# DFCCIL

## Previous Year Paper

### Executive Civil

### 17th April 2016 shift 1

डेडीकेटेड फ्रेट कोरीडोर

**Dedicated Freight Corridor Corporation of India Ltd.**

*A Government of India (Ministry of Railways) Enterprise*

**(भारत सरकार का उपक्रम)**

**5th Floor, Pragati Maidan Metro Station Building Complex, New Delhi -110001**

| | |
|---|---|
| Candidate Name: | |
| Candidate Roll Number: | |
| Test Center Name: | iON Digital Zone iDZ 2, Sector 62 |
| Subject: | Executive Civil |
| Test Date: | 17/04/2016 |
| Shift: | Shift 1 |

Section : Technical

**Q.1** An activated carbon is specially treated carbon which has the property of absorbing and attracting impurities. Which of the following points is/are not among the advantages of activated carbon?

A. It minimises the chlorine demand of treated water.
B. It accelerates the coagulation.
C. Its overdose is harmful.

Question ID : **7368158107**
Status : **Answered**
Chosen Option : **1**

**Ans**
✗ 1. Only B
✗ 2. A and C
✓ 3. Only C
✗ 4. Only A

**Q.2** Which of the following statements is/are not among the major limitations of sprinkler irrigation?

A. Strong wind disturbs the sprinkling.
B. It requires heavy initial investment.
C. It minimizes the erosion of the soil.

Question ID : **7368158101**
Status : **Answered**
Chosen Option : **1**

**Ans**
✗ 1. Only B
✗ 2. A, B and C
✗ 3. Only A
✓ 4. Only C

**Q.3** Which one of the following is not among the types of signals classified on the basis of their function?

Question ID : **7368158125**
Status : **Answered**
Chosen Option : **2**

**Ans**
✗ 1. Shunting signals
✗ 2. Semaphore signals
✓ 3. Advance starter signals
✗ 4. Warner signals

**Q.4** As recommended in IS 456 match the following according to the Recommended slumps for various concrete works and select the correct answer using codes as given below.

Question ID : **7368158115**
Status : **Answered**
Chosen Option : **4**

| Type of Construction | Recommended slump in mm (maximum) |
|---|---|
| A. Pavements | I. 75 |
| B. Unreinforced footings | II. 50 |
| C. Reinforced foundations | III. 100 |
| D. Columns | IV. 125 |

Ans
✗ 1. A-I, B-II, C-III, D-IV
✓ 2. A-II, B-I, C-III, D-IV
✗ 3. A-IV, B-II, C-III, D-I
✗ 4. A-I, B-III, C-II, D-IV

**Q.5** Which term is appropriate for the branch of physical geography which deals with the origin, distribution of water on the earth surface?

Question ID : **7368158102**
Status : **Answered**
Chosen Option : **3**

Ans
✗ 1. Oxidation
✗ 2. Hydropethia
✓ 3. Hydrology
✗ 4. Hydrolysis

**Q.6** In which type of foundation the length is considerably greater than its width?

Question ID : **7368158100**
Status : **Answered**
Chosen Option : **4**

Ans
✗ 1. Raft foundation
✗ 2. Pile foundation
✗ 3. Footing
✓ 4. Strip foundation

**Q.7** _____ is the algebraic sum of the moments of the forces on either side of the section of a loaded beam.

Question ID : **7368158157**
Status : **Answered**
Chosen Option : **4**

Ans
✗ 1. Retaining walls
✗ 2. Modulus of Resilience
✗ 3. Shearing force
✓ 4. Bending moment

**Q.8** Assume L is the load in Newton and A is cross-sectional area, then Stress (denoted by s) is equal to:

Question ID : **7368158154**
Status : **Answered**
Chosen Option : **3**

Ans
✗ 1. s = A+L
✗ 2. s = A*L
✓ 3. s = L/A
✗ 4. s = A/L

**Q.9** A 8 mm thick Copper sheet is cut with a 9 cm diameter round punch. If the punch exerts a force of 16 kN. Find the shear stress in the sheet.

Question ID : **7368158149**
Status : **Answered**
Chosen Option : **1**

Ans
✗ 1. 9.80 MPa
✗ 2. 11.43 MPa
✓ 3. 7.08 MPa
✗ 4. 17.86 MPa

**Q.10** According to the Soil Mechanics, which type of soil is not fully consolidated under the existing overburden pressure?

Question ID : **7368158088**
Status : **Answered**
Chosen Option : **1**

Ans
✗ 1. Compressed soil
✗ 2. Normally consolidated soil
✓ 3. Under-consolidated soil
✗ 4. Pre-consolidated soil

**Q.11** _____ is the normal stress when it acts into the area.

Question ID : **7368158151**
Status : **Answered**
Chosen Option : **3**

**Ans**
✗ 1. Shear stress
✗ 2. Torsional stress
✓ 3. Compressive stress
✗ 4. Tensile stress

**Q.12** According to the assumptions of Terzaghi's One-Dimensional Consolidation Theory, which of the following statements is/are incorrect?

