



रेलवे भर्ती बोर्ड / RAILWAY RECRUITMENT BOARD  
सी ई एन नं. - 03/2024 / CEN No. - 03/2024



Test Date	22/04/2025
Test Time	2:30 PM - 4:30 PM
Subject	RRB JE Stage 2 Civil and Allied Engineering

\* Note

Correct Answer will carry 1 mark per Question.

Incorrect Answer will carry 1/3 Negative mark per Question.

1. Options shown in green color with a tick icon are correct.

2. Chosen option on the right of the question indicates the option selected by the candidate.

Section : General Abilities

Q.1 Who among the following inaugurated the 38<sup>th</sup> National Games held in Dehradun in January 2025?

- Ans
- 1. Droupadi Murmu
  - 2. Pushkar Singh Dhami
  - 3. Narendra Modi
  - 4. Anurag Thakur

Q.2 The fine powder that is obtained from the modified and recycled form of plastic is called \_\_\_\_\_.

- Ans
- 1. polyethylene
  - 2. polystyrene
  - 3. polyblend
  - 4. polythene

Q.3 Which of the following is a characteristic difference between colloids and true solutions?

- Ans
- 1. True solutions exhibit Brownian motion, but colloids do not.
  - 2. True solutions show the Tyndall effect, but colloids do not.
  - 3. True solutions have visible solute particles, whereas colloids have invisible dispersed particles.
  - 4. True solutions have a single-phase system, whereas colloids have a two-phase system.

Q.4 What is the shortcut key to start a slideshow from the beginning?

- Ans
- 1. Ctrl + P
  - 2. F5
  - 3. Shift + F5
  - 4. Alt + Tab

Q.5 Which of the following is NOT a source of release of smokestacks?

- Ans
- 1. Thermal power plants
  - 2. Rivers
  - 3. Industries
  - 4. Smelters

**Q.6** What is India's global military ranking in the 2025 Global Firepower (GFP) index?

- Ans**
- 1. 4<sup>th</sup>
  - 2. 2<sup>nd</sup>
  - 3. 5<sup>th</sup>
  - 4. 3<sup>rd</sup>

**Q.7** In an electric circuit, what is the correct way to connect an ammeter?

- Ans**
- 1. In series with the component
  - 2. In parallel with the component
  - 3. In either series or parallel
  - 4. In parallel with the source

**Q.8** Which state of matter shows the highest expansion when temperature is increased?

- Ans**
- 1. Solids
  - 2. Liquids
  - 3. Gases
  - 4. Plasma

**Q.9** What is the primary purpose of using a firewall on a Personal Computer?

- Ans**
- 1. To clean up temporary files
  - 2. To increase storage space
  - 3. To speed up internet connectivity
  - 4. To block unauthorised access and protect the computer

**Q.10** If an object is dropped from rest, what will be its velocity after 15 seconds? ( $g = 9.8 \text{ m/s}^2$ )

- Ans**
- 1. 147 m/s
  - 2. 145 m/s
  - 3. 149 m/s
  - 4. 143 m/s

**Q.11** Which of the following companies announced plans in February 2025 to construct the world's longest undersea cable, aiming to enhance internet connectivity across five continents, with landing points in India?

- Ans**
- 1. Microsoft
  - 2. Google
  - 3. Amazon
  - 4. Meta

**Q.12** What is the maximum number of Ministers allowed in the Council of Ministers, including the Prime Minister, as per the 91<sup>st</sup> Amendment Act?

- Ans**
- 1. 20% of Lok Sabha strength
  - 2. 15% of Lok Sabha strength
  - 3. 10% of Lok Sabha strength
  - 4. 12% of Lok Sabha strength

**Q.13** Which of the following is the correct way to insert a new column in a spreadsheet?

- Ans**
- 1. Go to Home > Insert > Insert Sheet Columns.
  - 2. Go to File > New > Column.
  - 3. Press Ctrl + X and then Insert.
  - 4. Use Ctrl + Z to insert a column.

**Q.14** What was the main objective of the Extremists during the Indian National Movement?

- Ans**
- 1. To expand the legislative councils
  - 2. To bring social reforms
  - 3. To promote British goods in India
  - 4. To attain complete independence (Swaraj)

**Q.15** According to the Tendulkar methodology, what was the estimated percentage of people below the poverty line in rural areas in 2011-12?

