Junior Engineer Civil Mechanical and Electrical Examination 2023 Paper I

Exam Date	10/10/2023
Exam Time	5:00 PM - 7:00 PM
Subject	Junior Engineer 2023 Civil Paper I

Section : General Intelligence and Reasoning

Q.1 Select the option that represents the letters that, when placed from left to right in the blanks below, will complete the letter series.

_EI_UA_IO__E_OUA_IOU

Ans
1. OOAIOEI
2. OAEUIAE
3. AOEUAIE
4. AIEOOUI

Q.2 If '+' means '–', '–' means '×', '×' means '÷', '÷' means '+', then what will come in place of the question mark (?) in the following equation?
13 – 182 × 14 ÷ 25 + 16 = ?

Ans
1. 178
2. 155
3. 169
4. 182

Q.3 Select the option that represents the correct order of the given words as they would appear in an English dictionary.
1. Spear
2. Specific
3. Special
4. Species
5. Sparrow

Ans
1. 5, 1, 3, 2, 4
2. 5, 3, 1, 4, 2
3. 5, 1, 4, 3, 2
4. 5, 1, 3, 4, 2

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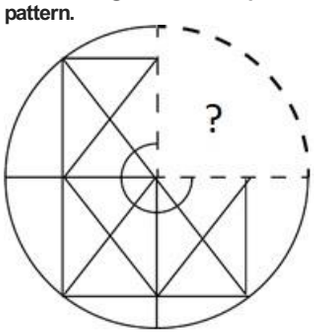
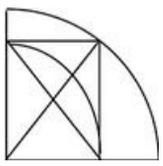
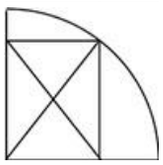
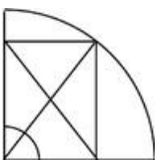
Q.4 Select the figure from the options that can replace the question mark (?) and complete the pattern.

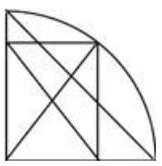


Ans

1. 

2. 

3. 

4. 

Q.5 Which of the following terms will replace the question mark (?) in the given series?
ABDG, ?, EFHK, GHJM, IJLO

Ans
1. CDIF
2. CDFI
3. DCIF
4. DCFI

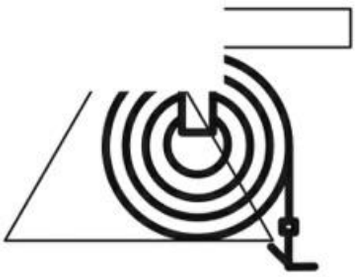
Q.6 A is the sister of B.
C is the husband of B.
D is the father of A.
How is D related to C?

Ans
1. Wife's brother
2. Father
3. Wife's father
4. Brother

Q.7 Select the correct option that indicates the arrangement of the following words in a logical and meaningful order.
1. Tissue
2. Organ
3. Nucleus
4. Organ system
5. Cells

Ans
1. 3 5 1 2 4
2. 3 1 5 2 4
3. 5 1 3 2 4
4. 5 3 1 2 4

Q.8 Which of the following option figures will complete the pattern in the figure given below?



Ans

1. ✗ 

2. ✓ 

3. ✗ 

4. ✗ 

Q.9 In a certain code language, 'AUDIT' is coded as BWGHR and 'HEAVY' is coded as IGDUW. How will 'INDEX' be coded in that language?

Ans
- ✗ 1. KPHDW
- ✗ 2. JQHDV
- ✓ 3. JPGDV
- ✗ 4. KPGDU

Q.10 Select the set in which the numbers are related in the same way as are the numbers of the following set.
(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g., 13 - Operations on 13 such as adding/subtraction/multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed)

(5, 3, 6)

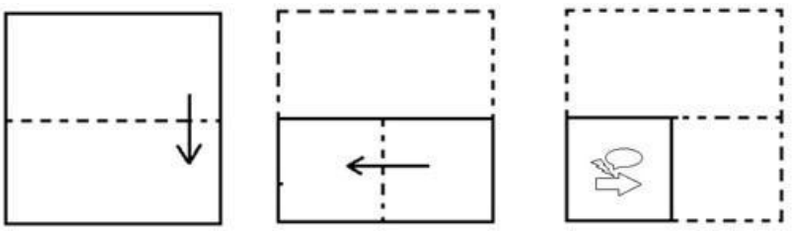
(7, 2, 17)

Ans
- ✗ 1. (8, 6, 4)
- ✗ 2. (4, 3, 1)
- ✗ 3. (15, 4, 30)
- ✓ 4. (3, 2, 5)

Q.11 Cricket commentators – Boycott, Sidhu, Sunny, Shastri, and Harsha along with two guest speakers Kapil and Srikanth – have to sit in a row to get a photograph taken. Harsha and Shastri being the youngest among the group sit on either side. Since Kapil and Srikanth are guest speakers they sit together. But Kapil and Sunny do not get along with each other and should be seated with at least 2 persons between them. Sidhu being the victim of all their leg-pulling is upset and sits with one of the young commentators.
Among the following, who could be seated at the centre?

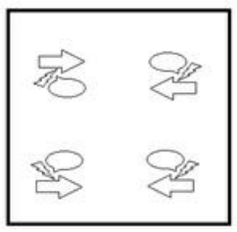
Ans
- ✗ 1. Harsha
- ✓ 2. Boycott
- ✗ 3. Sunny
- ✗ 4. Sidhu

Q.12 The sequence of folding a piece of paper and the manner in which the folded paper has been cut is shown below. Choose a figure which would most closely resemble the unfolded form of the paper.

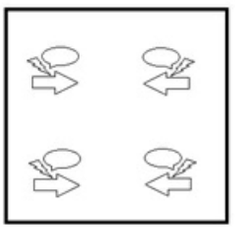


Ans

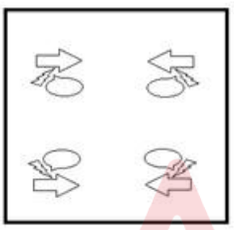
1.



2.



3.



4.

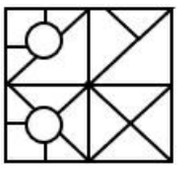
Q.13 Select the word-pair that best represents a similar relationship to the one expressed in the pair of words given below. (The words must be considered as meaningful English words and must not be related to each other based on the number of letters/numbers of consonants/vowels in the word)

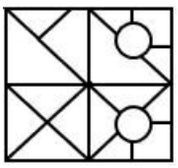
UK : POUND

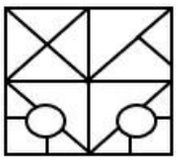
Ans
1. GERMANY : LIRA
2. IRAQ : KYAT
3. DUBAI : TAKA
4. THAILAND : BAHT

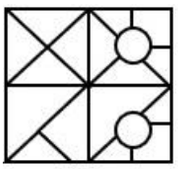
Q.14 Select the option in which the given figure is embedded (rotation is NOT allowed).

Ans

1. 

2. 

3. 

4. 

Q.15 Select the figure from the options that can replace the question mark (?) and complete the given pattern.

Ans

1. 

2. 

3. 

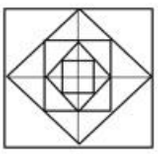
4. 

Q.16 Select the option that is related to the sixth letter-cluster in the same way as the first letter-cluster is related to the second letter-cluster and the third letter-cluster is related to the fourth letter-cluster.

RGY : OEV : :GPS : DNP :: ? : MKP

Ans
1. OMR
2. PNS
3. ONS
4. PMS

Q.17 How many square are there in the given figure?



Ans
1. 17
2. 20
3. 16
4. 18

Q.18 Select the option that is related to the fourth term in the same way as the first term is related to the second term and the fifth term is related to the sixth term?