A. The soil is homogeneous.
B. The soil is 100% unsaturated.
C. The soil is laterally confined.

Question ID : **7368158089**
Status : **Answered**
Chosen Option : **4**

**Ans**
✗ 1. B and C
✗ 2. Only A
✗ 3. Only C
✓ 4. Only B

**Q.13** Which of the following statements is/are true about the types of gauge in Indian Railways?

I. In Broad gauge, the clear distance between the inner faces of two rails is 1.676 m
II. In Metre gauge, the clear distance between the inner faces of two rails is 1.240 m
III. In Narrow gauge, the clear distance between the inner faces of two rails is 0.762 m

Question ID : **7368158121**
Status : **Answered**
Chosen Option : **2**

**Ans**
✗ 1. I, II and III
✓ 2. I and III
✗ 3. I and II
✗ 4. Only I

**Q.14** Which among the following is/are the correct assumptions in the theory of Simple Bending?

A. The loads act perpendicular to the beam axis.
B. The beam bends to a circular arc.
C. The beam is initially straight of constant cross-section.

Question ID : **7368158160**
Status : **Answered**
Chosen Option : **4**

**Ans**
✗ 1. Only A
✓ 2. A, B and C
✗ 3. Only B
✗ 4. A and B

**Q.15** A project engineer collects a sample of red soil having moist unit weight of a soil is 18.5 $kN/m^3$, water content available is 22% and the specific gravity of the solid of the soil is 2.85. Find the Void ratio.(Assume unit weight of water = 9.81 $kN/m^3$)

Question ID : **7368158094**
Status : **Answered**
Chosen Option : **2**

**Ans**
✗ 1. 0.73
✗ 2. 0.91
✓ 3. 0.84
✗ 4. 0.74

**Q.16** _____ is an engineered material that contains cement, polymers, and glass fibers. It is mainly used in concrete products including ornamental structures, fountains, domes etc.

Question ID : **7368158135**
Status : **Answered**
Chosen Option : **2**

**Ans**
✓ 1. Glass fiber reinforced concrete
✗ 2. Polypropylene fiber reinforced
✗ 3. Natural fiber reinforced concrete

✗ 4. Fiber glass reinforced concrete

**Q.17** According to the level of pressure applied, lateral earth pressure is classified into various types. Which of the following type of lateral earth pressure refers to the minimum pressure exerted by the soil on the retaining wall?

Question ID : **7368158096**
Status : **Answered**
Chosen Option : **2**

**Ans**
✗ 1. Earth pressure at rest
✓ 2. Active earth pressure
✗ 3. Passive earth pressure
✗ 4. Cylindrical earth pressure

**Q.18** In the pile foundation, which type of pile act as columns and transmit the load through weak soil to a firm stratum at a greater depth?

Question ID : **7368158087**
Status : **Answered**
Chosen Option : **4**

**Ans**
✗ 1. Footing piles
✓ 2. End bearing piles
✗ 3. Compaction piles
✗ 4. Friction piles

**Q.19** What is the name of the method of design of a reinforced cement structure in which optimum use of inherent strength of both steel and concrete is made?

Question ID : **7368158131**
Status : **Answered**
Chosen Option : **4**

**Ans**
✗ 1. RCC stress design
✗ 2. Axially loaded design
✗ 3. Optimum load design
✓ 4. Ultimate load strength design

**Q.20** Which of the following factors affect(s) the per capita demand of water?

A. Climatic conditions of the region.
B. Industrial/commercial activities of the region.
C. Population.

Question ID : **7368158110**
Status : **Answered**
Chosen Option : **3**

**Ans**
✗ 1. Only C
✗ 2. A and C
✓ 3. A, B and C
✗ 4. Only A

**Q.21** If R is the radius of the curve in metres and C is the chord length in metres what would be the expression to denote versine 'V' in millimetres?

Question ID : **7368158127**
Status : **Answered**
Chosen Option : **1**

**Ans**
✗ 1. $V = 127\ C^2/R$
✗ 2. $V = 127\ R^2/C$
✓ 3. $V = 125\ C^2/R$
✗ 4. $V = 125\ R^2/C$

**Q.22** A surveyor made an error during the survey of a project which is associated with his skills and vigilance. Which type of error this surveyor has committed?

Question ID : **7368158082**
Status : **Answered**
Chosen Option : **2**

**Ans**
✓ 1. Random errors
✗ 2. Systematic errors
✗ 3. Constant errors

✗ 4. Blunders

Q.23 _____ is used in concrete to provide economy in the cost of material. It is used as filler only and do not react with cement and water.

Question ID : **7368158111**
Status : **Answered**
Chosen Option : **3**

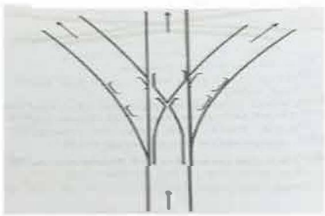
Ans
✗ 1. Sulphate resistant cement
✗ 2. Alumina
✓ 3. Aggregate
✗ 4. Pozzolana

Q.24 Which apparatus is used to perform the soundness test of cement?

