Topicwise Segregated
Previous Years Questions of

RRB-JE

CBT II

RAILWAY RECRUITMENT BOARD - JUNIOR ENGINEER

alongwith various Metro Corporations Papers :

- DMRC
- LMRC
- JMRC
- NMRC
- BMRCL
- UPMRC

Detailed Solutions of

1400+ PYQs

Of Exams held between : 2012 - 2026

CIVIL ENGINEERING

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RRB-JE (CBT-II)

alongwith various Metro Corporations Papers:

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Topicwise Segregated Previous Years Questions

Editions

First Edition : 2026

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PREFACE



B. Singh (Ex. IES)

Railway Recruitment Board - Junior Engineer is a sought-after examination among engineering graduates aspiring to build a career in the Indian Railways. Previous year questions play an important role in preparation, as they help candidates understand the examination pattern, assess the level of difficulty, and identify important concepts.

This book presents a systematically compiled collection of RRB JE and Metro Corporations (DMRC, LMRC, JMRC, NMRC, BMRCL, UPMRC) previous year questions with clear and accurate solutions. The aim is to provide aspirants with a reliable resource for practice and revision while strengthening their conceptual understanding.

Made Easy has taken due care to maintain the accuracy and clarity of the solutions. This book may also prove useful for other competitive engineering examinations. Suggestions from readers for further improvement are always welcome.

We hope this book serves as a valuable resource in your preparation and wish you success in your endeavours.

With Best Wishes

B. Singh (Ex. IES)

CMD, MADE EASY Group

Detailed Syllabus : RRB-JE

CBT-1 (STAGE-I) : Common for All

(a) **Mathematics:** Number systems, BODMAS, Decimals, Fractions, LCM and HCF, Ratio and Proportion, Percentages, Mensuration, Time and Work, Time and Distance, Simple and Compound Interest, Profit and Loss, Algebra, Geometry, Trigonometry, Elementary Statistics, Square Root, Age Calculations, Calendar & Clock, Pipes & Cistern.

(b) **General Intelligence and Reasoning:** Analogies, Alphabetical and Number Series, Coding and Decoding, Mathematical operations, Relationships, Syllogism, Jumbling, Venn Diagram, Data Interpretation and Sufficiency, Conclusions and Decision Making, Similarities and Differences, Analytical reasoning, Classification, Directions, Statement – Arguments and Assumptions etc.

(c) **General Awareness:** Knowledge of Current affairs, Indian geography, culture and history of India including freedom struggle, Indian Polity and constitution, Indian Economy, Environmental issues concerning India and the World, Sports, General Scientific and technological developments etc.

(d) **General Science:** Physics, Chemistry and Life Sciences (up to 10th Standard CBSE syllabus).

RRB-JE Exam Pattern : CBT-I		
Subjects	**No. of Questions**	**Marks for each Section**
	CBT-I	**CBT-I**
Mathematics	30	30
General Intelligence & Reasoning	25	25
General Awareness	15	15
General Science	30	30
Total	100	100
Time in Minutes	**90**	

- The section wise distribution given in the above table is only indicative and there may be some variations in the actual question papers.
- **Minimum percentage of marks for eligibility in various categories:** UR-40%, EWS-40%, OBC(NCL)-30%, SC-30%, ST -25%. This is also applicable to Ex-servicemen candidates, as per their community. These percentage of marks for eligibility may be relaxed by 2 marks for PwBD candidates in case of shortage of PwBD candidates against vacancies reserved for them.

Detailed Syllabus : RRB-JE

CBT-2 (STAGE-II)

(a) **General Awareness:** Knowledge of Current affairs, Indian geography, culture and history of India including freedom struggle, Indian Polity and Constitution, Indian Economy, Environmental issues concerning India and the World, Sports, General Scientific and Technological Developments etc.

(b) **Physics and Chemistry:** Up to 10th standard CBSE syllabus.

(c) **Basics of Computers and Applications:** Architecture of Computers; input and Output devices; Storage devices, Networking, Operating System like Windows, Unix, Linux; MS Office; Various data representation; Internet and Email; Websites & Web Browsers; Computer Virus.

(d) **Basics of Environment and Pollution Control:** Basics of Environment; Adverse effect of environmental pollution and control strategies; Air, water and Noise pollution, their effect and control; Waste Management, Global warming; Acid rain; Ozone depletion.

RRB-JE Exam Pattern : CBT-II		
Subjects	**No. of Questions**	**Marks for each Section**
	CBT-II	**CBT-II**
General Awareness	15	15
Physics & Chemistry	15	15
Basics of Computers and Applications	10	10
Basics of Environment and Pollution Control	10	10
Technical Abilities	100	100
Total	150	150
Time in Minutes	**120**	

- The section wise distribution given in the above table is only indicative and there may be some variations in the actual question papers.