12 : 2 :: ? : 4 :: 243 : 9

Ans
1. 48
2. 25
3. 36
4. 24

Q.19 Which of the following numbers will replace the question mark (?) in the given series?
32, 49, ?, 89, 112, 137, 164

Ans
1. 64
2. 72
3. 68
4. 66

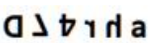
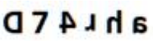
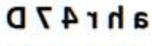
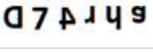
Q.20 Select the option that is related to the third word in the same way as the second word is related to the first word.
(The words must be considered as meaningful English words and must not be related to each other based on the number of letters/number of consonants/vowels in the word)
Black : White :: Head : ?

Ans
1. Neck
2. Toe
3. Hand
4. Spine

Q.21 Select the number from among the given options that can replace the question mark (?) in the following series.
97, 97, 82, 82, 67, 67, ?

Ans
1. 56
2. 52
3. 54
4. 60

Q.22 Select the correct mirror image of the given figure when the mirror is placed at MN as shown below.

Ans
1. 
2. 
3. 
4. 

Q.23 In a certain code language, 'MENTAL' is written as '103' and 'RULE' is written as '56'. How will 'VERBAL' be written in that language?

Ans
1. 100
2. 102
3. 108
4. 114

Q.24 Select the number from among the given options that can replace the question mark (?) in the following series.
18, 34, 40, 78, 84, 166, 172, ?

Ans
1. 342
2. 322
3. 344
4. 324

Q.25 A woman said to a man, "Your paternal grandfather is the husband of the mother-in-law of my brother's wife". How is that man related to that woman?

Ans
1. Brother
2. Father
3. Son
4. Brother's son

Q.26 Select the word-pair in which the two words are related in the same way as are the two words in the given pair.
(The words must be considered as meaningful English words and must not be related to each other based on the number of letters/number of consonants/vowels in the word.)
Quadrilateral: Four

Ans
1. Decagon : Eleven
2. Heptagon : Eight
3. Cube : Six
4. Nonagon : Nine

Q.27 Which letter-cluster will replace the question mark (?) to complete the given series?

IYMV, JXNU, LVPS, ? , SOWL

Ans
1. OSPS
2. OSSP
3. POSO
4. OPPS

Q.28 Shruti departs from her home and walks 26 m towards the east. She then turns left and walks 18 m. She turns right and walks 34 m. She takes a right turn again and walks 30 m. She then takes a left turn and walks 10 m. She takes a final left turn and walks 12 m to stop at Point X. How far and in which direction is her home from Point X?
(Assume that all the turns are 90° turns only.)

Ans
1. 65 m east
2. 55 m east
3. 60 m west
4. 70 m west

Q.29 Three statements are given followed by three conclusions numbered I, II and III. Assuming the statements to be true, even if they seem to be at variance with commonly known facts, decide which of the conclusions logically follow(s) from the statements.

Statements:
No cat is a dog.
All dogs are rats.
Some bears are cats.

Conclusions:
I. All rats can never be cats.
II. No bear is a rat.
III. All bears can never be dogs.

Ans
✗ 1. Only II and III follow
✓ 2. Only I and III follow
✗ 3. Only II follows
✗ 4. Only I follows

Q.30 Select the option that indicates the correct arrangement of the given words in a logical and meaningful order.
1. Horse
2. Monkey
3. Elephant
4. Grasshopper
5. Ant

Ans
✗ 1. 1, 2, 5, 3, 4
✓ 2. 3, 1, 2, 4, 5
✗ 3. 3, 2, 1, 5, 4
✗ 4. 1, 3, 2, 4, 5

Q.31 Which letter-cluster will replace the question mark (?) to complete the given series?

HCYU, AKUO, TSQI, ?, FIIA

Ans
✓ 1. MAME
✗ 2. NBNF
✗ 3. NAME
✗ 4. MBMF

Q.32 In a certain code language, "DISTRUST" is written as "24" and "ABASEMENT" is written as "27". How will "BUFFER" be written in that language?

Ans
✗ 1. 28
✗ 2. 24
✗ 3. 32
✓ 4. 18

Q.33 Select the option that represents the correct order of the given words as they would appear in an English dictionary.
1. Vacuum
2. Vague
3. Vacancy
4. Valley
5. Vaccinate

Ans
✗ 1. 3, 1, 5, 2, 4
✓ 2. 3, 5, 1, 2, 4
✗ 3. 3, 5, 2, 1, 4
✗ 4. 3, 5, 1, 4, 2

Q.34 Select the option that is related to the fifth term in the same way as the second term is related to the first term and the fourth term is related to the third term.
9 : 30 :: 11 : 36 :: 15 : ?

Ans
✗ 1. 50
✗ 2. 35
✗ 3. 40
✓ 4. 48

Q.35 Which two signs should be interchanged to make the given equation correct?
11 × 12 ÷ 78 + 6 – 57 = 88

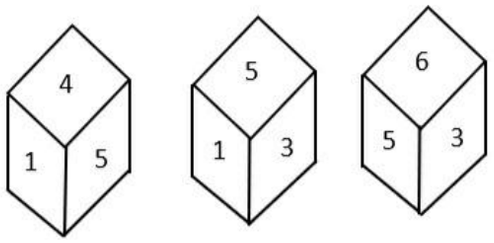
Ans
1. – and ×
2. ÷ and –
3. × and +
4. ÷ and +

Q.36 Which letter cluster will replace the question mark (?) to complete the given series?

SXT, PVU, MTV, JRW, ?

Ans
1. HPZ
2. GOZ
3. GQY
4. GPX

Q.37 Three different positions of the same dice are shown. Find the number on the face opposite the face having '2'.



Ans
1. 6
2. 1
3. 4
4. 5

Q.38 Select the set in which the numbers are related in the same way as are the numbers of the following sets.

(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g. 13 – Operations on 13 such as adding/subtracting/multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed)

(697, 13, 866)

(15, 91, 8296)

Ans
1. (541, 14, 737)
2. (651, 16, 940)
3. (747, 25, 1423)
4. (832, 8, 887)

Q.39 Select the option that is related to the sixth letter-cluster in the same way as the first letter-cluster is related to the second letter-cluster and the third letter-cluster is related to the fourth letter-cluster.

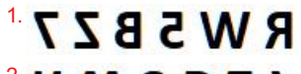
BLG : DPM : : HSD: JWJ :: ? : HOV

Ans
1. GKP
2. FJQ
3. FLP
4. FKP

Q.40 Select the correct mirror image of the given combination when the mirror is placed at 'PQ' as shown.

R W 5 B Z 7

P ——— Q

Ans
1. 
2. 
3. 
4. 

Q.41 In a certain code language, 'COUNTRY' is coded as '73', and 'MAP' is coded as '51'. How will 'TRAVEL' be coded in that language?

Ans
1. 90
2. 124
3. 84
4. 69

Q.42 Six students P, Q, R, S, T and U are sitting around a circular table facing the centre. R is an immediate neighbour of both T and U. P is sitting third to the right of U. Q is sitting immediate left to S. S is sitting second to the right of P. What is the position of T with respect to P?

Ans
1. Immediate left
2. Second to the left
3. Third to the right
4. Immediate right

Q.43 Select the set in which the numbers are related in the same way as are the numbers of the following sets.

(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g. 13 – Operations on 13 such as adding/subtracting/multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed)

(19, 53, 215)

(22, 15, 110)

Ans
1. (13, 35, 143)
2. (18, 50, 230)
3. (17, 47, 112)
4. (15, 49, 199)

Q.44 Two statements are given followed by two conclusions numbered I and II. Assuming the statements to be true, even if they seem to be at variance with commonly known facts, decide which of the conclusions logically follow(s) from the statements.