Question ID : **7368158112**
Status : **Answered**
Chosen Option : **1**

Ans
✓ 1. Le-chatlier apparatus
✗ 2. Vee-bee apparatus
✗ 3. Slump apparatus
✗ 4. Compaction apparatus

Q.25



Question ID : **7368158129**
Status : **Answered**
Chosen Option : **1**

Which of the following typical arrangements of points and crossings is being drawn in the figure shown above?

Ans
✓ 1. Tandem
✗ 2. Cross over
✗ 3. Symmetrical split
✗ 4. Double junction

Q.26 Which of the following is/are not the characteristic(s) of an ideal reinforcing material?

A. It should be easily available in bulk and at low prices.
B. It should not possess high tensile stress and elasticity.
C. It should be free from loose mill scales, loose rust and coat of paints.

Question ID : **7368158117**
Status : **Answered**
Chosen Option : **4**

Ans
✗ 1. Only C
✗ 2. B and C
✗ 3. A and B
✓ 4. Only B

Q.27 According to geological classification, rocks are divided into three different categories i.e. Igneous rocks, Sedimentary rocks and Metamorphic rocks. In which category Granite, Basalt and Dolerite etc types of rocks fall?

Question ID : **7368158136**
Status : **Answered**
Chosen Option : **3**

Ans
✗ 1. Sedimentary rocks
✗ 2. Metamorphic rocks
✓ 3. Igneous rocks
✗ 4. Stratified rocks

Q.28 When a liquid rotates at constant angular velocity about a vertical axis of a rigid body:

Question ID : **7368158143**

Ans ✔ 1. the pressure varies as the square of the radial distance

✘ 2. the velocity vector remains constant at a point

✘ 3. the velocity vector varies inversely as the altitude along any vertical line

✘ 4. the pressure varies inversely as the altitude along any vertical line

Status : **Answered**
Chosen Option : **3**

**Q.29** According to Hook's law, A material is said to be elastic if it returns to its original, unloaded dimensions when load is removed. It can be expressed as:

Ans ✔ 1. stress / strain = constant

✘ 2. stress / strain = force

✘ 3. stress + strain = constant

✘ 4. stress − strain = constant

Question ID : **7368158152**
Status : **Answered**
Chosen Option : **1**

**Q.30** In which type of joint, plates to be fastened are placed one over the other and riveted by one or more rows of rivets?

Ans ✘ 1. Chain joint

✘ 2. Butt joint

✘ 3. Zig-Zag joint

✔ 4. Lap joint

Question ID : **7368158159**
Status : **Answered**
Chosen Option : **4**

**Q.31** Soil scientist collects unsaturated 200 $cm^3$ sample of soil having weight 220 g. If the dried weight of soil is 180 g. Then, find the water content available in the soil.

Ans ✔ 1. 0.222

✘ 2. 0.176

✘ 3. 0.133

✘ 4. 0.166

Question ID : **7368158095**
Status : **Answered**
Chosen Option : **1**

**Q.32** The four kinds of crystals in thin sections of cement clinkers, named by Tornebohm are Alite, Belite, Celite and _____.

Ans ✘ 1. Elite

✘ 2. Delite

✘ 3. Gelite

✔ 4. Felite

Question ID : **7368158133**
Status : **Answered**
Chosen Option : **4**

**Q.33** In the given image, Read the observation carefully which were taken during the testing of a dumpy level.

| Instrument at | Staff reading on | |
|---|---|---|
| | P | Q |
| P | 1.543 | 2.123 |
| Q | 1.121 | 1.750 |

To what reading should the line of collimation be adjusted when the instrument was at Q?

Ans ✔ 1. 1.146 m

✘ 2. 0.946 m

✘ 3. 1.246 m

Question ID : **7368158085**
Status : **Answered**
Chosen Option : **3**

✗ 4. 0.786 m

**Q.34** An open cylindrical tank of 2 m diameter and 4 m high. contains water upto 1.5 m depth. If the cylinder rotates about vertical axis, what angular velocity can be attained without spilling any water?

Question ID : **7368158144**
Status : **Not Attempted**
Chosen Option : **--**

**Ans**
✗ 1. 12.9 radians/sec
✗ 2. 10.9 radians/sec
✓ 3. 9.9 radians/sec
✗ 4. 11.1 radians/sec

**Q.35** What would be the approximate weight of rail required for a particular track if the weight of locomotive axle load is 15000 tonnes?

Question ID : **7368158122**
Status : **Answered**
Chosen Option : **2**

**Ans**
✗ 1. 25410 tonnes
✗ 2. 39410 tonnes
✓ 3. 29410 tonnes
✗ 4. 35410 tonnes

**Q.36** What value of tensile stress is required to produce a strain of $10\times10^{-4}$ in copper? Find the result in MPa. (Assume Young's modulus of copper = 50 GPa)

Question ID : **7368158147**
Status : **Answered**
Chosen Option : **2**

**Ans**
✗ 1. 150 MPa
✓ 2. 50 MPa
✗ 3. 200 MPa
✗ 4. 500 MPa

**Q.37** Which of the following statements is/are incorrect about the Prismatic Compass?

A. The needle is broad but it does not act as an index.
B. The graduated ring is attached with the needle. This does not rotate along with the line of sight.
C. The readings are taken directly seeing through the top of the glass.

