C
 (c) 900 – 1200°C (d) 1200 – 1500°C
[KPSC-JE]
30. The usual name given to sculpture made by earthen ware using baked earth is
 (a) Terracotta (b) Burnt sand
 (c) Aggregate (d) Fossil
[KPSC-JE]
31. The standard size of modular brick including mortar thickness is
 (a) 23 cm × 12 cm × 8 cm
 (b) 19 cm × 20 cm × 19 cm
 (c) 20 cm × 10 cm × 10 cm
 (d) 18 cm × 9 cm × 9 cm
[KPSC-JE]
32. A good brick earth should, in general, contain
 (a) About 20% to 30% of alumina
 (b) About 50% to 60% of silica
 (c) Not more than 5% of lime
 (d) All of the above
[KPSC-JE]
33. In which of the following areas would refractory bricks be used?
 (a) Retaining walls
 (b) Columns
 (c) Piers
 (d) Combustion chambers
[KPSC-JE]
34. What is the standard size of masonry bricks ?
 (a) 21 cm × 11 cm × 11 cm
 (b) 20 cm × 10 cm × 10 cm
 (c) 19 cm × 9 cm × 9 cm
 (d) 18 cm × 8 cm × 8 cm
[KPSC-JE, MPSC - 2012, ISRO - 2013]
35. The main ingredient of a good quality brick earth is
 (a) Magnesia (b) Lime
 (c) Silica (d) Alumina
[KPSC-JE, RPSC]
36. Presence of which of the following is responsible for imparting yellow tint to bricks?
 (a) Silica (b) Alumina
 (c) Lime (d) Magnesia
[TSPSC-AE - 2015, DFCCIL - 2016]

37. The strength achieved by a brick depends on
 (a) Composition of brick earth
 (b) Nature of moulding adopted
 (c) Burning and cooling process
 (d) All of the above
[MPSC - 2012]
38. The red colour of bricks is due to :
 (a) Iron oxide (b) Silica
 (c) Magnesia (d) Alumina
[NBCC - 2017]
39. The recommended compression strength of A class Brick as per BIS is :
 (a) 25 N/mm² (b) 20 N/mm²
 (c) 14 N/mm² (d) None of these
[NBCC - 2017]
40. Excess of silica in brick earth causes
 (a) Loss of cohesion
 (b) Impermeability
 (c) Cracking and warping on drying
 (d) None of the above
[Chandigarh JE - 2016]
41. A pug mill is used for
 (a) Moulding of brick earth
 (b) Baking of bricks
 (c) Tempering of brick earth
 (d) Testing of bricks
[ISRO - 2018]
42. Which tool is used for cutting bricks accurately?
 (a) Bolster (b) Trowel
 (c) Brick Hammer (d) Rammer
[Haryana JE - 2018]
43. Fire bricks are made from
 (a) Fire clay (b) Quick lime
 (c) Hydrate lime (d) Cement
44. Which one of following is not a defect in bricks?
 (a) Wedge cut (b) Under burning
 (c) Over burning (d) Black core
[DMRC - 2018]
45. To get uniform colour, Terracotta is burnt at a temperature that lies in the range of :
 (a) 650 to 850°C (b) 900 to 1500°C
 (c) 4500 to 4600°C (d) 1100 to 1200°C
[DMRC - 2018]
46. In the manufacturing process of bricks, which moulding is not practiced?
 (a) Ground moulding
 (b) Table moulding
 (c) Automatic moulding
 (d) Machine moulding
[DMRC - 2018]
47. A frog in a brick is provided to mainly serve which of the following purposes?
 (a) Emboss builder's name
 (b) Reduce the weight of brick
 (c) Improve insulation by providing hollows
 (d) Form keyed joint between brick and mortar
[AEC - 2017]
48. The average compressive strength of 2nd class bricks should not be less than
 (a) 75 kg/cm² (b) 12 kg/cm²
 (c) 10 kg/cm² (d) 15 kg/cm²
[AEC - 2017]
49. The following soil is good for making bricks
 (a) Black cotton (b) Silty
 (c) Alluvial (d) Sand and silt
50. The percentage of perforation in solid bricks is about
 (a) 5 (b) 10
 (c) 15 (d) 20
[RPSC ACF - 2011]
51. The tolerance in the width of the mould of a class I brick is about
 (a) ± 3 mm (b) ± 6mm
 (c) ± 10 mm (d) ± 12 mm
[RPSC ACF - 2011]