Statements:
All microwaves are ovens.
No oven is an induction.

Conclusions:
I. At least some microwaves are inductions.
II. No microwave is an induction.

Ans
1. Only conclusion I follows
2. Neither conclusion I nor II follows
3. Only conclusion II follows
4. Both conclusions I and II follow

Q.45 Which two signs should be interchanged to make the given equation correct?
35 + 84 × 4 ÷ 3 – 11 = 87

Ans
1. – and ×
2. ÷ and –
3. ÷ and ×
4. × and +

Q.46 A person starts from point H and moves 4 km towards the west. He turns left and moves 6 km. He then turns right and moves 2 km and turns left and moves 1 km. He then takes a left turn and moves 6 km and stops at point D. How much and in which direction does he need to move to reach point H?

Ans
1. 4 km, North
2. 7 km, North
3. 5 km, East
4. 6 km, East

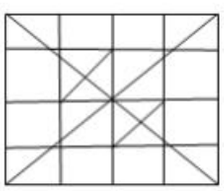
Q.47 Select the correct combination of mathematical signs to sequentially replace the * signs and balance the given equation.
5 * 25 * 5 * 11 * 9 = 23

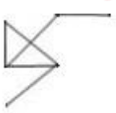
Ans
1. + - × ÷
2. ÷ × + -
3. × ÷ + -
4. × ÷ - +

Q.48 Select the option that is related to the third word in the same way as the second word is related to the first word (The words must be considered as meaningful English words and must not be related to each other based on the number of letters/consonants/vowels in the word).
Dishonesty : Distrust :: Carelessness : _____

Ans
1. Gift
2. Habit
3. Emotion
4. Accident

Q.49 Select the option figure which is embedded in the given figure as its part (rotation is NOT allowed).



Ans
1. 
2. 
3. 
4. 

Q.50 Seven friends A, B, C, D, E, F and G, each has a different age. C is older than D. A is the youngest among all. Only four people are older than C. E is older than G but younger than F. F is not the oldest. The age of how many persons is between the ages of B and G?

Ans
1. 3
2. 2
3. 0
4. 1

Section : **General Awareness**

Q.1 Identify which of the following statements about Tata Iron and Steel plant are correct.
1. It is lies very close to the Mumbai-Kolkata railway line and about 240 km away from Kolkata.
2. The rivers Subarnarekha and Kharkai provide water to the plant.
3. The iron ore for the plant comes from Noamundi and Badam Pahar.
4. The Coking coal for the plant comes from Jharia and west Bokaro coalfields.

Ans
✗ 1. 1, 2 and 3 only
✗ 2. 1, 3 and 4 only
✗ 3. 2 and 3 only
✓ 4. 1, 2, 3 and 4

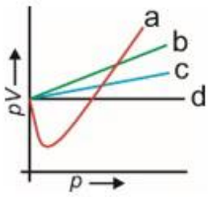
Q.2 In March 2023, how many PM MITRA (Pradhan Mantri Mega Integrated Textile Region and Apparel) Park sites were announced?

Ans
✓ 1. Seven
✗ 2. Eight
✗ 3. Five
✗ 4. Six

Q.3 Which hard, rubbery and elastic material has the ability to stretch and rise due to the action of baking powder or yeast?

Ans
✓ 1. Gluten
✗ 2. Secalin
✗ 3. Gelatine
✗ 4. Hordein

Q.4 Select the correct plot of ideal gas in the given figure.



Ans
✓ 1. d
✗ 2. b
✗ 3. c
✗ 4. a

Q.5 Vinai Kumar Saxena, who took over as the 22nd Lieutenant Governor of Delhi on 26th May 2022, hails from _____.

Ans
✓ 1. Uttar Pradesh
✗ 2. Odisha
✗ 3. Madya Pradesh
✗ 4. Jharkhand

Q.6 Guru Vempati Chinna Satyam, a Padma Bhushan awardee, is well recognized for his efforts for getting classical status to which of the following dance forms?

Ans
✗ 1. Kathakali
✗ 2. Manipuri
✗ 3. Odisi
✓ 4. Kuchipudi

Q.7 Which of the following risks, with reference to the usage of technology during green revolution, was significantly reduced by the services provided by the research institutes established by the government?

Ans
✗ 1. Inter-crop imbalances
✓ 2. Pest attacks
✗ 3. Regional disparities
✗ 4. Increase in income inequalities

Q.8 At which place was India's first Grass Conservatory launched by the Research Wing of the Uttarakhand Forest Department in November 2021?

Ans
- ✗ 1. Dehradun
- ✗ 2. Haridwar
- ✗ 3. Mussoorie
- ✓ 4. Ranikhet

Q.9 While Proclamation of emergency is in operation, the term of the Lok Sabha can be extended for a period not exceeding _____at a time.

Ans
- ✗ 1. three months
- ✗ 2. six months
- ✓ 3. one year
- ✗ 4. six weeks

Q.10 In which state of India is shifting cultivation known as 'Bringa'?

Ans
- ✓ 1. Odisha
- ✗ 2. Madhya Pradesh
- ✗ 3. Andhra Pradesh
- ✗ 4. Manipur

Q.11 Who among the following become the first Indian player to get elected in the Athletes' Commission of the International Table Tennis Federation (ITTF)?

Ans
- ✗ 1. Sathiyan Gnanasekaran
- ✗ 2. Kamlesh Navichandra Mehta
- ✓ 3. Sharath Achanta Kamal
- ✗ 4. Omar Assar

Q.12 Where did Lord Wavell call a conference between Congress and Muslim League leaders to reach an agreement?

Ans
- ✗ 1. Lucknow
- ✗ 2. Calcutta
- ✓ 3. Simla
- ✗ 4. Delhi

Q.13 How much wage compensation per trainee is provided under PM DAKSH Yojana including Common Cost Norms for trainees having 80%and above attendance in Reskilling/Up-skilling?

Ans
- ✓ 1. ₹3,000
- ✗ 2. ₹2,000
- ✗ 3. ₹4,000
- ✗ 4. ₹5,000

Q.14 How many members were given the task of taking care of administration of the Mauryan army?

Ans
- ✓ 1. 30
- ✗ 2. 35
- ✗ 3. 25
- ✗ 4. 20

Q.15 Which of the following rivers falls into the Arabian sea?

Ans
- ✗ 1. Kaveri
- ✓ 2. Narmada
- ✗ 3. Ganga
- ✗ 4. Godavari

Q.16 In which Province of India was the Bardoli Satyagraha launched?

Ans
- ✗ 1. Bihar
- ✓ 2. Gujarat
- ✗ 3. Kerala
- ✗ 4. Tamil Nadu

Q.17 Which of the following statements are correct about western disturbances?
Statement 1. Western disturbances are storms that originate in the Caspian or Mediterranean Sea, and bring non-monsoonal rainfall to northwest India.
Statement 2. The disturbance travels from the western to the eastern direction.
Statement 3. Western disturbances are storms that originate due to high pressure areas.

Ans
✗ 1. Only statements 1 and 3 are correct
✗ 2. All statements 1, 2 and 3 are correct
✗ 3. Only statements 2 and 3 are correct
✓ 4. Only statements 1 and 2 are correct

Q.18 Which of the following is the correct sentence about the mitotic cell division?

Ans
✓ 1. Chromosomes divide in a manner that the daughter cells receive identical amounts of hereditary matter.
✗ 2. Chromosomes divide in a manner that the daughter cells receive less amounts of hereditary matter.
✗ 3. Chromosomes divide in a manner that the daughter cells receive high amounts of hereditary matter.
✗ 4. Chromosomes divide in a manner that completely different daughter cells receive unidentical amount hereditary matter.