Question ID : **7368158083**
Status : **Answered**
Chosen Option : **2**

**Ans**
✗ 1. Only A
✗ 2. B and C
✓ 3. Only C
✗ 4. A and C

**Q.38** Which of the following statements describe(s) limitation(s) of concrete technology?

A. Availability of concrete ingredients easily.
B. Due to low tensile strength, concrete is required to be reinforced to avoid cracks.
C. Monolithic character gives better appearance.
D. The property of concrete possess high compressive strength.

Question ID : **7368158141**
Status : **Answered**
Chosen Option : **1**

**Ans**
✗ 1. A, B and C
✗ 2. B and C
✓ 3. Only B
✗ 4. Only C

**Q.39** Void ratio is the ratio of the volume of the voids to the volume of the soil solids and Porosity of the soil mass is the ratio of the volume of voids to the total volume of the given soil. What would be the expression to relate these two terms?
(Assume void ratio = e and porosity = n )

Question ID : **7368158097**
Status : **Answered**
Chosen Option : **3**

**Ans**
✗ 1. $n = (e+1)/e$
✗ 2. $e = n/(1+n)$
✓ 3. $n = e/(1+e)$

✗ 4. $n = 2e^2/(1+e)$

**Q.40** Calculate the approximate specific energy of a trapezoidal channel having a bottom width of 6 metres, ratio of side slopes is 1:1 and the depth of flow at a discharge speed of 15 cubic metres per second is 1.5 metres.

Question ID : **7368158130**
Status : **Answered**
Chosen Option : **4**

**Ans**
✗ 1. 2.6
✓ 2. 1.6
✗ 3. 3.6
✗ 4. 4.6

**Q.41** A soil engineer collects a sample of soil which having moist unit weight of a soil is 25 $kN/m^3$, water content available is 50% and the specific gravity of the solid of the soil is 2.55. Then, what is the value of porosity of soil mass? (Assume unit weight of water = 9.81 $kN/m^3$)

Question ID : **7368158092**
Status : **Answered**
Chosen Option : **4**

**Ans**
✗ 1. 30%
✓ 2. 33%
✗ 3. 66%
✗ 4. 40%

**Q.42** Assume initial void ratio = e0, final void ratio = e, initial pressure= p0 and final pressure= p. Then, what is the value of coefficient of compressibility (av)?

Question ID : **7368158099**
Status : **Answered**
Chosen Option : **1**

**Ans**
✗ 1. $av = (e - e0)/(p - p0)$
✓ 2. $av = (e0 - e)/(p - p0)$
✗ 3. $av = (e0 - e)/(p0 - p)$
✗ 4. $av = (e0+e)/(p+p0)$

**Q.43** As per the specifications designed by the Railway Board for trunk routes on Broad gauge tracks, the design speed for new track is _____ and the maximum speed permissible is _____.

Question ID : **7368158120**
Status : **Answered**
Chosen Option : **3**

**Ans**
✓ 1. 160 km/hr, 120 km/hr
✗ 2. 200 km/hr, 120 km/hr
✗ 3. 180 km/hr, 150 km/hr
✗ 4. 200 km/hr, 150 km/hr

**Q.44** Which constituent of good brick earth added in small quantity during the manufacturing of bricks, to give yellow tint to bricks and decrease shrinkage?

Question ID : **7368158138**
Status : **Answered**
Chosen Option : **1**

**Ans**
✓ 1. Magnesia
✗ 2. Oxide of iron
✗ 3. Silica
✗ 4. Alumina

**Q.45** At constant temperature, the fluid whose viscosity does not change with the rate of deformation, is called:

Question ID : **7368158145**
Status : **Answered**
Chosen Option : **4**

**Ans**
✗ 1. Real fluid
✗ 2. Non-Newtonian fluid
✗ 3. Ideal fluid
✓ 4. Newtonian fluid

**Q.46**

Question ID : **7368158119**
Status : **Answered**

Why steel is commonly used as good reinforcing material?

Chosen Option : 2

A. It is cheaply available in bulk.
B. Thermal coefficient is nearly equal to concrete.
C. It possesses low tensile strength.
D. It develops good bond with concrete.

Select the correct options.

Ans
1. Only C
2. A, B and D
3. A and D
4. A, B and C

Q.47 A project engineer receives a laboratory report of a sample of soil having moist unit weight of a soil is 20.5 $kN/m^3$, water content available is 25% and the specific gravity of the solid of the soil is 3.35. Find the dry unit weight of the soil.

Question ID : **7368158091**
Status : **Answered**
Chosen Option : **4**

Ans
1. 16.8 $kN/m^3$
2. 18.4 $kN/m^3$
3. 18.8 $kN/m^3$
4. 16.4 $kN/m^3$

Q.48 The type of concrete in which preliminary tests are performed for designing the mix and it is also used for all the seven types of grades of cement is known as:

Question ID : **7368158113**
Status : **Answered**
Chosen Option : **4**

Ans
1. Nominal mix concrete
2. Controlled concrete
3. Ordinary concrete
4. Design mix concrete

Q.49 In the Soil Mechanics and Foundation Engineering, the ratio of the density of solid to that of water at a given temperature is termed as _____ of soil solids.