- Ans**
- 1. 15.5%
  - 2. 20%
  - 3. 25.7%
  - 4. 27.5%

**Q.16** Inertia depends on which property of an object?

- Ans**
- 1. Acceleration
  - 2. Velocity
  - 3. Shape
  - 4. Mass

**Q.17** Which of the following is NOT toxic to non-target organisms in the soil?

- Ans**
- 1. Organic fertilisers
  - 2. Herbicides
  - 3. Pesticides
  - 4. Fungicides

**Q.18** What is the first step to securing ones smartphone or tablet?

- Ans**
- 1. Setting a password/PIN-protected lock screen
  - 2. Installing more apps
  - 3. Turning off mobile data
  - 4. Using only free Wi-Fi networks

**Q.19** The phenomenon of multiple echoes due to repeated reflections is called \_\_\_\_\_.

- Ans**
- 1. diffraction
  - 2. resonance
  - 3. reverberation
  - 4. refraction

**Q.20** What is the primary function of the F4 key in MS Excel when editing a cell reference in a formula?

- Ans**
- 1. Opens the Find and Replace dialog
  - 2. Toggles between absolute and relative references
  - 3. Repeats the last action
  - 4. Refreshes the worksheet

**Q.21** The glass panel used in greenhouses is known to retain \_\_\_\_\_.

- Ans**
- 1. heat
  - 2. humidity
  - 3. pH
  - 4. rainfall

**Q.22** Which of the following **CANNOT** be considered as a measure to control global warming?

- Ans**
- 1. Causing deforestation
  - 2. Reduction in emission of greenhouse gases
  - 3. Efficiently using energy
  - 4. Cutting down use of fossil fuel

**Q.23** The primary agent that helps in the decomposition of biodegradable matter in domestic sewage is \_\_\_\_\_.

- Ans**
- 1. chloride
  - 2. phosphate
  - 3. bacterium
  - 4. nitrate

**Q.24** Why does a bee sting cause pain and irritation?

- Ans**
- 1. The sting injects a mild sugar solution.
  - 2. The sting contains a strong base.
  - 3. The sting injects methanoic acid.
  - 4. The sting releases carbon dioxide gas.

**Q.25** What is the purpose of the Collation option in the Print settings?

- Ans**
- 1. To adjust the page orientation
  - 2. To select a custom print range
  - 3. To change the printer selection
  - 4. To print all the pages of a document as a set

**Q.26** The Rudra Veena is predominantly associated with which genre of Hindustani music?

- Ans**
- 1. Ghazal
  - 2. Khayal
  - 3. Thumri
  - 4. Dhrupad

**Q.27** If you want the primary recipient to see that others have received a copy of an email, you should enter their email addresses in the \_\_\_\_\_ field.

- Ans**
- 1. Cc
  - 2. Subject
  - 3. Bcc
  - 4. To

**Q.28** If the absolute refractive index of a medium is less than 1, it means \_\_\_\_\_.

- Ans**
- 1. the medium absorbs all light
  - 2. light travels slower in that medium than in vacuum
  - 3. light travels faster in that medium than in vacuum
  - 4. the medium is a perfect reflector

**Q.29** Dr. BR Ambedkar described which part of the Indian Constitution as its 'novel features', while Granville Austin referred to it as the 'Conscience of the Constitution'?

- Ans**
- 1. Preamble
  - 2. Fundamental Duties
  - 3. Directive Principles of State Policy
  - 4. Fundamental Rights

**Q.30** Which of the following correctly represents the chemical formula of a compound formed by aluminium and sulphate ions?

- Ans**
- 1.  $\text{Al}_2(\text{SO}_4)_3$
  - 2.  $\text{Al}_3(\text{SO}_4)_2$
  - 3.  $\text{Al}(\text{SO}_4)_3$
  - 4.  $\text{Al}_2\text{SO}_4$

**Q.31** Which official in the Gupta administration was responsible for peace and war matters?

- Ans**
- 1. Mahadandanayaka
  - 2. Sandhi-Vigrahika
  - 3. Mahapratihara
  - 4. Vishayapati

**Q.32** What is the net force acting on an object if balanced forces are applied?

- Ans**
- 1. Infinite
  - 2. Equal to acceleration
  - 3. Zero
  - 4. Equal to the mass of the object

**Q.33** Which of the following is NOT a component of a CPU?

- Ans**
- 1. Hard Disk
  - 2. Cache Memory
  - 3. Control Unit (CU)
  - 4. Arithmetic Logic Unit (ALU)

**Q.34** Which Article provides Ministers the right to participate in parliamentary proceedings but without voting rights?

- Ans**
- 1. Article 53
  - 2. Article 77
  - 3. Article 88
  - 4. Article 78

**Q.35** Which of the following cities hosted the inaugural Kho Kho World Cup in January 2025?

- Ans**
- 1. New Delhi
  - 2. Chennai
  - 3. Mumbai
  - 4. Kolkata

**Q.36** Identify the correct formula for the compound formed between  $\text{Mg}^{2+}$  and  $\text{PO}_4^{3-}$  ions.

- Ans**
- 1.  $\text{Mg}_2(\text{PO}_4)_3$
  - 2.  $\text{Mg}_3(\text{PO}_4)_2$
  - 3.  $\text{Mg}(\text{PO}_4)_3$
  - 4.  $\text{MgPO}_4$

**Q.37** Which of the following states is NOT covered under the Atal Bhujal Yojana?

- Ans**
- 1. Maharashtra
  - 2. Uttar Pradesh
  - 3. Rajasthan
  - 4. Jharkhand

**Q.38** What does PCB stand for?

- Ans**
- 1. Processing Circuit Board
  - 2. Primary Control Board
  - 3. Peripheral Connection Bus
  - 4. Printed Circuit Board

**Q.39** Which of the following correctly explains why clothes dry faster on a windy day?

- Ans**
- 1. Wind decreases the temperature of the water molecules.
  - 2. Wind reduces the surface area of the clothes.
  - 3. Wind increases the humidity around the clothes.
  - 4. Wind removes the water vapour from the clothes' surroundings.