Q.19 The number of participant countries in the first Asian Games was _____.

Ans
✗ 1. 9
✗ 2. 12
✗ 3. 10
✓ 4. 11

Q.20 Identify the group of peninsular rivers.

Ans
✗ 1. Narmada, Ghaghara, Krishna, Gandak
✓ 2. Mahanadi, Godavari, Krishna, Kaveri
✗ 3. Narmada, Beas, Son, Godavari
✗ 4. Tapi, Ravi, Godavari, Krishna

Q.21 What are the places where the groundwater is stored between layers of hard rock below the water table called?

Ans
✓ 1. Aquifer
✗ 2. Water table
✗ 3. Underground water
✗ 4. Infiltration

Q.22 How can you insert a new row or column MS Excel?

Ans
✗ 1. Use the 'Copy' and 'Paste' options to insert data.
✓ 2. Right-click the row or column and choose 'Insert'.
✗ 3. Select a row or column and press the 'Enter' key.
✗ 4. Apply a new cell style to the entire row or column.

Q.23 Biodiversity is defined as a:

Ans
✗ 1. wide variety of soil
✗ 2. single variety of living organism
✓ 3. wide variety of living organisms
✗ 4. wide variety of climates

Q.24 How many members' signatures are required to initiate the impeachment process against the President of India.

Ans
✗ 1. In case of Lok Sabha 100 members, in case of Rajya Sabha 50 members
✗ 2. 1/3 members of the impeaching house either Lok Sabha or Rajya Sabha
✓ 3. 1/4 members of the impeaching house either Lok Sabha or Rajya Sabha
✗ 4. In case of Rajya Sabha i.e. 1/4 members, in case of Lok Sabha 1/3 members

Q.25 Select the correct statement.

Ans
- ✗ 1. A closed ecosystem exchanges both energy and matter with its surroundings.
- ✓ 2. An open ecosystem exchanges both energy and matter with its surroundings.
- ✗ 3. An open ecosystem exchanges only energy and no matter with its surroundings.
- ✗ 4. A closed ecosystem exchanges only matter and no energy with its surroundings.

Q.26 Who invites the leader of the majority party to form the Government?

Ans
- ✗ 1. Chief Secretary
- ✗ 2. Vice-President
- ✓ 3. President
- ✗ 4. Chief Justice of India

Q.27 Duleep Trophy is a first class _____ tournament held in India.

Ans
- ✗ 1. football
- ✗ 2. volleyball
- ✗ 3. tennis
- ✓ 4. cricket

Q.28 Which of the following is a secondary function of money?

Ans
- ✗ 1. Helping in conducting transactions in an economy
- ✗ 2. Allowing purchase and sale to be conducted independently
- ✓ 3. Being a standard of deferred payments
- ✗ 4. Calculating relative prices of goods and services

Q.29 Which of the following monuments was built by Muhammad Quli Qutb Shah?

Ans
- ✓ 1. Charminar
- ✗ 2. Gol Gumbaz
- ✗ 3. Warangal Fort
- ✗ 4. Chowmahalla Palace

Q.30 What is the diameter of the largest lens objective used at Yerkes Observatory in Wisconsin, USA?

Ans
- ✗ 1. 60 inches
- ✓ 2. 40 inches
- ✗ 3. 70 inches
- ✗ 4. 30 inches

Q.31 The trial for Meerut conspiracy took place under whose Viceroyalty?

Ans
- ✗ 1. Lord Chelmsford
- ✗ 2. Lord Reading
- ✓ 3. Lord Irwin
- ✗ 4. Lord Harding

Q.32 Which of the following compounds is a heterocyclic compound?

Ans
- ✗ 1. Acetic acid
- ✗ 2. Methane
- ✓ 3. Furan
- ✗ 4. Ethane

Q.33 According to the Census of India 2011, India's decadal growth rate was _____.

Ans
- ✗ 1. 16.7%
- ✗ 2. 18.7%
- ✓ 3. 17.7%
- ✗ 4. 19.7%

Q.34 According to which Article of the Indian Constitution is the population census a Union subject?

Ans
- ✗ 1. Article 79
- ✗ 2. Article 280
- ✗ 3. Article 154
- ✓ 4. Article 246

Q.35 In which of the following cases has the Supreme Court of India opined that the Constitution of India is founded on the bedrock of the balance between the Fundamental Rights and Directive Principles of State Policy?

Ans
✗ 1. Golaknath Case
✓ 2. Minerva Mills Case
✗ 3. Maneka Gandhi case
✗ 4. Keshvananda Bharati Case

Q.36 Which of the following is the style of temple architecture popular in northern India?

Ans
✗ 1. Vimana
✓ 2. Nagara
✗ 3. Dravida
✗ 4. Mandapa

Q.37 Which of the following Articles of the Constitution of India guarantees equality of opportunity in matters of public employment?

Ans
✓ 1. Article 16
✗ 2. Article 21
✗ 3. Article 35
✗ 4. Article 45

Q.38 Which of the following statements is related to Garib Kalyan Rojgar Abhiyaan (GKRA)?

Ans
✗ 1. It was started in 116 districts.
✗ 2. It provides135 days employment.
✓ 3. It was started in 10 states.
✗ 4. It was launched in 2018.

Q.39 As per the provisional figures of the 2011 census, the literacy rate has registered an increase of ____ percentage points since 2001.

Ans
✗ 1. 13.20
✗ 2. 11.01
✓ 3. 9.21
✗ 4. 7.48

Q.40 In which year was India's first paperless budget presented in the Parliament?

Ans
✓ 1. 2021
✗ 2. 2019
✗ 3. 2020
✗ 4. 2022

Q.41 Which letter symbol represents the Semi-arid steppe climate according to Köppen's scheme?

Ans
✓ 1. BShw
✗ 2. Dfc
✗ 3. Cwg
✗ 4. As

Q.42 Match the following columns.

Colum-A (Type of Forest)	Column-B (Example of Plant)
i. Himalayan Coniferous	a. Pine, deodar
ii. Deciduous-Dry	b. Avicennia
iii. Mangrove Delta	c. Teak, Ain, Terminalia
iv. Evergreen North-east, Western Ghats	d. Jamun, Ficus, Dipterocarpus

Ans
✗ 1. i-d, ii-c, iii-b, iv-a
✓ 2. i-a, ii-c, iii-b, iv-d
✗ 3. i-a, ii-b, iii-c, iv-d
✗ 4. i-b, ii-c, iii-d, iv-a

Q.43 Ali Ahmad Hussain Khan was an exponent of _____.

Ans
✓ 1. shehnai
✗ 2. guitar
✗ 3. flute
✗ 4. been

Q.44 Bagurumba is a folk dance of which tribe of Assam?

Ans
✗ 1. Kachari
✗ 2. Miri
✗ 3. Rabha
✓ 4. Bodo

Q.45 Which muscles can help modify the curvature in an eye lens?

Ans
✗ 1. Cardiac
✓ 2. Ciliary muscles
✗ 3. Smooth muscles
✗ 4. Glandular muscles

Q.46 Which disease is transmitted to humans by a flavivirus that can cause inflammation in the brain?

Ans
✗ 1. Anthrax
✗ 2. Candidiasis
✗ 3. Leptospirosis
✓ 4. Japanese encephalitis

Q.47 Match the columns.