Question ID : **7368158086**
Status : **Answered**
Chosen Option : **1**

Ans
1. specific gravity
2. porosity
3. degree of saturation
4. void ratio

Q.50 Match the Grade of bricks with its compressive strength (According to IS: 10719557-1970) 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 |

Question ID : **7368158139**
Status : **Answered**
Chosen Option : **4**

Ans
1. A-I, B-III, C-II, D-IV
2. A-I, B-II, C-III, D-IV
3. A-IV, B-II, C-III, D-I
4. A-II, B-I, C-III, D-IV

Q.51

Question ID : **7368158084**

In an open field two parallel pipe lines are to be connected by a reverse curve, each section having the same radius. If the centre lines are 20 m apart, and the maximum distance between tangent points is 40 m, what is the maximum allowable radius that can be used?

Status : **Answered**
Chosen Option : **1**

**Ans**
✔ 1. 20 m
✘ 2. 40 m
✘ 3. 32 m
✘ 4. 60 m

**Q.52** Which of the following statements is/are not correct as per the requirements specified by IS: 383-1970, for an ideal aggregate used for manufacturing of concrete?

A. It should be hard, strong and durable.
B. It should contain flaky and elongated pieces.
C. It should be dense, clear and free from any coating.
D. It should consist of natural stones, gravels and sand.

Question ID : **7368158114**
Status : **Answered**
Chosen Option : **4**

**Ans**
✘ 1. B and C
✘ 2. Only C
✔ 3. Only B
✘ 4. B and D

**Q.53** The shear strength is a most important characteristic of the soil. What is/are the correct reason(s) due to which the shear resistance of the soil occurs?

A. Cohesion
B. Structural resistance
C. Friction

Question ID : **7368158098**
Status : **Answered**
Chosen Option : **2**

**Ans**
✘ 1. B and C
✔ 2. A, B and C
✘ 3. Only C
✘ 4. A and C

**Q.54** Which of the following characteristics of the rain storm can completely describe the rainfall at a place?

A. Intensity of the rain.
B. Duration of the rain.
C. Hyetograph.
D. Frequency of the rain.

Question ID : **7368158103**
Status : **Answered**
Chosen Option : **4**

**Ans**
✘ 1. A and D
✘ 2. A and C
✘ 3. Only C
✔ 4. A, B, C and D

**Q.55** Which type of beam is supported only at one end by being built into a wall?

Question ID : **7368158156**
Status : **Answered**
Chosen Option : **2**

**Ans**
✘ 1. Overhanging beam
✔ 2. Cantilever beam
✘ 3. Curvature beam
✘ 4. Centroid beam

**Q.56** What is the name of the process in which reducing chemical such as sulphur dioxode ($SO_2$), sodium bisulphite ($NaHSO_3$) and sodium sulphite ($Na_2SO_3$) is added to remove unwanted residual of chlorine from water?

Question ID : **7368158105**
Status : **Answered**
Chosen Option : **3**

**Ans**
✘ 1. Chlorination
✘ 2. Hydrogenation

✔ 3. Dechlorination

✘ 4. Sulphurification

**Q.57** _____ is the geological formation that does not yield water freely to well due to its lesser permeability.

Question ID : **7368158109**
Status : **Answered**
Chosen Option : **4**

**Ans**

✘ 1. Aquatic permeability

✘ 2. Aquifer

✔ 3. Acquitard

✘ 4. Aquiclude

**Q.58** _____ is the crude impure iron, which is extracted from iron ores.

Question ID : **7368158140**
Status : **Answered**
Chosen Option : **2**

**Ans**

✘ 1. Steel

✘ 2. Cast iron

✔ 3. Pig iron

✘ 4. Wrought iron

**Q.59** A train has to run on a BG track having a curvature of 3 degrees and cant of 100 mm. What would be the maximum permissible speed of this train if the allowable cant deficiency is 76 mm?

Question ID : **7368158124**
Status : **Answered**
Chosen Option : **1**

**Ans**

✘ 1. 98.2 kmph

✘ 2. 78.2 kmph

✘ 3. 68.2 kmph

✔ 4. 88.2 kmph

**Q.60** _____ is the type of concrete in which internal stresses are intentionally induced in a planned manner such that the stresses resulting from the superimposed loads get counteracted to a desired degree.

Question ID : **7368158132**
Status : **Answered**
Chosen Option : **4**

**Ans**

✘ 1. Post-stressed concrete

✘ 2. Intra-stressed concrete

✘ 3. Curvatured concrete

✔ 4. Pre-stressed concrete

**Q.61** A 58 kN compressive load is applied to a 7 cm diameter, 2 cm tall, aluminium cylinder. Calculate value of stress in MPa.