Civil & Allied Engineering Exam Group– JE

1. **Engineering Mechanics:** Force (resolution of force, moment of force, force system, composition of forces), Equilibrium, Friction, Centroid and Center of gravity, Simple machines.
2. **Building Construction:** Building components (substructure, superstructure), type of structure (load bearing, framed and composite structures).
3. **Building materials:** Masonry materials (stones, bricks, and mortars), Timber and miscellaneous materials (glass, plastic, fiber, aluminium steel, galvanized iron, bitumen, PVC, CPVC, and PPF).
4. **Construction of substructure:** Job layout, earthwork, foundation (types, dewatering, coffer dams, bearing capacity).
5. **Construction of superstructure:** Stone masonry, brick masonry, Hollow concrete block masonry, composite masonry, cavity wall, doors and windows, vertical communication (stairs, lifts, escalators), scaffolding and shoring.
6. **Building finishes:** Floors (finishes, process of laying), walls (plastering, pointing, painting) and roofs (roofing materials including RCC).
7. **Building maintenance:** Cracks (causes, type, repairs- grouting, guniting, epoxy etc.), settlement (causes and remedial measures), and re-baring techniques.
8. **Building drawing:** Conventions (type of lines, symbols), planning of building (principles of planning for residential and public buildings, rules and byelaws), drawings (plan, elevation, section, site plan, location plan, foundation plan, working drawing), perspective drawing.
9. **Concrete Technology:** Properties of various types/grades of cement, properties of coarse and fine aggregates, properties of concrete (water cement ratio, properties of fresh and hardened concrete), Concrete mix design, testing of concrete, quality control of concrete (batching, formwork, transportation, placing, compaction, curing, waterproofing), extreme weather concreting and chemical admixtures, properties of special concrete (ready mix, RCC, pre-stressed, fiber reinforced, precast, high performance).
10. **Surveying:** Types of survey, chain and cross staff survey (principle, ranging, triangulation, chaining, errors, finding area), compass survey (principle, bearing of line, prismatic compass, traversing, local attraction, calculation of bearings, angles and local attraction) leveling (dumpy level, recording in level book, temporary adjustment, methods of reduction of levels, classification of leveling, tilting level, auto level, sources of errors, precautions and difficulties in leveling), contouring (contour interval, characteristics, method of locating, interpolation, establishing grade contours, uses of contour maps), area and volume measurements, plane table survey (principles, setting, method), theodolite survey (components, adjustments, measurements, traversing), Tacheometric survey, curves (types, setting out), advanced survey equipment, aerial survey and remote sensing.
11. **Computer Aided Design:** CAD Software (AutoCAD, Auto Civil, 3D Max etc.), CAD commands, generation of plan, elevation, section, site plan, area statement, 3D view.
12. **Geo Technical Engineering:** Application of Geo Technical Engineering in design of foundation, pavement, earth retaining structures, earthen dams etc., physical properties of soil, permeability of soil and seepage analysis, shear strength of soil, bearing capacity of soil, compaction and stabilization of soil, site investigation and sub soil exploration.

13. **Hydraulics:** Properties of fluid, hydrostatic pressure, measurement of liquid pressure in pipes, fundamentals of fluid flow, flow of liquid through pipes, flow through open channel, flow measuring devices, hydraulic machines.
14. **Irrigation Engineering:** Hydrology, investigation and reservoir planning, percolation tanks, diversion head works.
15. **Mechanics of Structures:** Stress and strain, shear force and bending moment, moment of inertia, stresses in beams, analysis of trusses, strain energy.
16. **Theory of structures:** Direct and bending stresses, slope and deflection, fixed beam, continuous beam, moment distribution method, columns.
17. **Design of Concrete Structures:** Working Stress method, Limit State method, analysis and design of singly reinforced and doubly reinforced sections, shear, bond and development length, analysis and design of T Beam, slab, axially loaded column and footings.
18. **Design of Steel Structures:** Types of sections, grades of steel, strength characteristics, IS Code, Connections, Design of tension and compression members, steel roof truss, beams, column bases.
19. **Transportation Engineering:** Railway Engineering (alignment and gauges, permanent way, railway track geometrics, branching of tracks, stations and yards, track maintenance), Bridge engineering (site selection, investigation, component parts of bridge, permanent and temporary bridges, inspection and maintenance), Tunnel engineering (classification, shape and sizes, tunnel investigation and surveying, method of tunneling in various strata, precautions, equipment, explosives, lining and ventilation).
20. **Highway Engineering:** Road Engineering, investigation for road project, geometric design of highways, construction of road pavements and materials, traffic engineering, hill roads, drainage of roads, maintenance and repair of roads.
21. **Environmental Engineering:** Environmental pollution and control, public water supply, domestic sewage, solid waste management, environmental sanitation, and plumbing.
22. **Advanced Construction Techniques and Equipment:** Fibers and plastics, artificial timber, advanced concreting methods (under water concreting, ready mix concrete, tremix concreting, special concretes), formwork, pre-fabricated construction, soil reinforcing techniques, hoisting and conveying equipment, earth moving machinery (exaction and compaction equipment), concrete mixers, stone crushers, pile driving equipment, working of hot mix bitumen plant, bitumen paver, floor polishing machines.
23. **Estimating and Costing:** Types of estimates (approximate, detailed), mode of measurements and rate analysis.
24. **Contracts and Accounts:** Types of engineering contracts, Tender and tender documents, payment, specifications.