Names of Cyclones	Water body from where they developed
i. Cyclone Tauktae	a. Bay of Bengal
ii. Cyclone Yaas	b. Gulf of Mexico
iii. Hurricane Katrina	c. Arabian Sea
iv. Hurricane Ingrid	d. Atlantic Ocean

Ans
✓ 1. i-c, ii-a, iii-d, iv-b
✗ 2. i-c, ii-d, iii-a, iv-b
✗ 3. i-d, ii-c, iii-b, iv-a
✗ 4. i-c, ii-d, iii-b, iv-a

Q.48 What does data encryption involve?

Ans
✓ 1. Encoding data into a secret code
✗ 2. Compressing data to save storage space
✗ 3. Deleting data permanently from storage
✗ 4. Converting data into a human-readable format

Q.49 Pandit Shivnath Mishra, Padma Shri Awardee in 2022, is well known for his contribution to which of the following musical instruments?

Ans
- ✗ 1. Surbahar
- ✗ 2. Mandolin
- ✓ 3. Sitar
- ✗ 4. Violin

Q.50 In August 2022, Shri Jagdeep Dhankhar took over as the 14th Vice President of India and Chairman of Rajya Sabha. Which of the following posts has he NOT served earlier?

Ans
- ✓ 1. President of the Rajasthan Cricket Association
- ✗ 2. Governor of West Bengal
- ✗ 3. MP, Jhunjhunu, Rajasthan
- ✗ 4. Minister of State for Parliamentary Affairs

Section : General Engineering Civil and Structural

Q.1 A centrifugal pump, driven by a directly coupled 2 kW motor of speed 1400 rpm, is proposed to be connected to a motor of speed 2800 rpm. The power of the motor should be:

Ans
- ✓ 1. 16kW
- ✗ 2. 8kW
- ✗ 3. 24 kW
- ✗ 4. 4 kW

Q.2 For which of the following applications in levelling is an inverted staff reading most suitable?

Ans
- ✗ 1. Levelling across a steep slope
- ✗ 2. Levelling across a lake
- ✓ 3. Levelling across a wall
- ✗ 4. Levelling across an intervening, high or low ground

Q.3 Which of the following does NOT represent the grade of Bitumen based on viscosity?

Ans
- ✗ 1. VG-40
- ✓ 2. VG-50
- ✗ 3. VG-20
- ✗ 4. VG-30

Q.4 Select the correct option for the given statements.
Statement 1: Runoff is a function of precipitation, intensity, duration and its coverage.
Statement 2: The size of catchment has a definite effect on the runoff. More the area, lesser will be the runoff.

Ans
- ✗ 1. Statement 1 is false and statement 2 is true
- ✗ 2. Both statement 1 and statement 2 are true
- ✓ 3. Statement 1 is true and statement 2 is false
- ✗ 4. Both statement 1 and statement 2 are false

Q.5 The power of a centrifugal pump depends on the rate of flow of water. The rate of flow of water from the centrifugal pump is directly proportional to the _____.

Ans
- ✗ 1. outer diameter of the impeller
- ✗ 2. total head
- ✓ 3. revolutions per minute of the impeller
- ✗ 4. inner diameter of the impeller

Q.6 In which type of dressing are only the edges of a stone block levelled with the help of a hammer?

Ans
- ✓ 1. Pitched dressing
- ✗ 2. Chisel drafting
- ✗ 3. Rough tooling
- ✗ 4. Hammer dressing

Q.7 The science that deals with the occurrence, circulation and distribution of water of the earth and the earth's atmosphere is known as _____.

Ans
✗ 1. hydraulics
✓ 2. hydrology
✗ 3. oceanography
✗ 4. environment

Q.8 If the 30th highest hourly volume is adopted for design, there will be congestion on road for only:

Ans
✗ 1. 0 hours in a year
✗ 2. 70 hours in a year
✗ 3. 30 hours in a year
✓ 4. 29 hours in a year

Q.9 As per IS 11624-1986, what will be the water quality rating of irrigation water when residual sodium carbonate (RSC) is in the range of 1.5 to 3?

Ans
✗ 1. High
✗ 2. Very high
✓ 3. Medium
✗ 4. Low

Q.10 Which of the following statement for the included angle method is/are true?
Statement 1: Included angles can be measured either clockwise or counter-clockwise.
Statement 2: The measured clockwise angles are interior angles if the direction of progress around the survey is counter-clockwise.

Ans
✗ 1. Neither Statement 1 nor Statement 2 is true.
✗ 2. Only Statement 1 is true.
✓ 3. Both Statements 1 and 2 are true.
✗ 4. Only Statement 2 is true.

Q.11 Traffic engineering does NOT include which of the following?
i. Geometric design
ii. Traffic studies and analysis
iii. Road user characteristics
iv. Marshall mix design

Ans
✗ 1. Both i and iv
✓ 2. Only iv
✗ 3. Only iii
✗ 4. Only i

Q.12 Proctor compaction test is made to determine moisture content at which soil will be compacted to obtain _____.

Ans
✗ 1. minimum dry density
✓ 2. maximum dry density
✗ 3. specific gravity
✗ 4. porocity

Q.13 What is the value of slope on the inside face of the flange for all the standard I-sections and channels sections of steel?

Ans
✗ 1. $16\frac{1}{2}\%$
✓ 2. $16\frac{2}{3}\%$
✗ 3. $16\frac{3}{4}\%$
✗ 4. $16\frac{4}{5}\%$

Q.14 What should be the unit of measurement for earthwork in excavation in any type of soil and honeycomb brick work?

Ans
- ✗ 1. m^2 and m^2
- ✗ 2. m^3 and m
- ✓ 3. m^3 and m^2
- ✗ 4. m and m^2

Q.15 Direct stress due to self-weight and extreme bending stress at the base of a masonry dam is given as 22 N/mm^2 and 44 N/mm^2, respectively. Determine the value of extreme resultant stresses.

Ans
- ✗ 1. Max. stress = 66 N/mm^2, Min. stress = 22 N/mm^2
- ✗ 2. Max. stress = 44 N/mm^2, Min. stress = −66 N/mm^2
- ✓ 3. Max. stress = 66 N/mm^2, Min. stress = −22 N/mm^2
- ✗ 4. Max. stress = 44 N/mm^2, Min. stress = 22 N/mm^2

Q.16 In case of staggered or zigzag riveting in the design of tension members of steel structures, the net cross-sectional area along the chains of rivets is:

Ans
- ✗ 1. increased by an amount equal to $\frac{s^2t}{8g}$
- ✓ 2. increased by an amount equal to $\frac{s^2t}{4g}$
- ✗ 3. decreased by an amount equal to $\frac{s^2t}{4g}$
- ✗ 4. decreased by an amount equal to $\frac{s^2t}{8g}$

Q.17 As per IS 1203-1978 in the penetration test of bitumen, a standard tapered needle is used to calculate:

Ans
- ✓ 1. consistency of the bitumen binder
- ✗ 2. binder capacity
- ✗ 3. softening point
- ✗ 4. the required quantity of colour

Q.18 The bearings of two lines AB and AC measured by using a surveyor's compass are S 26° 40' E and N 18° 30' W, respectively. The value of ∠BAC measured in clockwise direction is _____.

Ans
- ✗ 1. 189° 10'
- ✓ 2. 188° 10'
- ✗ 3. 134° 10'
- ✗ 4. 135° 10'

Q.19 The processes used for the manufacture of cement can be classified into _____ types.

Ans
- ✓ 1. two
- ✗ 2. four
- ✗ 3. three
- ✗ 4. five

Q.20 Silt ejector is provided _____.

Ans
- ✗ 1. in the river far off from the weir on the upstream side
- ✗ 2. in the river adjacent to the head regulator
- ✗ 3. in the river on the downstream of the weir
- ✓ 4. in the canal on the downstream of head regulator

Q.21 The check for traversing by deflection angle method in a closed traverse of n sides is:

Ans
- ✗ 1. the sum of angles must be equal to (2n - 4)°
- ✗ 2. the sum of angles must be equal to (2n + 4)°
- ✗ 3. the sum of angles must be equal to 180°
- ✓ 4. the sum of angles must be equal to 360°

Q.22 Which of the following sections is ideally suited for a compression member?