Question ID : **7368158148**
Status : **Not Attempted**
Chosen Option : **--**

**Ans**

✘ 1. 20.80 MPa

✘ 2. 16.50 MPa

✔ 3. 15.08 MPa

✘ 4. 20.08 MPa

**Q.62** A 10 inch long silver wire is stretched to a total length of 11.50 inches. Find the value of strain.

Question ID : **7368158146**
Status : **Answered**
Chosen Option : **2**

**Ans**

✘ 1. 0.015

✔ 2. 0.15

✘ 3. 0.25

✘ 4. 0.025

**Q.63** Which one of the following is not the cause of buckling?

Question ID : **7368158123**

**Ans**

Status : **Answered**
Chosen Option : **4**

✗ 1. Due to welded rails on weak tracks

✗ 2. Insufficient expansion gaps at rail joints

✗ 3. Due to excess tightening of bolts of the fish plates

✓ 4. Due to contraction of rail tracks in winter

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**Q.64** Which of the following types of chemical weathering is associated with the feldspar, which can be found in granite changing to clay?

Question ID : **7368158090**
Status : **Answered**
Chosen Option : **3**

**Ans**

✗ 1. Oxidation

✓ 2. Hydrolysis

✗ 3. Hydrogenation

✗ 4. Carbonation

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**Q.65** Match section I with the section II and select the correct answer using codes as given below.

| Section I (Alignment) | Section II (Topography) |
|---|---|
| A. Zig-Zag alignment | I. Sags and summits in succession |
| B. Cross country alignment | II. One slope of valley |
| C. Switch back development | III. A slope with deep valleys |
| D. Valley alignment | IV. One steep regular slope |

Question ID : **7368158128**
Status : **Answered**
Chosen Option : **3**

**Ans**

✓ 1. A-III, B-I, C-IV, D-II

✗ 2. A-I, B-II, C-III, D-IV

✗ 3. A-III, B-I, C-II, D-IV

✗ 4. A-I, B-II, C-IV, D-III

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**Q.66** _____ is a mechanical property of linear elastic solid materials which defines the relationship between stress and strain in a material.

Question ID : **7368158153**
Status : **Answered**
Chosen Option : **4**

**Ans**

✗ 1. Poisson's ratio

✗ 2. Lateral modulus

✗ 3. Bulk modulus

✓ 4. Young's modulus

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**Q.67** If H1 is height of liquid surface above the orifice top, H2 is height of liquid surface above the orifice bottom, b is width of orifice and Cd is the coefficient of discharge, what would be the expression to calculate the discharge denoted by Q?

Question ID : **7368158142**
Status : **Answered**
Chosen Option : **4**

**Ans**

✗ 1. $Q = 3\ Cd\ b\ \sqrt{(2g)}\ (H2^{3/2} - H1^{3/2})\ /2$

✗ 2. $Q = 3\ Cd\ b\ \sqrt{g}\ (H1^{3/2} - H2^{3/2})\ /2$

✗ 3. $Q = 2\ Cd\ b\ \sqrt{g}\ (H1^{3/2} - H2^{3/2})\ /3$

✓ 4. $Q = 2\ Cd\ b\ \sqrt{(2g)}\ (H2^{3/2} - H1^{3/2})\ /3$

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**Q.68** Which of the following is/are the property(s) of good quality of stones?

A. Crushing strength greater than $1000 kg/cm^2$
B. Specific gravity should be greater then 8
C. Stones should be well seasoned before putting into use.

Question ID : **7368158137**
Status : **Answered**
Chosen Option : **2**

**Ans**

✗ 1. B and C

✗ 2. Only A

✓ 3. A, B and C

✗ 4. Only B

**Q.69** There are three distinct stages occur in the natural process of sludge digestion due to biological action. What is the name of the first stage in which fresh sewerage-sludge is acted upon by anaerobic and facultative bacteria's which decompose easily available food matters?

Question ID : **7368158108**
Status : **Answered**
Chosen Option : **1**

**Ans**
✗ 1. Acid regression
✓ 2. Acid fermentation
✗ 3. Alkaline fermentation
✗ 4. Chamber fermentation

**Q.70** Which among the following is/are the correct assumptions made in torsion formula?

A. Material of the shaft is uniform throughout.
B. Twist along the shaft is uniform.
C. Plane Sections before twisting remain plane after twisting.
D. Circular Sections before twisting remain circular even after twisting.

Question ID : **7368158158**
Status : **Answered**
Chosen Option : **1**

**Ans**
✓ 1. A, B, C and D
✗ 2. C and D
✗ 3. A, B and C
✗ 4. B and D

**Q.71** Which one of the following formulas is correct to express the bond stress (Bs)? Assume shear force at the section = Q. Lever arm =Jd and sum of the perimeter of bars = S.

Question ID : **7368158118**
Status : **Answered**
Chosen Option : **3**

**Ans**
✗ 1. Bs = Q/(Jd+S)
✗ 2. Bs = Jd/(Q*S)
✓ 3. Bs = Q/(Jd*S)
✗ 4. Bs = S/(Jd*Q)

**Q.72** _____ is the rigid dam which is constructed either with stone or brick masonry or mass concrete.

Question ID : **7368158104**
Status : **Answered**
Chosen Option : **1**

**Ans**
✓ 1. Solid gravity dam
✗ 2. Footing dam
✗ 3. Buttress dam
✗ 4. Sediment dam

**Q.73** The ratio of lateral strain to that of longitudinal strain which remain constant within elastic limit is called as _____.