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alongwith various Metro Corporations Papers:

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1 CHAPTER

BUILDING MATERIALS & CONSTRUCTION

1.1 Bricks & Stones

1. Which of the following is the hardest wood?

(a) Teak (b) Shisham
(c) Babul (d) Chir

[RRB-JE • Shift-I (Online), 26-08-2015]

Sol. (b)

Teak is considered the most valuable timber due to its natural oil content, dimensional stability, and termite resistance, Shisham possesses higher density and hardness, making it more resistant to denting and surface abrasion.

2. The hardest among the natural stones listed here is

(a) Granite (b) Limestone
(c) Marble (d) Slate

[RRB-JE • CBT-II 28-08-2019 (Morning)]

Sol. (a)

- Granite: It is an igneous rock primarily composed of quartz and feldspar. It reads around 6 to 7 on Mohs scale of mineral hardness. It is one of the hardest occurring natural stones.
- Marble: It is a metamorphic rock formed from limestone composed mostly of recrystallized calcite/dolomite, reading 3 to 4 on the Mohs scale.
- Limestone: It is a sedimentary rock composed mainly of calcite, reading around 3 on the Mohs scale.
- Slate: It is a fine-grained metamorphic rock derived from shale, reading around 2.5 to 4 on the Mohs scale. It splits easily into thin layers.

3. Special types of glazed tiles or bricks are used as facing material for the rubble or concrete or brick backing in

(a) Stone facing with Brick, Rubble or Concrete backing masonry
(b) Random Rubble masonry
(c) Brick facing with Rubble or Concrete backing masonry
(d) Brick backed Ashlar masonry

[RRB-JE • CBT-II 28-08-2019 (Evening)]

Sol. (c)

In composite masonry construction, glazed or ornamental facing bricks/tiles are used to form the outer facing while less expensive materials like rubble stone or concrete form the backing. This construction technique is known as brick facing with rubble or concrete backing masonry.

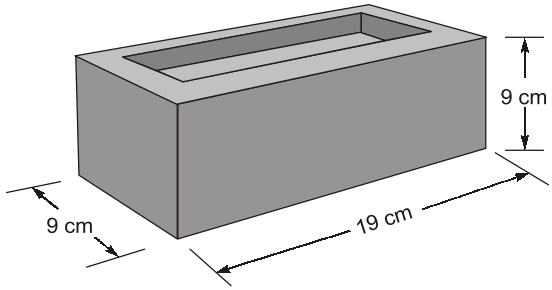
4. As per IS : 1077-1992, the standard modular size ($L \times W \times H$) of common building bricks shall be:

(a) 19 cm × 10 cm × 9 cm
(b) 20 cm × 10 cm × 10 cm
(c) 20 cm × 9 cm × 9 cm
(d) 19 cm × 9 cm × 9 cm

[RRB-JE • CBT-II 28-08-2019 (Morning)]

Sol. (d)

As per IS 1077:1992, the standard modular size of a burnt clay building brick is:
19 cm × 9 cm × 9 cm.



When mortar joint thickness is included, the nominal size becomes 20 cm × 10 cm × 10 cm.

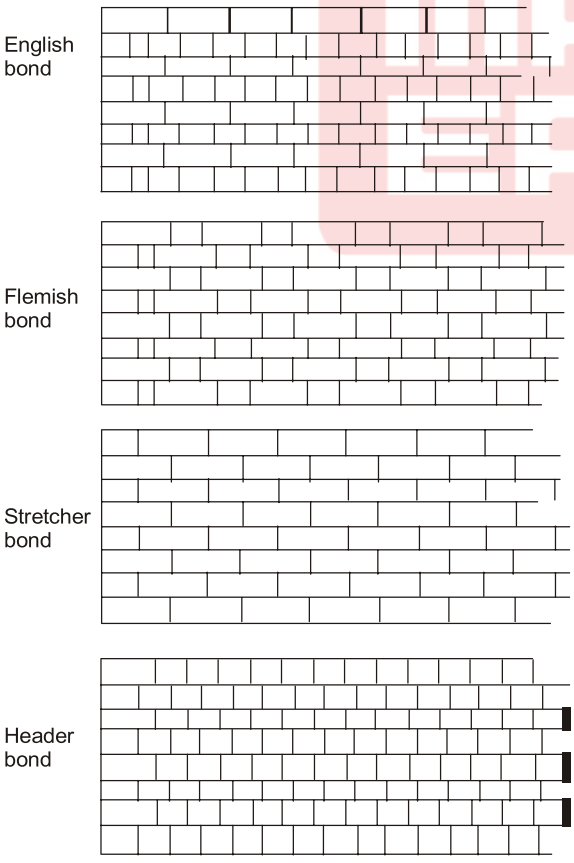
5. When two walls meet at right angles, which of the following bonds is generally used to maintain structural strength?