**Q.40** In which of the following regions the Himalayas has the greatest width?

- Ans**
- 1. Himachal Pradesh
  - 2. Arunachal Pradesh
  - 3. Kashmir
  - 4. Sikkim

**Q.41** The practice of Jhum cultivation is prevalent in the \_\_\_\_\_.

- Ans**
- 1. South east
  - 2. North east
  - 3. South west
  - 4. North west

**Q.42** The energy that is derived from the use of radioactive isotopes is termed as \_\_\_\_\_.

- Ans**
- 1. solar energy
  - 2. geothermal energy
  - 3. thermal energy
  - 4. nuclear energy

**Q.43** What is the approximate pH of a neutral salt solution?

- Ans**
- 1. Depends on the temperature
  - 2. Equal to 7
  - 3. More than 7
  - 4. Less than 7

**Q.44** Which defect of vision occurs due to the weakening of ciliary muscles with age?

- Ans**
- 1. Presbyopia
  - 2. Astigmatism
  - 3. Hypermetropia
  - 4. Myopia

**Q.45** The Millennium Development Goals (MDGs) aimed to reduce extreme poverty by which year?

- Ans**
- 1. 2008
  - 2. 2005
  - 3. 2014
  - 4. 2015

**Q.46** The Industrial Policy Resolution of 1956 categorised industries into how many groups?

- Ans**
- 1. Nine
  - 2. Seven
  - 3. Three
  - 4. Five

**Q.47** What happens when a computer is put into Sleep mode?

- Ans**
- 1. It stores data on the hard drive and powers off.
  - 2. It keeps the session active in RAM while using minimal power.
  - 3. It shuts down completely.
  - 4. It restarts automatically after a few minutes.

**Q.48** What happens when an acid reacts with a metal oxide?

- Ans**
- 1. A salt and water are formed.
  - 2. Only water is formed.
  - 3. A salt and hydrogen gas are formed.
  - 4. Only salt is formed.

**Q.49** The main use of chlorofluorocarbons is in \_\_\_\_\_.

- Ans**
- 1. refrigerants
  - 2. smog
  - 3. chimneys
  - 4. vehicles

**Q.50** The maximum sound is generated \_\_\_\_\_.

- Ans**
- 1. from industrial smoke
  - 2. from vehicular emissions
  - 3. by the take off of a jet plane
  - 4. from house chimneys

#### Section : Technical Abilities

**Q.1** Which type of footing is preferred for closely spaced columns in a row?

- Ans**
- 1. Continuous footing
  - 2. Combined footing
  - 3. Strap footing
  - 4. Isolated footing

**Q.2** Which of the following sensors on board of the Indian Remote Sensing satellites is capable of monitoring dynamic phenomenon such as forest fire?

- Ans**
- 1. PAN
  - 2. LISS I
  - 3. WiFS
  - 4. MOS

**Q.3** Which of the following statements about traffic marking classification is INCORRECT?

- Ans**
- 1. Longitudinal markings regulate lane discipline and provide guidance to drivers.
  - 2. Transverse markings include stop lines, pedestrian crossings and yield lines.
  - 3. Yellow markings are exclusively used for regulatory purposes, while white markings are only used for guidance.
  - 4. Object markings are used to indicate fixed roadside obstacles like medians and bridge piers.

**Q.4** Which type of footing is most commonly used when a column is placed near a property boundary, restricting footing extension on one side?

- Ans**
- 1. Strap footing
  - 2. Isolated footing
  - 3. Combined footing
  - 4. Mat footing

**Q.5** A Location Plan is also called a:

- Ans**
- 1. Key Plan
  - 2. Survey Plan
  - 3. Site Plan
  - 4. Master Plan

**Q.6** The term 'eccentric footing' refers to a footing:

- Ans**
- 1. placed off-centre relative to the column
  - 2. shared by multiple columns
  - 3. used for machine foundations
  - 4. having a circular shape

**Q.7** Which of the following boundary conditions for a column results in the lowest effective length factor (K)?

- Ans**
- 1. Both ends fixed
  - 2. One end fixed and the other free
  - 3. One end fixed and the other pinned
  - 4. Both ends pinned

**Q.8** According to the Bureau of Indian Standards, IS 12894:2002, clay and silt in sand for pulverized fuel-ash lime bricks should preferably be:

- Ans**
- 1. 11-15%
  - 2. 16-20%
  - 3. 6-10%
  - 4. 0-5%

**Q.9** Which of the following is NOT a desirable characteristic of a good formwork?

- Ans**
- 1. Should provide a smooth surface finish
  - 2. Should be easily handled and removed
  - 3. Should be rigid and strong
  - 4. Should be highly absorbent to absorb excess water

**Q.10** Which type of window sill is best suited for areas prone to heavy rainfall?

- Ans**
- 1. Sloped sill
  - 2. Vertical sill
  - 3. Horizontal sill
  - 4. Flat sill

**Q.11** A finish of rich concrete made with very hard and tough quality coarse aggregate such as granite, basalt, quartzite, etc. is known as \_\_\_\_\_ finish.