52. The percentage of alumina in a good brick clay should be lies between
 (a) 20% – 30% (b) 30% – 40%
 (c) 40% – 50% (d) 50% – 60%
[DSSSB JE - 2015, Bihar JE - 2016]
53. If L is the length and B the width of the brick and t the thickness of mortar, the relation between these is
 (a) $L = 2B$ (b) $L = B + t$
 (c) $L = B + 2t$ (d) $L = 2B + t$
54. Which of the following ingredients of the brick earth enables the brick to remain its shape?
 (a) Alumina (b) Silica
 (c) Iron (d) Magnesia
[RPSC ACF - 2011]
55. Glazing is used to make earthenware
 (a) Hard (b) Soft
 (c) Porous (d) Impervious
[RPSC ACF - 2011]
56. Bauxite bricks are
 (a) Ordinary fire bricks
 (b) Basic refractory bricks
 (c) Acid refractory bricks
 (d) Neutral refractory bricks
[Haryana SSC JE - 2015]
57. Refractory bricks resist
 (a) High temperature
 (b) Chemical action
 (c) Dampness
 (d) All of the above
[HPSC AE - 2010]
58. According to IS-1077, class-10 bricks are the bricks having____.
 (a) Thickness more than 10 cm
 (b) Tensile strength not less than 10 N/cm²
 (c) Compressive strength not less than 10 N/mm²
 (d) Length more than 10 cm
[MP VYAPM - 2017]
59. Match the Grade of bricks with its compressive strength (According to IS : 1077 - 1992) and select the correct answer as per the codes given below.
- | Compressive Strength | Grade |
|---|---------------|
| A. Not less than 140 kg/cm ² | I. Grade A |
| B. Not less than 105 kg/cm ² | II. Grade A-A |
| C. Not less than 70 kg/cm ² | III. Grade B |
| D. Not less than 35 kg/cm ² | IV. Grade C |
- (a) A-IV, B-II, C-III, D-I
 (b) A-I, B-II, C-III, D-IV
 (c) A-II, B-I, C-III, D-IV
 (d) A-I, B-III, C-II, D-IV
[DFCCIL - 2016]
60. Which of the following is not mechanical property of bricks?
 (a) Modulus of rupture (b) Texture
 (c) Tensile Strength (d) Fire resistance
[RJC - 2016]
61. A good brick earth can be rolled without breaking in small thread of diameter:
 (a) 1 mm (b) 3 mm
 (c) 6 mm (d) 10 mm
[RJC - 2016]
62. For checking the length of bricks as per Indian standards how many bricks are to be taken:
 (a) 10 (b) 15
 (c) 20 (d) 25
[UP JAL NIGAM JE - 2013 , UP SSC JE - 2015]
63. Which of the following statement is INCORRECT with respect to first class bricks?
 (a) No impression should be left on the brick when a scratch is made by a finger nail
 (b) A metallic or ringing sound should come when two bricks are struck against each other
 (c) Water absorption is about 25-30% of its dry weight is allowed
 (d) These should be free from flaws, cracks and stones
[MP SUB ER. - 2017]

64. The function of iron oxide in brick is to _____.
 (a) Impart uniform shape
 (b) Prevent shrinkage of raw bricks
 (c) Impart colour
 (d) Impart plasticity to the brick
[Draughtsman-Bihar - 2016]
65. Percentage of silica in a good brick earth lies between
 (a) 5 to 10% (b) 20 to 30%
 (c) 50 to 60% (d) 70 to 80%
[UP JAL NIGAM JE - 2017, UPRVUNL JE - 2015]
66. The average crushing and tensile strength of hand moulded bricks in kN/m² is:
 (a) 60000 and 2000 (b) 50000 and 1000
 (c) 55000 and 1500 (d) 65000 and 2500
[UPRVUNL JE - 2016]
67. What happens of the constituents of brick, when a raw brick is heated in the temperature range of 700-1000 degree C?
 (a) Physical changes (b) Chemical changes
 (c) Dehydration (d) Colouring of brick
[CPEB - 2016]
68. The minimum compressive strength of a brick is:
 (a) 3.5 MPa (b) 7.5 MPa
 (c) 10.2 MPa (d) 5.5 MPa
[CPEB - 2016]
69. China clay is an example of
 (a) Kaolinite (b) Illite
 (c) Montmorillonite (d) None of these
[CPEB - 2016]
70. Stone chips or broken bricks are also known as
 (a) Scrap (b) Waste
 (c) Dust (d) Spall
[Haryana SSC JE - 2015]
71. Which of the following is an odd one as regards 'requirements of good bricks earth?'
 (a) It must be free from lumps of lime
 (b) It should not be mixed with salty water
 (c) It must be non-homogeneous
 (d) It should not contain vegetable and organic matter
[Haryana SSC JE - 2015]
72. Which class of bricks has the following quality?
 1. Soft and have light color.
 2. Crumble even on light crushing.
 (a) Over burnt bricks
 (b) Second class bricks
 (c) Under burnt bricks
 (d) First class bricks
[MP VYAPAM - 2016]
73. Frog is provided into the bricks to:
 (i) Indicate the manufacture's name
 (ii) Provide a key for mortar
 Which among these is/are correct?
 (a) Only (i)
 (b) Only (ii)
 (c) Both (i) and (ii)
 (d) Neither (i) nor (ii)
[UPPCL JE - 2016, LMRC JE - 2015]
74. The articles prepared from refractory clays mixed with stone and crushed pottery are called
 (a) Tiles (b) Terra cotta
 (c) Porcelain (d) Stoneware
[UPPCL JE - 2016]
75. Excess of _____ is responsible for brick's decay.
 (a) Magnesia (b) Alumina
 (c) Lime (d) Silica
[UPPCL JE - 2016]
76. Strength based classification of bricks is made on the basis of
 (a) IS : 3101 (b) IS : 3102
 (c) IS : 3495 (d) IS : 3496