(a) Flemish bond (b) Header bond
(c) Stretcher bond (d) English bond

[RRB-JE • CBT-II 22-04-2025 (Morning)]

Sol. **(d)**

- It is the arrangement of bonding that consists of alternate courses of stretcher and header placed one over each other.
- In order to break the alignment of vertical joints to be in the same straight line, queen closer is placed next to the quoin header in each alternate course.
- Header courses must not start from queen closer as it is liable to get displaced off.
- A lap of one-fourth brick is available for each stretcher over the header in the course below it.
- For the wall having the thickness in odd multiples of half brick thick, each course shows a stretcher on one face and a header on the other face.



6. Which of the following plastics is used in fiber-reinforced composites for bridges and structural applications?

(a) Acrylic
(b) Nylon
(c) Epoxy resin
(d) Acrylonitrile Butadiene Styrene

[RRB-JE • CBT-II 22-04-2025 (Morning)]

Sol. **(c)**

Fibre-reinforced plastic (FRP) (also known as a fibre-reinforced polymer) is a composite material made of a polymer matrix reinforced with fibres. Epoxy resin is the most commonly used polymer matrix material in fiber-reinforced composites (FRPs) for structural applications like bridges, due to its high strength, stiffness, good chemical resistance, and excellent ability to bond with fibers.

7. Restricting the height of masonry constructed per day is a remedial measure to prevent :

(a) lateral pressure on the walls
(b) lateral movement of subsoil
(c) unequal settlement of subsoil
(d) unequal settlement of masonry

[RRB-JE • CBT-II 22-04-2025 (Morning)]

Sol. **(d)**

When constructing masonry, especially with materials like brick or block and mortar, it's important to limit the height built in a single day to allow the mortar to properly set and gain strength. It prevent unequal settlement of masonry.

8. Slate and laterite are examples of _____.

(a) argillaceous rock
(b) argillaceous and calcareous rocks, respectively
(c) siliceous rock
(d) calcareous rock

[RRB-JE • CBT-II 22-04-2025 (Morning)]

Sol. **(a)**

According to the chemical classification of rocks, they are classified as follows:

- **Siliceous rocks:-** The rocks which contain silica as the main constituent are called as siliceous rocks. e.g: Granite, Gneiss, Trap, Basalt, Sandstone, and Quartzite.

- **Argillaceous rocks:-** The rocks which contain clay or alumina as a main constituent is called as argillaceous rocks. e.g: Slate, Laterite, and Kaolin.
- **Calcareous rocks:-** The rocks which contain lime or calcium as the main constituent are called calcareous rocks. e.g: Marble, Limestone, and Dolomite.

9. Clay possesses the highest strength in which of the following conditions?
(a) When at shrinkage limit
(b) When heated to very high temperatures, up to redness
(c) When at liquid limit
(d) When with kaolinite at room temperatures

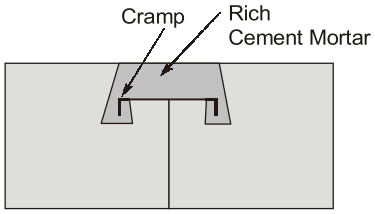
[RRB-JE • CBT-II 22-04-2025 (Morning)]

Sol. **(b)**
Clay undergoes a process called ceramic transformation when heated to very high temperatures (typically above 900°C). At these "red heat" temperatures, clay minerals undergo physical and chemical changes, including sintering and vitrification, which drastically increase their strength and hardness.

10. Which of the following options is used to enhance the alignment and strength of adjoining stones in stone masonry?
(a) Recessed joint (b) Flush joint
(c) Key joint (d) Dowel joint

[RRB-JE • CBT-II 22-04-2025 (Morning)]

Sol. **(d)**
Dowel Joint: In this joint, a hole is made into each stone.
Then the dowels which are small pieces of hard stone, slate, gunmetal, bronze, or brass are used for connecting these stones and secured with cement.
A cylindrical metal pin used in aligning and strengthening joints of adjacent stone units, or to assist in anchoring stone units.