Question ID : **7368158155**
Status : **Answered**
Chosen Option : **4**

**Ans**
✗ 1. Modulus of rigidity
✗ 2. Hook's law
✗ 3. Young's modulus
✓ 4. Poisson's ratio

**Q.74** What is the main disadvantage of Aeration process?

Question ID : **7368158106**
Status : **Answered**
Chosen Option : **2**

**Ans**
✗ 1.
Excessive aeration absorb too much carbon dioxide and water becomes corrosive.
✓ 2.
Excessive aeration absorb too much oxygen and thus water becomes corrosive.
✗ 3.
It removes oils and decomposes algae and other aquatic product from water.

✗ 4.
It effectively removes volatile gases which is harmful for water.

**Q.75** A soil engineer collects a sample of soil having moist unit weight of a soil is 24.5 $kN/m^3$. water content available is 10% and the specific gravity of the solid of the soil is 2.50. What is the degree of saturation of the soil? (Assume unit weight of water = 9.81 $kN/m^3$)

Question ID : **7368158093**
Status : **Answered**
Chosen Option : **4**

**Ans**
✓ 1. 250%
✗ 2. 225%
✗ 3. 75%
✗ 4. 150%

**Q.76** A surveyor assumes P as difference in elevation between Points X and Y having slope S. What will be the expression to calculate slope correction?

Question ID : **7368158081**
Status : **Answered**
Chosen Option : **1**

**Ans**
✓ 1. $P^2/2S$
✗ 2. $P^2/4S$
✗ 3. $S^2/2P$
✗ 4. $P/2S^2$

**Q.77** A 10 m aluminum flagpole is installed at 30°C. After 2 days, the temperature drops to -10°C. How much does the height change of the flagpole (in mm)? (Assume thermal expansion coefficient for aluminum = $23\times10^{-6}\,°C^{-1}$ )

Question ID : **7368158150**
Status : **Not Attempted**
Chosen Option : **--**

**Ans**
✗ 1. 7.8 mm
✗ 2. 8.8 mm
✗ 3. 9.5 mm
✓ 4. 9.2 mm

**Q.78** Which of the following statements is/are true about the advantages of Pre-stressed Concrete structure?

A. In the pre-stressed concrete structure, deflection of beams is considerably reduced.
B. Prestressing decreases cracks in concrete under all stages of loading.
C. Prestressed concrete requires only 1/3 rd of the concrete required for R.C.C.

Question ID : **7368158134**
Status : **Answered**
Chosen Option : **3**

**Ans**
✗ 1. Only A
✗ 2. B and C
✓ 3. A, B and C
✗ 4. Only C

**Q.79** The equilibrium super elevation/cant necessary for any speed is calculated from the formula:

Question ID : **7368158126**
Status : **Answered**
Chosen Option : **4**

**Ans**
✗ 1. $C = GR^2/127V$
✗ 2. $C = RV^2/127G$
✗ 3. $C = V^2/127GR$
✓ 4. $C = GV^2/127R$

**Q.80** As per IS: 456-1978, the concrete mixes have been designated into 7 grades. Which one out the following seven grades (given below) is not the correct grade of concrete mix?