Ans
✗ 1. Section with larger length
✗ 2. Section with high amount of material unevenly distributed
✗ 3. Section with different moment of inertia about perpendicular axis passing through its centre of gravity
✓ 4. Section with same moment of inertia about perpendicular axis passing through its centre of gravity

Q.23 As per IS 2386 (1963), the aggregate crushing value is calculated by using a single sized aggregate, which is:

Ans
✗ 1. passing 40 mm and retained on 20 mm sieve
✓ 2. passing 12.5 mm and retained on 10 mm sieve
✗ 3. passing 4.75 mm and retained on 2.36 mm sieve
✗ 4. passing 20 mm and retained on 10 mm sieve

Q.24 Which of the following laboratory methods is more suitable to determine the permeability of less permeable soils?

Ans
✗ 1. Unconfined flow pumping test
✗ 2. Constant head test
✓ 3. Falling head test
✗ 4. Confined flow pumping test

Q.25 Which of the following is an example of sedimentary rock?

Ans
✗ 1. Basalt
✗ 2. Black flint
✓ 3. Sandstone
✗ 4. Pumice

Q.26 With reference to lacings under compression members of steel structures, the width of the lacing flat for 20 mm of nominal diameter of rivet is _____.

Ans
✗ 1. 50 mm
✓ 2. 60 mm
✗ 3. 55 mm
✗ 4. 65 mm

Q.27 Salvage value is the _____ of an asset after all depreciation has been fully expensed.

Ans
✗ 1. market value
✗ 2. scrap value
✗ 3. depreciation
✓ 4. book value

Q.28 Which of the following statements regarding an electronic theodolite fitted with a graduated circle encoded in an incremental system is INCORRECT?

Ans
✗ 1. One of the photodiodes is fixed and the other moves with the telescope.
✓ 2. Two photodiodes are placed perpendicular to each other over the graduated circle.
✗ 3. The graduated circle is fixed and it does not move.
✗ 4. The graduated circle is made of glass.

Q.29 Which of the following methods of quarrying is suitable for costly, soft and stratified rocks such as sandstone, limestone, laterite, marble and slate?

Ans
✗ 1. Excavating
✓ 2. Wedging
✗ 3. Heating
✗ 4. Blasting

Q.30 A simply supported beam of length 4 m is subjected to a udl of intensity 10 kN/m over entire span of beam. Determine the magnitude of maximum shear force acting anywhere in the beam.

Ans
- ✗ 1. 40/6 kN
- ✗ 2. 10 kN
- ✗ 3. 40 kN
- ✓ 4. 20 kN

Q.31 In a plane survey, the length of an arc 12 km long lying on the earth's surface is _____ greater than the subtended chord.

Ans
- ✗ 1. 0.1 cm
- ✗ 2. 10 cm
- ✗ 3. 100 cm
- ✓ 4. 1 cm

Q.32 The coefficient of discharge (C_d) in terms of the coefficient of velocity (C_V) and the coefficient of contraction (C_C) is:

Ans
- ✗ 1. $C_d = C_C/C_V$
- ✗ 2. $C_d = C_V + C_C$
- ✓ 3. $C_d = C_V \times C_C$
- ✗ 4. $C_d = C_V/C_C$

Q.33 DDT belongs to the category of _____.

Ans
- ✗ 1. non-persistent pollutants
- ✗ 2. secondary air pollutants
- ✗ 3. primary air pollutants
- ✓ 4. persistent pollutants

Q.34 Hook length for a straight bar in terms of the diameter of bar, d is:

Ans
- ✗ 1. D
- ✗ 2. 4.5d
- ✓ 3. 9d
- ✗ 4. 18d

Q.35 Blaine air permeability apparatus is used to determine the _____ of Portland cement.

Ans
- ✗ 1. permeability
- ✗ 2. specific gravity
- ✗ 3. gradation
- ✓ 4. fineness

Q.36 In India, stones with a specific gravity less than _____ are considered unsuitable for buildings.

Ans
- ✗ 1. 3.6
- ✓ 2. 2.4
- ✗ 3. 2.8
- ✗ 4. 3.2

Q.37 If a compression member of a steel structure is effectively held in position and restrained against rotation at both the ends, then which of the following options represents the effective length of the member?

Ans
- ✓ 1. 0.65 times of the actual length
- ✗ 2. 2.0 times of the actual length
- ✗ 3. 1.2 times of the actual length
- ✗ 4. 0.80 times of the actual length

Q.38 Which of the following methods are not used for the analysis and design of watertanks?

Ans
- ✓ 1. Rankine method
- ✗ 2. Reissner's method
- ✗ 3. BIS code method
- ✗ 4. Carpenter's simplified method

Q.39 According to IS 456:2000, value of design bond stress for plain bars shall be increased by _____%for deformed bars conforming to IS 1786.

Ans
✗ 1. 25
✗ 2. 40
✓ 3. 60
✗ 4. 10

Q.40 Level surface in terms of leveling is a _____.

Ans
✗ 1. datum surface
✗ 2. horizontal surface
✗ 3. vertical surface
✓ 4. curved surface

Q.41 Select the correct option for the given statements.
Statement 1: When the crossing site is such that the canal FSL is well above the stream HFL, the choice between aqueduct and siphon aqueduct is made depending on the stream discharge.
Statement 2: For larger stream discharges (i.e. when the stream bed is much wider), an aqueduct is more suitable than a siphon aqueduct which requires lowering of the stream bed by a drop.

Ans
✗ 1. Both statement 1 and statement 2 are true, but statement 2 is not the correct explanation of statement 1
✗ 2. Statement 1 is true and statement 2 is false
✓ 3. Both statement 1 and statement 2 are true, and statement 2 is the correct explanation of statement 1
✗ 4. Statement 1 is false and statement 2 is true

Q.42 Consider the following statements regarding, the function of base course and sub-base course in pavement layers:
i.Prevent mud-pumping in rigid pavement
ii.Protect sub-grade of rigid pavement from frost action
iii.Provide tensile strength to the flexible pavement
iv.Distribute the load in flexible pavement
v.Prevent warping stresses in rigid pavement.
Which of the above statements are correct?

Ans
✗ 1. Only i, ii and v
✗ 2. Only ii, iii and v
✓ 3. Only i, ii and iv
✗ 4. Both ii and iv

Q.43 The density of mercury used in shrinkage limit apparatus is _____ (approx).

Ans
✗ 1. 14.6 g/cc
✓ 2. 13.6 g/cc
✗ 3. 12.6 g/cc
✗ 4. 15.6 g/cc

Q.44 The ratio Nc/Nq for a purely cohesive soil is _____.
(N_c and N_q are Terzaghi bearing capacity factors)

Ans
✗ 1. 5.14
✓ 2. 5.7
✗ 3. 2.85
✗ 4. 2.57

Q.45 As per IS 486:2000, in reinforced and plain concrete footings, the thickness at the edge of the footing shall not be less than _____ for footings on soils.

Ans
✗ 1. 120 mm
✗ 2. 125 mm
✓ 3. 150 mm
✗ 4. 100 mm

Q.46 Before stone seasoning, dressing of stones is done as it provides:
i. uniform appearance
ii. good mortar joints
iii. proper bedding
iv. poor water absorption

Ans
✗ 1. Only (i)
✗ 2. (i), (ii), (iii), (iv)
✓ 3. Only (i), (ii) and (iii)
✗ 4. Only (i) and (ii)

Q.47 Which material is used for shuttering equipment, that require very little maintenance and can be used for years?