11. Identify the tools NOT used for stone dressing:
(a) Dressing knife (b) Mash hammer
(c) Pestle (d) Splitting chisel

[RRB-JE • CBT-II 22-04-2025 (Evening)]

Sol. **(c)**
Dressing of stones:
- A quarried stone has rough surfaces, which are dressed to obtain a definite and regular shape.
- Dressing of stones is done immediately after quarrying and before seasoning to achieve less weight for transportation.

Following tools are shown in figure below:



(a) Mash hammer (b) Face hammer
(c) Mason's hammer (d) Mallet
(e) Spalling hammer (f) Scabbling hammer
(g) Drafting chisel (h) Point chisel
(i) Punch chisel (j) Crow chisel
(k) Soft stone chisel (l) Plane chisel

- Pestle is not use in dressing of stone.

12. Which type of stone masonry uses stones of uniform size and shape?
(a) Dry masonry (b) Random rubble
(c) Ashlar masonry (d) Coursed rubble

[RRB-JE • CBT-II 22-04-2025 (Evening)]

Sol. **(c)**
Stone masonry: It is used in the vertical joints and is spread over each layer to give bed and a binding medium for successive layer of masonry.
There are mainly two type of stone masonry:
Ashlar masonry: In this type of masonry stones are dressed to get suitable shape and sizes.
The height of the stone varies from 250 mm to 300 mm.

The length should not exceed three time the height. The dressing of stone need not be very accurate on all sides.

13. According to the Bureau of Indian Standards, IS 12894:2002, clay and silt in sand for pulverized fuel-ash lime bricks should preferably be :

(a) 16-20% (b) 11-15%
(c) 6-10% (d) 0-5%

[RRB-JE • CBT-II 22-04-2025 (Evening)]

Sol. **(d)**

Pulverized fuel-ash lime bricks:-

- Pulverized fly ash-lime bricks are made by blending pulverized fly ash in major quantity, lime and an accelerator acting as a catalyst.
- It is manufactured by intergrinding or blending various raw materials which are then moulded into bricks and subjected to curing cycles at different temperatures and pressures.
- These bricks are suitable for use in masonry construction just like common burnt clay bricks.
- Deleterious materials, such as clay and silt in sand, shall preferably be less than 5% in pulverized fuel-ash lime bricks.

14. The raw material for slate tile roofing is _____ .

(a) mud (b) metal
(c) straw (d) stone

[RRB-JE • CBT-II 22-04-2025 (Evening)]

Sol. **(d)**

Slate is a metamorphic rock that is durable, waterproof, and can be split into thin, flat sheets making it ideal for roofing commonly used in hilly or heavy rainfall areas.

15. Which of the following bonds is considered the strongest and most suitable for load-bearing walls?

(a) English bond (b) Stretcher bond
(c) Flemish bond (d) Header bond

[RRB-JE • CBT-II 22-04-2025 (Evening)]

Sol. **(a)**

Different type of bonding in Brick masonry

English Bond:

- It is alternate consist of courses of stretcher and header placed one over other.
- It is commonly used bond for the wall thickness.
- This is considered to be the strongest bond, So this bond is provided in brick masonry for carrying heavy loads.
- In order to break the alignment of vertical joints to be in the same straight line queen closer is placed next to the quoin header in each alternate course.
- A lap of one-fourth brick is available for each stretcher over the header in the course below it.
- For the wall having the thickness in the odd multiples of half brick thick, each course shows a stretcher on one face and a header on the other face.

16. Which of the following bonds is used when constructing curved brick walls?

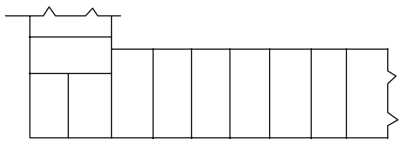
(a) Dutch bond (b) Stretcher bond
(c) Header bond (d) English bond

[RRB-JE • CBT-II 04-06-2025 (Re Exam)]

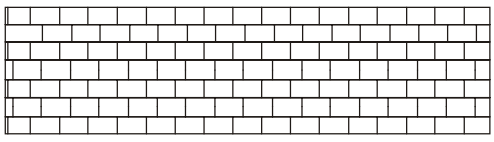
Sol. **(c)**

Header bond:

- It is the arrangement of bonding that consists of a header in each course.
- In order to break the alignment of the vertical joint to be in the same straight line each alternate course started in the quarter bat.
- Used for curved surfaces in work such as well lining or well foundation etc.
- This bond is generally provided in foundation work, in order to uniformly distributed the transverse load.
- A lap of half-width is available for each header in all the courses.