- Ans**
- 1. ceramic
  - 2. terrazzo
  - 3. monolithic
  - 4. granolithic

**Q.12** In a reinforced concrete beam, what should the spacing of vertical stirrups be in terms of effective depth, to ensure adequate shear reinforcement as per IS 456:2000?

- Ans**
- 1. It should not exceed 0.75 times the effective depth (d) of the beam.
  - 2. It should not exceed twice the effective depth (d) of the beam.
  - 3. It should not exceed the effective depth (d) of the beam.
  - 4. It should not exceed 1.5 times the effective depth (d) of the beam.

**Q.13** A building section drawing does NOT give which of the following information?

- Ans**
- 1. Height of the structure
  - 2. Foundation used for the structure
  - 3. Length and width of the rooms
  - 4. Type of materials used for the structure

**Q.14** Which keyboard shortcut is used to toggle wireframe mode in 3ds Max?

- Ans**
- 1. F3
  - 2. Ctrl + W
  - 3. W
  - 4. Shift + X

**Q.15** In the three envelope system of tender submission, the first envelope contains:

- Ans**
- 1. technical bid
  - 2. documents related to eligibility criteria
  - 3. financial bid
  - 4. documents related to estimation of construction work

**Q.16** For a column with one end fixed and the other end hinged, what is the effective length factor K?

- Ans**
- 1. 0.5
  - 2. 1.0
  - 3. 2.0
  - 4. 0.7

**Q.17** Which of the following components of the Autodesk Civil 3D 2024 user interface provides access to file-related commands such as creating, opening, printing, exporting and publishing files?

- Ans**
- 1. Command Line
  - 2. Toolspace Window
  - 3. Application Menu
  - 4. Ribbon

**Q.18** If the width of a rectangular notch is doubled, then the discharge will \_\_\_\_\_.

- Ans**
- 1. double
  - 2. become half
  - 3. remain the same
  - 4. increase by three times

**Q.19** Expanded polystyrene (EPS) is commonly used in the construction of:

- Ans**
- 1. reinforced concrete
  - 2. structural steel
  - 3. thermal insulation panels
  - 4. electrical wiring

**Q.20** Which of the following is a major combustible component of biogas?

- Ans**
- 1. Carbon dioxide
  - 2. Hydrogen sulphide
  - 3. Methane
  - 4. Butane

**Q.21** A light pole is held in place by three tensioned cables forming angles of  $60^\circ$ ,  $75^\circ$ , and  $45^\circ$  with each other at a common point. Assuming equilibrium, which theorem helps to determine the tensions in the cables?

- Ans**
- 1. Varignon's theorem
  - 2. Parallel axis theorem
  - 3. Lami's theorem
  - 4. Newton's second law

**Q.22** What are beams fabricated using rolled plates called?

- Ans**
- 1. Plate girders
  - 2. Castellated beams
  - 3. Hybrid beams
  - 4. Composite beams

**Q.23** Why is proper drainage essential for subgrade soil in highway pavements?

- Ans**
- 1. To prevent moisture retention and strength reduction
  - 2. To reduce erosion
  - 3. To increase soil temperature
  - 4. To allow easy mixing with cement

**Q.24** Which of the following statements is true regarding a fixed beam?

- Ans**
- 1. The deflection and slope at the fixed end are zero.
  - 2. A fixed beam is always supported on more than two supports.
  - 3. A fixed beam does not experience end moments
  - 4. The deflection at the fixed ends is zero, but the slope is not zero.

**Q.25** Which of the following is NOT a type of drilling equipment?

- Ans**
- 1. Truck mounted drill
  - 2. Jack hammer
  - 3. Drifters
  - 4. Excavator

**Q.26** Which method is most commonly used for placing concrete in high-rise buildings?

- Ans**
- 1. Direct placement using wheelbarrows
  - 2. Hand mixing and placing
  - 3. Pouring concrete from a height without any control
  - 4. Pumping method

**Q.27** Which of the following statements about manometric head is correct?

- Ans**
- 1. It is the effective head that accounts for losses.
  - 2. It represents only the suction head of a pump.
  - 3. It does not include friction losses.
  - 4. It is a constant value for all pumps.