ANSWERS SHEET

- | | | | |
|---------------------|---------------------|---------------------|---------------------|
| 1. <i>Ans. (d)</i> | 18. <i>Ans. (d)</i> | 36. <i>Ans. (d)</i> | 58. <i>Ans. (c)</i> |
| 2. <i>Ans. (c)</i> | 19. <i>Ans. (d)</i> | 37. <i>Ans. (d)</i> | 59. <i>Ans. (c)</i> |
| 3. <i>Ans. (d)</i> | 20. <i>Ans. (b)</i> | 38. <i>Ans. (a)</i> | 60. <i>Ans. (b)</i> |
| 4. <i>Ans. (b)</i> | 21. <i>Ans. (c)</i> | 39. <i>Ans. (c)</i> | 61. <i>Ans. (b)</i> |
| 5. <i>Ans. (c)</i> | 22. <i>Ans. (b)</i> | 40. <i>Ans. (a)</i> | 62. <i>Ans. (c)</i> |
| 6. <i>Ans. (a)</i> | 23. <i>Ans. (a)</i> | 41. <i>Ans. (c)</i> | 63. <i>Ans. (c)</i> |
| 7. <i>Ans. (a)</i> | 24. <i>Ans. (b)</i> | 42. <i>Ans. (a)</i> | 64. <i>Ans. (c)</i> |
| 8. <i>Ans. (c)</i> | 25. <i>Ans. (d)</i> | 43. <i>Ans. (a)</i> | 65. <i>Ans. (c)</i> |
| 9. <i>Ans. (a)</i> | 26. <i>Ans. (b)</i> | 44. <i>Ans. (a)</i> | 66. <i>Ans. (a)</i> |
| 10. <i>Ans. (d)</i> | 27. <i>Ans. (c)</i> | 45. <i>Ans. (d)</i> | 67. <i>Ans. (b)</i> |
| 11. <i>Ans. (d)</i> | 28. <i>Ans. (c)</i> | 46. <i>Ans. (c)</i> | 68. <i>Ans. (a)</i> |
| 12. <i>Ans. (b)</i> | 29. <i>Ans. (c)</i> | 47. <i>Ans. (d)</i> | 69. <i>Ans. (a)</i> |
| 13. <i>Ans. (b)</i> | 30. <i>Ans. (a)</i> | 48. <i>Ans. (a)</i> | 70. <i>Ans. (d)</i> |
| 14. <i>Ans. (c)</i> | 31. <i>Ans. (c)</i> | 49. <i>Ans. (a)</i> | 71. <i>Ans. (c)</i> |
| 15. <i>Ans. (a)</i> | 32. <i>Ans. (d)</i> | 50. <i>Ans. (d)</i> | 72. <i>Ans. (c)</i> |
| 16. <i>Ans. (d)</i> | 33. <i>Ans. (d)</i> | 51. <i>Ans. (a)</i> | 73. <i>Ans. (c)</i> |
| 17. <i>Ans. (b)</i> | 34. <i>Ans. (c)</i> | 52. <i>Ans. (a)</i> | 74. <i>Ans. (d)</i> |
| (I) Unsoiling | 35. <i>Ans. (c)</i> | 53. <i>Ans. (d)</i> | 75. <i>Ans. (a)</i> |
| (II) Digging | Silica = 50 – 60%, | 54. <i>Ans. (b)</i> | 76. <i>Ans. (b)</i> |
| (III) Weathering | Lime = 4 – 5 % | 55. <i>Ans. (d)</i> | |
| (IV) Blending | Alumina = 20 – 30%, | 56. <i>Ans. (b)</i> | |
| (V) Tempering | Iron oxide = 5 – 6% | 57. <i>Ans. (a)</i> | |
| | Magnesia = 1% | | |

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