Plan



Elevation

Header Bond

17. In stone quarrying, tamping is the process of:
(a) ramming the wood wedges into holes drilled into the rock
(b) filling the hole containing the explosive charge with damp clay
(c) separating rock layers by applying electricity
(d) dampening the rock layers with water before digging with tools

[RRB-JE • CBT-II 04-06-2025 (Re Exam)]

Sol. **(b)**
In stone quarrying, tamping is the process of filling the hole containing the explosive charge with damp clay.
Tamping:- After placing the charge in the hole, a greased priming needle, projecting a little outside the hole, is placed in the hole which is then filled up with damp clay or stone dust in layers tamped sufficiently with a braced tamping rod.

18. A field test for brick where in the brick is immersed in water for a certain amount of time is known as _____.
(a) hardness test (b) absorption test
(c) structure test (d) shrinkage test

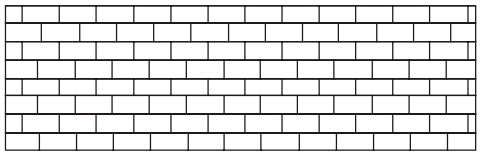
[RRB-JE • CBT-II 04-06-2025 (Re Exam)]

Sol. **(b)**
Water absorption test: In this test, bricks are weighed in dry condition and let immersed in fresh water for 24 hours. After 24 hours of immersion, those are taken out from the water and wipe out with a cloth. Good quality brick doesn't absorb more than 20% water of its own weight.

19. What is the vertical joint on the face of the wall that lies directly above the vertical joints in alternate courses in stone masonry called?
(a) Quoin joint (b) Perpend
(c) Riser (d) Bed joint

[RRB-JE • CBT-II 04-06-2025 (Re Exam)]

Sol. **(b)**
- Quoins - The exterior angle of a wall.
- Closer- The portion of brick cut in such a manner that its one long face remains un-cut.
- Bat- The portion of brick cut across width.
- Perpend- That vertical joint on the face of wall, which lies directly above the vertical joints in alternative course.



Elevation

Stretcher Bond

20. In the context of brick masonry, what distinguishes modular bricks from traditional bricks?
(a) Traditional bricks are produced in larger standard sizes
(b) Modular bricks are produced with standardized dimensions
(c) Modular bricks are manufactured mainly by manual methods
(d) Traditional bricks are manufactured using lightweight materials

[RRB-JE • CBT-II 02.07.2026 Shift-I]

Sol. **(b)**
Types of Bricks:
- Modular bricks: Manufactured to standard dimensions (Actual size: 190 × 90 × 90 mm; Nominal size with mortar: 200 × 100 × 100 mm).
- Non-modular (traditional) bricks: Manufactured in conventional sizes that are not based on modular coordination and may vary slightly in dimensions.

21. Which type of stone is laid with its length perpendicular to the face of the wall so that it extends into the thickness of the wall in stone masonry?
(a) Tail (b) Stretcher
(c) Header (d) Bed

[RRB-JE • CBT-II 02.07.2026 Shift-I]

Sol. **(c)**
A header is a stone laid with its length perpendicular to the face of the wall, extending through the wall thickness to provide proper bonding between the outer and inner portions of the masonry.

22. Granite, Gabbro and Basalt are different types of:
(a) cohesive soil (b) metamorphic rock
(c) igneous rock (d) sedimentary rock

[UPMRCL-JE • CBT-II 02-01-2023]

Sol. **(c)**
Igneous rocks – It is also known as primary unstratified or eruptive rock are of volcanic origin

and are formed as a result of solidification of molten laying below or above the earth's surface.
e.g., Granite, syenite, gabbro, basalt, trap etc.

23. A rough estimate of the quantity (A) of dynamite required in grams for blasting rocks is given by:

(Where, L = Length of line of least resistance.)

[UPMRCL-JE • CBT-II 02-01-2023]

(a) $\frac{L^2}{0.008}$ (b) $\frac{L^3}{0.002}$

(c) $\frac{L^2}{0.002}$ (d) $\frac{L^3}{0.008}$

Sol. **(a)**

Quantity of explosive required – A rough estimate can be made by

$$A = \frac{L^2}{0.008}$$

Where, A = Quantity of gun powder (g),
L = Length of line of least resistance (m)

24. In industrial towns, stones are preserved by the application of which solution?

(a) Baryta (b) $CaCl_2$

(c) H_2SO_4 (d) Caustic alkalis

[UPMRCL-JE • CBT-II 02-01-2023]

Sol. **(a)**

In industrial towns, stones are preserved by application of solution of baryta, $Ba(OH)_2$ Barium hydrate.

- Baryta reacts with calcium sulphate deposited on the stones and forms insoluble barium sulphate and calcium hydroxide. The calcium hydroxide absorbs carbon dioxide from the air to form calcium carbonate.