**Q.28** The correct relationship between Modulus of Elasticity (E) and Shear Modulus (G) is given by:

- Ans
- 1.  $E = 3G(1-2\mu)$
  - 2.  $E = G(1+\mu)$
  - 3.  $E = G(1+2\mu)$
  - 4.  $E = 2G(1+\mu)$

**Q.29** What is the main purpose of applying grade compensation on a horizontal curve?

- Ans
- 1. To increase the tractive effort of vehicles
  - 2. To make the road surface smoother
  - 3. To reduce the frictional resistance due to the curve and gradient
  - 4. To allow vehicles to travel at higher speeds on curves

**Q.30** With respect to Darcy's law, which of the following heads are ignored for soil flow problems?

- Ans
- 1. Hydraulic head
  - 2. Datum head
  - 3. Velocity head
  - 4. Pressure head

**Q.31** Which of the following bonds is considered the strongest and most suitable for load-bearing walls?

- Ans
- 1. Stretcher bond
  - 2. English bond
  - 3. Flemish bond
  - 4. Header bond

**Q.32** If the length, width and height of the wall is 7 m, 0.3 m, 3 m, respectively, then the total quantity of brickwork required will be:

- Ans
- 1.  $21 \text{ m}^2$
  - 2.  $6.3 \text{ m}^3$
  - 3.  $0.9 \text{ m}^2$
  - 4.  $12.6 \text{ m}^3$

**Q.33** What is the main purpose of adding steel fibres to concrete?

- Ans
- 1. To reduce the need for cement
  - 2. To increase the water cement ratio
  - 3. To increase the weight of concrete
  - 4. To improve its tensile strength and crack resistance

**Q.34** According to Terzaghi's bearing capacity theory, the angle of shear failure planes of the Rankine's passive zones of linear shear, with the horizontal is \_\_\_\_\_. (where  $\phi$  = angle of internal friction)

- Ans
- 1.  $45 - \phi/2$
  - 2.  $45$
  - 3.  $45 + \phi/2$
  - 4.  $\phi/2$

**Q.35** Which of the following causes settlement of foundations due to water level fluctuation?

- Ans
- 1. Vibration due to blasting
  - 2. Seasonal swelling and shrinking of expansive soils
  - 3. Adjacent excavation
  - 4. Slipping of ground strata on sloping sites.

**Q.36** The vertical downward movement of a structure's base is known as \_\_\_\_\_.

- Ans**
- 1. Deformation
  - 2. Deflection
  - 3. Depression
  - 4. Settlement

**Q.37** Which of the following represents an engineer's scale?

- Ans**
- 1. 1 in 10
  - 2. 1/5000
  - 3. 1 cm = 10 m
  - 4. 2%

**Q.38** The devices for harnessing solar energy are usually coated with:

- Ans**
- 1. anti-reflective coating
  - 2. anti-glare coating
  - 3. carbide coating
  - 4. titanium oxide coating

**Q.39** Pointing is a process carried out in:

- Ans**
- 1. stucco walls
  - 2. plastered masonry walls
  - 3. exposed masonry walls
  - 4. wattle and daub walls

**Q.40** Escalator balustrades are primarily designed to:

- Ans**
- 1. protect users from falling
  - 2. support the weight of steps
  - 3. improve aesthetics
  - 4. house control panels

**Q.41** The aggregate crushing value in accordance with IS 2386 Part IV, 1963, shall not exceed \_\_\_\_\_ for concrete for wearing surfaces such as runways, roads and pavements.

- Ans**
- 1. 35%
  - 2. 45%
  - 3. 30%
  - 4. 50%

**Q.42** As per general conditions of the contract, the security money deposited by the contractor is:

- Ans**
- 1. 20% of the estimated cost
  - 2. 10% of the estimated cost
  - 3. 2% of the estimated cost
  - 4. 5% of the estimated cost

**Q.43** Where is the centre of gravity of a solid cone located?

- Ans
- 1. At a height  $\frac{h}{2}$  from the base along the axis
  - 2. At the geometric centre of the base
  - 3. At a height  $\frac{h}{4}$  from the base along the axis
  - 4. At the apex of the cone

**Q.44** In polymer-modified concrete (PMC), the role of the polymer component is to:

- Ans
- 1. increase setting time significantly
  - 2. reduce water permeability and increase flexibility
  - 3. reduce strength and durability
  - 4. increase brittleness

**Q.45** What is the function of the 'Layer Manager' in Autodesk 3ds Max?

- Ans
- 1. To control object visibility and manage scene organisation
  - 2. To assign materials to object
  - 3. To group objects together
  - 4. To add cameras to the scene

**Q.46** Select the pair in which the words present the same relationship to each other as the words of the given pair.

Approximate quantity estimate : Running meter length : : Cube rate estimate :

- Ans
- 1. plinth area
  - 2. cubical content
  - 3. cost of one room
  - 4. area content

**Q.47** Which structural component of a bridge directly supports the superstructure and transfers the load to the foundation?

- Ans
- 1. Deck
  - 2. Expansion Joints
  - 3. Bearings
  - 4. Piers

**Q.48** Which type of stone masonry uses stones of uniform size and shape?

- Ans
- 1. Dry masonry
  - 2. Ashlar masonry
  - 3. Random rubble
  - 4. Coursed rubble

**Q.49** The whole circle bearing and the reduced bearing of a line will be the same when the line is in the \_\_\_\_\_ quadrant.