Ans
✗ 1. Epoxy ply
✗ 2. Timber
✓ 3. Steel
✗ 4. Pressed board

Q.48 Which of the following methods can be used to lower the water table by using gravity flow?

Ans
✗ 1. Dewatering
✓ 2. Well point system
✗ 3. Dehydration
✗ 4. Water suction method

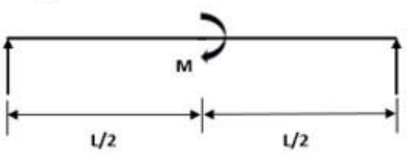
Q.49 Identify water-borne diseases from the following.
I. Typhoid
II. Hepatitis
III. Malaria

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

Q.50 In India, the authority to issue the environmental no objection certificate to start an industry lies with the _____.

Ans
✗ 1. State Government
✗ 2. Forest Department
✗ 3. Central Government
✓ 4. Pollution Control Board

Q.51 Find the value of shear force at one-fourth of the given span from the left support as shown in the below diagram.



Ans
✗ 1. $\frac{M}{2L}(-ve)$
✗ 2. $\frac{M}{L}(+ve)$
✓ 3. $\frac{M}{L}(-ve)$
✗ 4. $\frac{M}{2L}(+ve)$

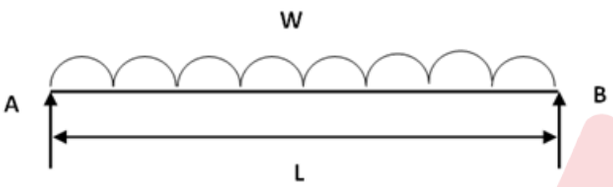
Q.52 Which of the following statements is INCORRECT?

Ans
✗ 1. Lower water-cement ratio leads to lower workability.
✓ 2. Graphically, the relation between the strength of concrete and the water-cement ratio is approximately cubic.
✗ 3. Lower water-cement ratio is required when the concrete mix is mechanically compacted to achieve higher strength as compared to the hand-compacted concrete mix with higher water-cement ratio.
✗ 4. The lower the water-cement ratio is, the higher will be the strength of concrete.

Q.53 Which of the following is a type of pump based on the type of power?

Ans
✗ 1. Low-lift pump
✗ 2. High-lift pump
✗ 3. Centrifugal pump
✓ 4. Steam engine pump

Q.54 Find the bending moment at a distance L/4 from end A of the simply supported beam as shown below.



Ans
✗ 1. $\frac{wL^2}{32}$
✓ 2. $\frac{3.wL^2}{32}$
✗ 3. Zero
✗ 4. $\frac{wL^2}{8}$

Q.55 According to IS 456:2000, for an RCC footing, the thickness of the footing at the edge shall NOT be less than _____ for footings on soils.

Ans
✗ 1. 100 mm
✗ 2. 200 mm
✓ 3. 150 mm
✗ 4. 50 mm

Q.56 Select the option that is appropriate regarding the following two statements labelled Assertion and Reason.
Assertion: Good-quality irrigation water is one of the favourable conditions for sub-surface irrigation practice.
Reason: Irrigation water of bad quality may block the buried perforated pipes in artificial sub-surface irrigation.

Ans
✓ 1. Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
✗ 2. Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
✗ 3. Both Assertion and Reason are false.
✗ 4. Assertion is true, but Reason is false.

Q.57 The dimension of Manning's roughness coefficient 'n' is:

Ans
✗ 1. $L^{-1/2}T^{-2}$
✗ 2. $L^{-2/3}T$
✗ 3. $L^{-1/6}T^{-1}$
✓ 4. $L^{-1/3}T$

Q.58 Which of the following options explain the effect of cold weather on concrete?
(i) Delay in setting and hardening
(ii) Freezing of concrete at early age
(iii) Alternate Freezing and Thawing

Ans
✗ 1. Only (i)
✓ 2. (i), (ii), and (iii)
✗ 3. Both (i) and (ii)
✗ 4. Both (ii) and (iii)

Q.59 The horizontal platform that is used for connecting two flights of a staircase is called _____.

Ans
✗ 1. thread
✗ 2. stringer
✗ 3. connector
✓ 4. landing

Q.60 Which of the following options represents the methods that can be used effectively to locate the routes of highways or railways from a contour map?

Ans
✗ 1. Tracing of contour gradient method and the method of horizontal plane
✗ 2. Method of cross-section and the equal depth contours method
✗ 3. Tracing of contour gradient method and the equal depth contours method
✓ 4. Method of cross-section and the tracing of contour gradient method

Q.61 Shelby tube is one of the most widely used devices for:

Ans
✓ 1. collecting undisturbed soil samples
✗ 2. wash borings and drilling cobbles
✗ 3. drilling rocks
✗ 4. measuring effective stress and plotting Mohr envelope

Q.62 By which method is valuation carried out to be initial or prime cost less depreciation?

Ans
✗ 1. Estimated cost from accounts
✓ 2. Initial cost-based valuation
✗ 3. Cost from detailed items
✗ 4. Profit-based valuation

Q.63 Which of the following may NOT be a direct effect of noise pollution?

Ans
✓ 1. Stomach disorder
✗ 2. Hearing loss
✗ 3. Anxiety
✗ 4. Migration of birds from cities

Q.64 The foundation of the structure is designed for:

Ans
✗ 1. compression failure of soils
✗ 2. tension failure of soils
✗ 3. bending failure of soils
✓ 4. shear failure of soils

Q.65 Soil with particle size less than _____ mm is called fine grained soil (silt or clay).

Ans
✗ 1. 0.015
✗ 2. 0.020
✗ 3. 14.750
✓ 4. 0.075

Q.66 Select the option that is appropriate regarding the following two statements labelled Assertion and Reason.
Assertion: A loose, permeable, sandy soil has a higher infiltration capacity than that of a tight, clayey soil.
Reason: A soil with poor under-drainage has a higher infiltration capacity.

Ans
- ✗ 1. Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- ✗ 2. Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
- ✓ 3. Assertion is true, but Reason is false.
- ✗ 4. Both Assertion and Reason are false.

Q.67 Which of the following stresses is mainly responsible for the stability of a masonry chimney?

Ans
- ✗ 1. Tensile stresses due to earthquake
- ✗ 2. Bending stress due to horizontal wind pressure
- ✓ 3. Direct stress due to self-weight of the chimney
- ✗ 4. Shear stress due to wind pressure

Q.68 The absence of a bond between reinforcing steel and surrounding concrete in a RCC beam will result in:

Ans
- ✗ 1. parabolic variation of axial stress in a straight bar
- ✗ 2. zero axial stress at all points in a straight bar
- ✗ 3. linear variation of axial stress in a straight bar
- ✓ 4. constant stress at all points in a straight bar

Q.69 Offsets from the tangents method of curve setting can be adopted if _____.

Ans
- ✗ 1. the deflection angle is small and the radius of curvature is large
- ✓ 2. both the deflection angle and the radius of curvature are small
- ✗ 3. both the deflection angle and the radius of curvature are large
- ✗ 4. the deflection angle is large and the radius of curvature is small

Q.70 Match the basic terms used in the runoff given in the first column with their meanings in the second column.

A. Surface runoff	1. Delayed sub-surface flow at shallow depth
B. Interflow	2. Unconfined flow of water over the ground surface
C. Base flow	3. Portion of water that moves laterally in the upper part of the soil

Ans
- ✗ 1. A-1, B-2, C-3
- ✓ 2. A-2, B-3, C-1
- ✗ 3. A-1, B-3, C-2
- ✗ 4. A-2, B-1, C-3

Q.71 A road pavement should have which of the following qualities?