25. What is the principal chemical constituent present in argillaceous rock is:

(a) Lime (b) Al_2O_3

(c) SiO_2 (d) Dolomite

[DMRC-JE • CBT-II 19-02-2020 Shift-III]

Sol. **(b)**

Argillaceous rocks - principal constituent is clay (Al_2O_3). Hard and brittle. e.g: slate, laterite etc.
Siliceous rocks–in this rocks the principal constituent is silica (SiO_2).
e.g : granite, basalt, trap, quartzite etc.
Calcareous rock–The principal constituent is lime
e.g, limestone, marble, dolomite etc.

26. What is the required duration for seasoning of stone?

(a) 6 to 12 months (b) 7 to 10 days

(c) 8 to 12 hours (d) 1 to 2 months

[UPMRCL-JE • CBT-II 20-01-2020]

Sol. **(a)**

Seasoning of stone–A freshly cut stone carries some natural moisture known as quarry sap to remove the moisture from fresh stone called seasoning.

- This process takes about 6 to 12 months for complete seasoning.

27. Identify the type of rocks formed due to the cooling of magma at a considerable depth from earth's surface.

(a) Plutonic rocks (b) Volcanic rocks

(c) Sedimentary rocks (d) Metamorphic rocks

[LMRC-JE • CBT-II 13-05-2018 Shift-I]

Sol. **(a)**

- **Igneous rocks** – Igneous rocks formed due to solidification of molten mass lying below and above the earth's surface example : basalt, dolerite, trap etc.
- **Plutonic rocks–** Plutonic rocks are the igneous rock formed at considerable depth, generally between 7-10 km below the surface of the earth. Because of a very slow rate of cooling at the depths, the rocks resulting from magma are coarse grained.

e.g- Granite

Extrusive (Volcanic) igneous rocks– These rocks are formed due to cooling/solidification of magma at the crust's surface. It cools faster than the intrusive one.

e.g- Basalt, traps, block smokers, etc.

28. A good structural stone should possess a crushing strength of more than _____.

(a) 10 (b) 50

(c) 100 (d) 120

[LMRC-JE • CBT-II 13-05-2018 Shift-I]

Sol. **(c)**

For a good structural stone, the crushing strength should be greater than 100 N/mm^2 or 100 MPa.

- For good structural building stone water absorption is not greater than 5%.
- For good stone, toughness index = 13

29. Which of the following possess more ability to resist fire?

(a) Compact sandstone
(b) Quartz
(c) Red marble (d) Shale

[LMRC-JE • CBT-II 2016]

Sol. **(a)**

Compact sandstone possess the quality to resist fire upto a very good extent. It is a solid rock and is naturally found of the bottom of the stacks. The surface of sandstone is rough.

Sand Stone– Compressive strength 65 N/mm^2, Specific gravity 2.65-2.95.

30. _____ is an example for metamorphic rock

(a) Granite (b) Marble
(c) Sand stone (d) Lime stone

[DMRC-JE • CBT-II 16-02-2017 Shift-I]

Sol. **(b)**

Metamorphic rocks– Metamorphic rocks are formed from igneous or sedimentary rocks as a result of the action of the earth movement, temperature changes, liquid pressure etc.

- The resultant mass may have a foliated structure
  Example– Marble, Gneiss, quartzite, slate, schist, serpentine etc.
- Non-foliated structure, e.g. Marble.

31. The compressive strength of sand stone is

(a) 800 kg/cm^2 (b) 650 kg/cm^2
(c) 550 kg/cm^2 (d) 400 kg/cm^2

[DMRC-JE • CBT-II 16-02-2017 Shift-II]

Sol. **(b)**

Properties of sand stone is –

(i) Texture – Elastic
(ii) Grain size – 0.06 – 2 mm
(iii) Hardness – Soft to hard
(iv) Colour – Gray, Yellow, Red, White
(v) Minerals – Quartz or feldspar (both silicates)
(vi) Compressive strength – 650 kg/cm^2

32. _____stone type is metamorphic in nature and stratified in structure.

(a) Laterite (b) Gneiss
(c) Granite (d) Trap and basalt

[NMRC-JE • CBT-II 2017]

Sol. **(b)**

- Gneiss stone is a type of metamorphic rock and its nature is stratified in structure
- Gneiss stone is used in street paving.

33. Which harmful substances in brick earth do not allow the clay to be mixed thoroughly, spoil the appearance of the brick and it may crack while working?

(a) Alkalis (b) Iron pyrites
(c) Lime
(d) Pebbles, gravels and grits

[UPMRCL-JE • CBT-II 02-01-2023]

Sol. **(d)**

Harmful substances in bricks earth-pebbles, gravels, grits do not allow the clay to be mixed thoroughly and spoils the appearance of the brick. Bricks with pebbles and gravels may crack while working.