- Ans
- 1. north-west
  - 2. north-east
  - 3. south-east
  - 4. south-west

**Q.50** In plastering of surfaces, the process of hacking is done to ensure:

- Ans**
- 1. that the surface is smooth and free from all laitance
  - 2. bonding between the surface and the plaster
  - 3. that the materials of plaster are mixed to a correct consistency
  - 4. that the moisture content is retained in the plaster mix

**Q.51** A point on the picture plane where all the parallel lines appear to converge is called:

- Ans**
- 1. station point
  - 2. vanishing point
  - 3. eye level point
  - 4. angle of vision point

**Q.52** The moment of force depends on which factors?

- Ans**
- 1. The speed of rotation
  - 2. Only the distance from the point of rotation
  - 3. Both force magnitude and perpendicular distance
  - 4. Only the magnitude of the force

**Q.53** Which of the following factors would most likely decrease surface runoff?

- Ans**
- 1. Removal of vegetation
  - 2. High intensity rainfall
  - 3. Impervious surfaces like roads and buildings
  - 4. Permeable soil and vegetation cover

**Q.54** Cracks in buildings caused by vegetation are because of:

- Ans**
- 1. moisture due to transpiration of vegetation
  - 2. the removal of vegetation leading to dry conditions
  - 3. dense branches of trees adjacent to the building
  - 4. the roots of trees very close to the building

**Q.55** What is the main advantage of a raft foundation?

- Ans**
- 1. Reduces column spacing
  - 2. Settlement is uniform
  - 3. Easier to construct
  - 4. Cheaper than other foundations

**Q.56** Which of the following will NOT prevent cracks resulting from sulphate attack?

- Ans**
- 1. Use of bricks containing high percentage of soluble salts
  - 2. Use of sulphate resistant cement in building works
  - 3. Use of rich cement mortar or concrete in building works
  - 4. Provision of damp proofing to maintain dry conditions

**Q.57** Borosilicate glass is used in the manufacture of laboratory equipment and cooking utensils due to what property?

- Ans**
- 1. It can withstand high temperatures.
  - 2. It can be moulded into curved shapes.
  - 3. It is a clear glass and does not obscure vision.
  - 4. It is a strong glass and resists breakage.

Q.58 The foundation settlement caused by lowering of water level in fine grained soils is

- Ans
- 1. consolidation
  - 2. elastic compression
  - 3. erosion
  - 4. plastic compression

Q.59 For a thin rod of length L, rotating about its center, the radius of gyration is:

- Ans
- 1. L
  - 2.  $\frac{L}{\sqrt{12}}$
  - 3.  $\frac{L}{\sqrt{3}}$
  - 4.  $\frac{L}{\sqrt{2}}$

Q.60 In the moment distribution method, how is the distribution factor (DF) for a structural member at a joint determined?

- Ans
- 1. By multiplying the stiffness of the considered member at a joint with the total stiffness of all the members meeting at that joint
  - 2. By dividing the total stiffness of all the members meeting at a joint by the stiffness of the considered member
  - 3. By adding the stiffness of the considered member at a joint by the total stiffness of all the members meeting at that joint
  - 4. By dividing the stiffness of the considered member at a joint by the total stiffness of all the members meeting at that joint

Q.61 Soil is composed of three layers of height 'h' m each. The permeability of layers are k, 2k, and k respectively. The equivalent permeability in vertical direction is:

- Ans
- 1.  $\frac{6k}{5}$
  - 2.  $\frac{5}{2}k$
  - 3.  $\frac{2k}{5}$
  - 4. 4k

Q.62 What is the typical ratio of cement, sand and aggregate for RCC (M20 grade)?

- Ans
- 1. 1 : 4 : 8
  - 2. 1 : 2 : 3
  - 3. 1 : 3 : 6
  - 4. 1 : 1.5 : 3

Q.63 In a reciprocating pump, which of the following options connects the piston to the crankshaft?

- Ans
- 1. Bearings
  - 2. Suction pipe
  - 3. Delivery pipe
  - 4. Connecting rod

Q.64 Which type of reinforcement is called the main reinforcement in a one-way slab?

- Ans
- 1. Top reinforcement supported along the longer span
  - 2. Top reinforcement provided in the transverse direction
  - 3. Bottom reinforcement placed in the longer span direction
  - 4. Bottom reinforcement provided in the shorter span direction

**Q.65** Which type of scaffolding is used for painting tall buildings?

- Ans**
- 1. Suspended scaffolding
  - 2. Cantilever scaffolding
  - 3. Double scaffolding
  - 4. Single scaffolding

**Q.66** Which tool is used for breaking hard surfaces during excavation?

- Ans**
- 1. Pickaxe
  - 2. Crowbar
  - 3. Rake
  - 4. Spade

**Q.67** What is the role of impact force in the soil compaction process?

- Ans**
- 1. It increases soil permeability.
  - 2. It reduces the void spaces by sudden compression.
  - 3. It creates a uniform soil texture.
  - 4. It helps to retain moisture.