$M_{100}$, $M_{200}$, $M_{250}$, $M_{150}$, $M_{50}$, $M_{350}$, $M_{300}$

Question ID : **7368158116**
Status : **Answered**
Chosen Option : **2**

**Ans**
✗ 1. $M_{100}$
✓ 2. $M_{50}$

✗ 3. $M_{350}$

✗ 4. $M_{300}$

Section : **General Knowledge**

**Q.1** Which of the following fundamental rights is deleted from Indian Constitution by the 44th amendment act?

Question ID : **7368158166**
Status : **Answered**
Chosen Option : **4**

**Ans**
✗ 1. Right to speak
✗ 2. Right against exploitation
✗ 3. Right to vote
✓ 4. Right to property

**Q.2** Which of the following Indian scientists discovered that stimuli in plants are due to electrical impulses?

Question ID : **7368158167**
Status : **Answered**
Chosen Option : **3**

**Ans**
✗ 1. C. V. Raman
✓ 2. J. C. Bose
✗ 3. Hargobind Khurana
✗ 4. Y. Subba Rao

**Q.3** In which year National Rural Employment Guarantee Act was introduced?

Question ID : **7368158163**
Status : **Answered**
Chosen Option : **2**

**Ans**
✗ 1. 2010
✓ 2. 2005
✗ 3. 1999
✗ 4. 2007

**Q.4** The highest rice producing state in India is:

Question ID : **7368158161**
Status : **Answered**
Chosen Option : **1**

**Ans**
✓ 1. West Bengal
✗ 2. Telangana
✗ 3. Tamil Nadu
✗ 4. Orissa

**Q.5** Who is considered as the Father of Modern Economics?

Question ID : **7368158164**
Status : **Answered**
Chosen Option : **3**

**Ans**
✗ 1. P. C. Ray
✗ 2. Satyardhi
✓ 3. Adam Smith
✗ 4. Karl Marx

**Q.6** Who was the Chairman of the drafting committee for Indian Constitution?

Question ID : **7368158165**
Status : **Answered**
Chosen Option : **2**

**Ans**
✗ 1. Indira Gandhi
✓ 2. Dr. B. R. Ambedkar
✗ 3. Sarvepalli Radha Krishnan
✗ 4. Lala Lajpat Rai

**Q.7** Which South Indian actor served as Tourism Minister of India in UPA government?

Question ID : **7368158170**

**Ans**

1. K. Chiranjeevi
2. Mammotty
3. Kamal Hassan
4. Mohan Lal

Status : **Answered**
Chosen Option : **3**

**Q.8** In which state Indian Government has decided to establish Organic farming research Institute?

**Ans**
2. Orissa
3. Tamil Nadu
4. Jharkhand
1. Sikkim

Question ID : **7368158169**
Status : **Answered**
Chosen Option : **3**

**Q.9** Which Indian king was known as Indian Napolean?

**Ans**
2. Tipu Sultan
3. Babar
4. Krishnadevaraya
1. Samudragupta

Question ID : **7368158162**
Status : **Answered**
Chosen Option : **4**

**Q.10** In computer terminology, the full form of LAN is:

**Ans**
1. Local Area Network
2. Local Area Navigator
3. Local Alignment Network
4. Light Amplification Network

Question ID : **7368158168**
Status : **Answered**
Chosen Option : **1**

Section : **Reasoning**

**Q.1** Russia is related to Moscow in the same way France is related to _____.

**Ans**
1. Paris
2. Rome
3. Havana
4. Cairo

Question ID : **7368158173**
Status : **Answered**
Chosen Option : **1**

**Q.2** After starting from a point, a man walks 3 km towards East, then turning to his left he moves 3 km. After this he again turns left and moves 3 km. Which choice given below indicates the correct direction in which he is from his staring point?

**Ans**
2. East
1. North
3. South
4. West

Question ID : **7368158179**
Status : **Answered**
Chosen Option : **2**

**Q.3** Identify the similar set of numbers.
(482, 496, 526)

**Ans**
1. (334, 348, 378)
2. (890, 748, 923)

Question ID : **7368158172**
Status : **Answered**
Chosen Option : **1**

✗ 3. (442, 182, 290)

✗ 4. (296, 310, 480)

**Q.4** Determine the pattern and fill in the missing number.
5, 9, 17, 33, ___

Question ID : **7368158180**
Status : **Answered**
Chosen Option : **3**

**Ans**
✗ 1. 38
✗ 2. 46
✓ 3. 65
✗ 4. 36

**Q.5** Student X rank fifth from the top and nineteenth from the bottom in a class. How many students are there in the class?

Question ID : **7368158176**
Status : **Answered**
Chosen Option : **3**

**Ans**
✗ 1. 24
✗ 2. 21
✓ 3. 23
✗ 4. 22

**Q.6** Select from the given choices the letter sequence that completes the following sequence in an order.
m n _ _ m n n _ m n _ m

Question ID : **7368158175**
Status : **Answered**
Chosen Option : **2**

**Ans**
✗ 1. m n n m
✓ 2. n m m n
✗ 3. n n m m
✗ 4. m n m n

**Q.7** In a certain code TOUR is coded as 1234, CLEAR as 56784 and SPARE as 90847. What is the fifth digit for SCULPTURE?

Question ID : **7368158177**
Status : **Answered**
Chosen Option : **3**

**Ans**
✗ 1. 4
✗ 2. 6
✓ 3. 0
✗ 4. 1

**Q.8** If P's mother is Q's daughter, L is the maternal aunt of P, and M is the sister of Q, then how is M related to L?

Question ID : **7368158171**
Status : **Answered**
Chosen Option : **2**

**Ans**
✗ 1. mother-in-law
✓ 2. aunt
✗ 3. sister
✗ 4. daughter

**Q.9** In a certain code FIRE is coded as DGPC. What is the last letter of the coded word for SHOT?

Question ID : **7368158178**
Status : **Answered**
Chosen Option : **1**

**Ans**
✓ 1. R
✗ 2. S
✗ 3. P
✗ 4. Q

**Q.10**

Question ID : **7368158174**
Status : **Answered**
Chosen Option : **1**

Four engineers, designated as CE, SE, EE and AE, read a certain number of newspapers early in the morning. One of them reads four newspapers, another reads three newspapers, the third reads two newspapers while the fourth one reads one newspaper. Below are some additional facts regarding the names of these officers.

a) N is not the EE
b) H is the AE
c) N is not the CE and he reads more number of newspapers than L
d) The one who is the CE reads more number of newspapers than L
e) The person who is the SE reads the maximum number of newspapers
f) B does not read two newspapers

Which of the following statements is necessarily true?

Ans

✗ 1. L is the EE and reads one newspaper

✓ 2. B is the CE and reads three newspapers

✗ 3. N is the EE and reads four newspapers

✗ 4. H is the AE and reads two newspapers