34. The defect observed as spongy swollen mass over the surface of burned bricks that is caused due to the presence of excess carbonaceous matter and sulphur in brick-clay is:

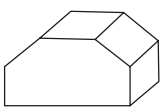
(a) spots (b) bloating
(c) black core (d) chuffs

[UPMRCL-JE • CBT-II 02-01-2023]

Sol. **(b)**

- **Bloating–**This defect observed as spongy swollen mass over the surface of burned bricks is caused due to the presence of excess carbonaceous matter and sulphur in brick clay.
- **Chuffs–**The deformation of the shape of bricks caused by the rainwater falling on hot bricks.

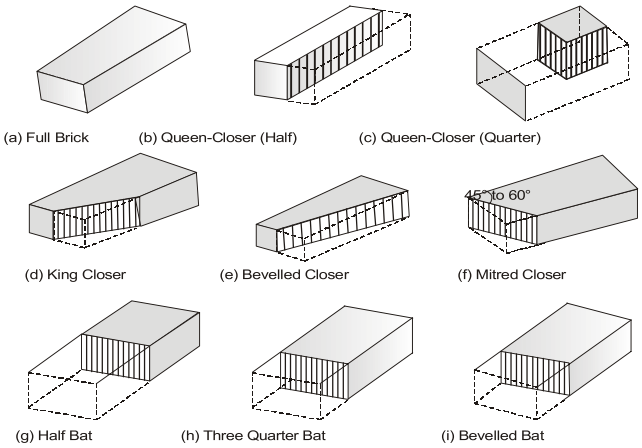
35. Identify the forms of brick shown in the figure.



(a) Coping (b) Double cant
(c) Bull nosed (d) Perforated

[UPMRCL-JE • CBT-II 02-01-2023]

Sol. **(b)**



36. 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 140kg/cm^2	I. Grade A
B. Not less than 105kg/cm^2	II. Grade A-A
C. Not less than 70kg/cm^2	III. Grade B
D. Not less than 35kg/cm^2	IV Grade C

A B C D
(a) IV, II, III, I
(b) I, II, III, IV
(c) II, I, III, IV
(d) I, III, II, IV

[BMRCL-JE • CBT-II 24-02-2019]

Sol. **(C)**

Compressive strength of bricks according to IS code 3495 (Part-1)

Compressive strength		Grade
Not less than 140 kg/cm^2	–	Grade A-A
Not less than 105 kg/cm^2	–	Grade A
Not less than 70 kg/cm^2	–	Grade B
Not less than 35 kg/cm^2	–	Grade C

37. The water absorption of heavy duty burnt clay bricks having compressive strength greater than 40 N/mm^2 is :
(a) 10% (b) 25%
(c) 15% (d) 5%

[DMRC-JE • CBT-II 19-02-2020 Shift-III]

Sol. **(a)**

Heavy duty burnt clay bricks (IS : 2180)–

- The compressive strength not less than 40 N/mm^2.
- Water absorption should not be more than 10% after 24 hours immersion in water.
- Efflorescence should be nil.

38. At about what temperature do two important constituents of brick clay, namely, alumina and sand bind themselves together resulting in increase of strength and density of brick?
(a) 1400°C (b) 105°C to 120° C
(c) 1100°C (d) 650°C

[UPMRCL-JE • CBT-II 20-01-2020]

Sol. **(c)**

At about 1100°C temperature do two important constituents of brick clay, namely, alumina and sand bind themselves together resulting in increase of strength and density of brick.
Further heating is not desirable and if the temperature is raised beyond 1100°C large amount of fusible glassy mass is formed and the bricks begin to lose their shape.

39. The compressive strength of any individual brick tested in the sample shall not fall below the minimum compressive strength specified for the corresponding class of brick by more than:
(a) 15% (b) 10%
(c) 12.5% (d) 20%

[UPMRCL-JE • CBT-II 20-01-2020]

Sol. **(d)**

As per IS 3495 (Part 1) Compressive strength test of brick–

- The compressive strength of any individual brick tested in the sample shall not fall below the minimum compressive strength specified for the corresponding class of brick by more than 20%.

40. As per IS : 1077-1992, the standard modular size ($L \times W \times H$) of common building bricks shall be :
(a) 19 cm × 10 cm × 9 cm
(b) 20 cm × 10 cm × 10 cm
(c) 20 cm × 9 cm × 9 cm
(d) 19 cm × 9 cm × 9 cm

[DMRC-JE • CBT-II 19-02-2020 Shift-III]

Sol. **(d)**

As per IS 1077-1992 –
The standard modular size of bricks–
190 × 90 × 90 mm^3