**Q.68** The raw material for slate tile roofing is \_\_\_\_\_.

- Ans**
- 1. straw
  - 2. metal
  - 3. mud
  - 4. stone

**Q.69** Which of the following is NOT true with respect to structural cracks?

- Ans**
- 1. Pose significant risk to the stability of the building.
  - 2. Generally the damage is difficult to rectify or repair.
  - 3. Caused by changes in moisture, etc. on building materials.
  - 4. Caused by overloading of the structural components.

**Q.70** Which of the following is the full form of PENT or PETN, an explosive used in tunneling and military applications?

- Ans**
- 1. Pentane Energy Nitrate
  - 2. Polyethylene Nitrogen Trinitrate
  - 3. Pyrotechnic Explosive Nitrogen Trigger
  - 4. Pentaerythritol Tetranitrate

**Q.71** Which of the following types of beams is used for lightly loaded beams such as roof purlins and sheeting rails?

- Ans**
- 1. Angles sections
  - 2. Castellated beams
  - 3. Box girders
  - 4. Plate girders

**Q.72** Which type of roller is most suitable for compacting cohesive soils?

- Ans**
- 1. Vibratory roller
  - 2. Smooth wheel roller
  - 3. Pneumatic roller
  - 4. Sheep foot roller

Q.73 Which of the following is the correct expression for the bending equation in pure bending?

(Where M = Bending moment, I = Moment of inertia of the cross-section about the neutral axis, f = Bending stress at a distance y from the neutral axis, y = Distance from the neutral axis, E = Modulus of elasticity, and R = Radius of curvature of the beam)

Ans  1.  $\frac{M}{I} = \frac{f}{y} = \frac{R}{E}$

2.  $\frac{I}{M} = \frac{f}{y} = \frac{E}{R}$

3.  $\frac{M}{I} = \frac{f}{y} = \frac{E}{R}$

4.  $\frac{M}{I} = \frac{y}{f} = \frac{E}{R}$

Q.74 A prismatic bar of length 'L' and cross-sectional area 'A' is subjected to an axial tensile load 'P'. What is the maximum stress induced in the bar?

Ans  1.  $\frac{2P}{A}$

2.  $\frac{P}{A}$

3.  $\frac{P}{L}$

4.  $\frac{P}{2A}$

Q.75 For a cantilever beam of length 'L' subjected to a uniformly distributed load (UDL) w (kN/m) over its entire length, what is the bending moment at the fixed end?

Ans  1.  $\frac{WL^2}{4}$

2.  $\frac{WL}{2}$

3.  $\frac{WL^2}{2}$

4.  $\frac{WL}{4}$

Q.76 Which type of scaffolding is most suitable for stone masonry work?

Ans  1. Single scaffolding

2. Cantilever scaffolding

3. Suspended scaffolding

4. Double scaffolding

**Q.77** What is the primary load that a lintel resists?

- Ans
- 1. Shear load
  - 2. Bending load
  - 3. Axial load
  - 4. Lateral load

**Q.78** The quantity of flooring is measured in:

- Ans
- 1.  $m^3$  and the length, breadth and height are taken as outside dimensions from wall to wall of superstructure
  - 2.  $m^2$  and the length and breadth are taken as inside dimensions from wall to wall of superstructure
  - 3.  $m^2$  and the length and breadth are taken as outside dimensions from wall to wall of superstructure
  - 4.  $m^3$  and the length, breadth and height are taken as inside dimensions from wall to wall of superstructure

**Q.79** What is the primary function of a pile cap in a deep foundation?

- Ans
- 1. To reduce the length of piles
  - 2. To prevent water ingress into the foundation
  - 3. To distribute loads evenly among piles
  - 4. To improve aesthetic appearance

**Q.80** If the retaining wall moves away from the backfill, the value of coefficient of Rankine's earth pressure is given by:

- Ans
- 1.  $(1 - \sin \phi)$
  - 2.  $(1 + \sin \phi)$
  - 3.  $\frac{(1 + \sin \phi)}{(1 - \sin \phi)}$
  - 4.  $\frac{(1 - \sin \phi)}{(1 + \sin \phi)}$

**Q.81** What happens when the rate of precipitation is greater than the rate of infiltration?

- Ans
- 1. Rivers and lakes start to evaporate faster
  - 2. Groundwater recharge occurs
  - 3. Evaporation stops completely
  - 4. Surface runoff increases

**Q.82** The basic principle of surveying, 'working from whole part', is best represented by which of the following options?

- Ans
- 1. One can finish the traverse survey quickly.
  - 2. If an accurate basic control is established first, large errors can be prevented and minor ones controlled and localised.
  - 3. Easiness in surveying.
  - 4. It helps to continue the work during the second day of surveying.

**Q.83** Which fastening system is commonly used with concrete sleepers in Indian Railways?

- Ans
- 1. Elastic Rail Clip
  - 2. Dog Spike
  - 3. Fang Bolt
  - 4. Fish Plate

**Q.84** Identify the tool NOT used for stone dressing:

- Ans
- 1. Splitting chisel
  - 2. Pestle
  - 3. Mash hammer
  - 4. Dressing knife

**Q.85 Which soil type is least suitable for shallow foundations?**

- Ans
- 1. Silty clay
  - 2. Fine sand
  - 3. Black cotton soil
  - 4. Coarse sand

**Q.86 The pointing that facilitates easy draining of water is \_\_\_\_\_.**

- Ans
- 1. beaded pointing
  - 2. recessed pointing
  - 3. tuck pointing
  - 4. struck pointing

**Q.87 Which of the following is NOT an effect of a force applied to a body?**

- Ans
- 1. Change in direction of motion
  - 2. Change in shape
  - 3. Change in mass
  - 4. Change in motion

**Q.88 As per IS 10262:2009, what is the maximum mixing water content per unit volume of concrete for 20 mm nominal maximum size angular coarse aggregate, considering a slump range of 25 to 50 mm?**

- Ans
- 1. 186 kg/m<sup>3</sup>
  - 2. 250 kg/m<sup>3</sup>
  - 3. 200 kg/m<sup>3</sup>
  - 4. 150 kg/m<sup>3</sup>

**Q.89 Which of the following commands is used in Autodesk 3ds Max to create a new scene?**

- Ans
- 1. Edit -> New Scene
  - 2. Create -> Scene Setup
  - 3. File -> New
  - 4. File -> Open

**Q.90 Which is the correct sequence for preparation of the surface for new pointing work?**

- Ans
- 1. Wetting surface and joints; Raking Joints; Cleaning surface and joints
  - 2. Cleaning surface and joints; Raking joints; Wetting surface and joints
  - 3. Raking joints; Cleaning surface and joints; Wetting surface and joints
  - 4. Cleaning surface and joints; Wetting surface and joints; Raking joints

**Q.91 Which of the following statements are correct with respect to estimation of water tanks?**

- A: Water proofing compounds are added in plaster of water tank walls.  
B: Item particulars in estimate of water tanks, does not include estimate of ladder to be built around it.  
C: When the vertical and horizontal walls of tanks meet, a sloping structure is built at their intersection, this is called haunching.  
D: When the vertical and horizontal walls of tanks meet, a sloping structure is built at their intersection, this is called soling.

- Ans
- 1. A and D
  - 2. B and C
  - 3. A and C
  - 4. B and D

**Q.92** What is a particle board made up of?

- Ans**
- 1. Layers of odd number veneers glued under pressure
  - 2. Wood fibres and synthetic resin moulded together
  - 3. Strips of thin wood glued between two veneers
  - 4. Wood chips in a binder pressed under heat/pressure

**Q.93** Half round country tiles are laid in pairs of \_\_\_\_\_.

- Ans**
- 1. lap tile and overlap tile
  - 2. bottom tile and crown tile
  - 3. under tile and over tile
  - 4. base tile and covering tile

**Q.94** How does adding more fine aggregate affect the properties of Ready Mix Concrete (RMC)?

- Ans**
- 1. Improves compressive strength directly
  - 2. Enhances resistance to freezing and thawing
  - 3. Increases setting time
  - 4. Increases workability

**Q.95** How is the design shear strength of concrete ( $\tau_c$ ) influenced by the percentage ( $p_t$ ) of tensile reinforcement in a beam?

- Ans**
- 1. Decreases with an increase in tensile reinforcement percentage
  - 2. Increases up to 2% of tension reinforcement and decreases if the tension reinforcement exceeds 2%
  - 3. Increases with an increase in tensile reinforcement percentage
  - 4. Remains constant regardless of tensile reinforcement percentage

**Q.96** In a singly reinforced beam, the reinforcement is provided in which zone?

- Ans**
- 1. Entire cross-section
  - 2. Both tension and compression zones
  - 3. Only tension zone
  - 4. Only compression zone

**Q.97** Which of the following states in India has the maximum potential for wind energy?

- Ans**
- 1. Punjab
  - 2. Gujarat
  - 3. Himachal Pradesh
  - 4. Uttar Pradesh

**Q.98** Shooting concrete under pressure with hose pipe and nozzle to repair damaged concrete areas is known as \_\_\_\_\_.

- Ans**
- 1. curing
  - 2. sealing
  - 3. concreting
  - 4. guniting

**Q.99** In planning a residence, the principle of orientation is adopted to ensure:

- Ans**
- 1. beautiful aesthetic appearance of the residence
  - 2. rooms are oriented to achieve the required privacy
  - 3. natural elements are used effectively in the design
  - 4. proper sanitation and hygiene in the residence

**Q.100** Which of the following environmental factors negatively affects the durability of concrete?

- Ans**
- 1. High temperature and humidity variations
  - 2. Dry conditions with proper curing done
  - 3. Stable temperature with no moisture changes
  - 4. Well-ventilated surroundings

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