Ans
- ✗ 1. Yielding
- ✗ 2. Deflection
- ✓ 3. Non yielding
- ✗ 4. Undulation

Q.72 Consider the following statements regarding horizontal equivalent and contour interval.
i. Horizontal equivalent between two contour lines is always constant.
ii. Horizontal equivalent may be zero for a vertical cliff.
iii. Contour interval should be inversely proportional to the scale.
iv. For detailed design work, large contour interval is taken.
Which of the given statements are correct?

Ans
- ✓ 1. ii and iii
- ✗ 2. i and iii
- ✗ 3. ii and iv
- ✗ 4. i and iv

Q.73 As per components of the sewerage system, what is the meaning of 'outfall sewer'?

Ans
- ✗ 1. A sewer which transports sewage from a house to lateral sewers
- ✗ 2. A sewer which transports sewage from a lateral sewer to a branch sewer
- ✓ 3. A sewer which transports sewage from a treatment plant to the final disposal point
- ✗ 4. A sewer which transports sewage from a branch sewer to the main sewer

Q.74 The constituents of paint in suspension are held by which vehicle that also help in its evenly distribution?

Ans
✗ 1. Base
✓ 2. Binder
✗ 3. Plaster of Paris
✗ 4. Pigments

Q.75 Which of the given options is NOT a commonly used minor method of disinfection of water during its treatment process?

Ans
✗ 1. Boiling of water
✓ 2. Treatment with silica
✗ 3. Treatment with ozone
✗ 4. Treatment with iodine and bromine

Q.76 Silt content in fine aggregates leads to _____.

Ans
✗ 1. decreased permeability
✗ 2. increased durability
✓ 3. increased shrinkage
✗ 4. excellent bond characteristics

Q.77 In the case of a _____, the brickwork is not measured in cubic metres.

Ans
✗ 1. reinforced brickwork
✗ 2. brickwork in arches
✓ 3. half-brick wall
✗ 4. one and more than one brick wall

Q.78 The mechanical device which is used to measure flow velocity, where the number of revolutions of the wheel per unit time are proportional to the velocity of the flowing water is the _____.

Ans
✗ 1. pitot tube
✓ 2. current meter
✗ 3. float
✗ 4. rotameter

Q.79 The type of pile foundation that is installed in soft strata to build a stable foundation for heavy structures by the method of resistance is called:

Ans
✗ 1. friction piles
✗ 2. tension piles
✓ 3. end bearing piles
✗ 4. screw piles

Q.80 In an old plan, a line was drawn to a magnetic bearing of 7° 25' with a magnetic declination of 2° 5' west. If the present magnetic declination is 9° 40' west, then the new magnetic bearing should be drawn at _____.

Ans
✗ 1. 4° 20'
✗ 2. −15°
✗ 3. −4° 20'
✓ 4. 15°

Q.81 In a fillet welded connection of steel structures, the sides containing the right angle of the fillet are called _____.

Ans
✗ 1. roots
✓ 2. legs
✗ 3. toes
✗ 4. throats

Q.82 Which of the following statements is INCORRECT about the grading limits of fine aggregates?

Ans
✗ 1. Zone II corresponds to normal sand.
✓ 2. There are 3 grading zones as per IS 383-2016.
✗ 3. Zone III corresponds to finer sand than Zone II.
✗ 4. IS 383 defines the grading zones of fine aggregates.

Q.83 Calculate the approximate mass density of oil with 4.5m^3 of volume and 40 kN of weight. (Consider g = 10 m/s^2)

Ans
- ✔ 1. 889 kg/m^3
- ✘ 2. 809 kg/m^3
- ✘ 3. 920 kg/m^3
- ✘ 4. 850 kg/m^3

Q.84 The difference between the total head line and the hydraulic grade line in an open-channel flow is called:

Ans
- ✔ 1. velocity head
- ✘ 2. elevation head
- ✘ 3. pressure head
- ✘ 4. total energy head

Q.85 As per IS 2470 codes, which of the following should be the minimum width of a septic tank for five users?

Ans
- ✘ 1. 55 cm
- ✔ 2. 75 cm
- ✘ 3. 60 cm
- ✘ 4. 85 cm

Q.86 As per the Indian Railways, the gauge is defined as:

Ans
- ✘ 1. the centre to centre distance of two track rails
- ✔ 2. the clear distance between inner faces of two track rails
- ✘ 3. the length of the sleeper-width of the sleeper
- ✘ 4. the clear distance between outer faces of two track rails

Q.87 The quantity of water in a reservoir, which cannot be utilised under normal operating conditions and is stored below the minimum pool level, is known as _____.

Ans
- ✔ 1. dead storage
- ✘ 2. valley storage
- ✘ 3. surcharge storage
- ✘ 4. live storage

Q.88 In soil mechanics, what is Darcy constant?

Ans
- ✘ 1. coefficient of liquefaction
- ✘ 2. coefficient of compressibility
- ✔ 3. coefficient of permeability
- ✘ 4. coefficient of compaction

Q.89 _____ is the method of locating an offset point from 2 different points on a chain line in such a way that all the three points form a near-equilateral triangle.

Ans
- ✘ 1. Swing offset method
- ✘ 2. Perpendicular offset method
- ✘ 3. Oblique offset method
- ✔ 4. Method of ties

Q.90 Which of the following factors does NOT contribute to soil/land pollution?

Ans
- ✔ 1. Eutrophication
- ✘ 2. Mining wastes
- ✘ 3. Agricultural activities
- ✘ 4. Domestic wastes

Q.91 Dupit's equation is expressed for series-connected pipes as:
(where L1, L2, and L3 are lengths of pipe 1, 2 and 3, d1, d2, d3 are diameter of pipe 1, 2 and 3, L is equivalent length of pipe are D is equivalent diameter of pipe)

Ans
1. $L/d^5 = L_1/d_1^5 - L_2/d_2^5$
2. $L/d^6 = L_1/d_1^6 + L_2/d_2^6 + L_3/d_3^6$
3. $L/d^5 = L_1/d_1^5 - L_2/d_2^5 - L_3/d_3^5$
4. $L/d^5 = L_1/d_1^5 + L_2/d_2^5 + L_3/d_3^5$

Q.92 The true reduced bearing is N 5˚0' W and the magnetic declination is 2˚E. Find the true bearing in the whole circle bearing system.

Ans
1. 357˚
2. 5˚
3. 353˚
4. 355˚

Q.93 A vertical gate closes a horizontal tunnel 4 m high and 3 m wide running full with water. The bottom of the vertical gate is located at a distance of 8 m from the free water surface. Determine the total fluid force(in kN) acting on the gate.

Ans
1. 720
2. 740
3. 730
4. 706

Q.94 Arrange the various zones of distribution of soil moisture in the infiltration process.
A.Saturation zone
B.Wetting zone
C.Transmission zone
D.Transition zone

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

Q.95 Which of the following is NOT a natural source of air pollution?

Ans
1. Wildfire by atmospheric temperature change
2. Volcanic gases
3. Combustion of fossil fuels
4. Pollens

Q.96 Which of the following is just above the blank pipe in the tube well?

Ans
1. Strainer
2. Main tube-well pipe
3. Barrel
4. Fulcrum

Q.97 The system of signal in which clusters of signals along a route display an opposite indication at the same moment is called _____.

Ans
1. simultaneous system
2. alternate system
3. flexible progressive system
4. simple progressive system

Q.98 Pavement blocks are mostly recommended during construction due to:

Ans
1. size of the block
2. low maintenance
3. water absorption capacity
4. efflorescence

Q.99 Pot and Bow Sleepers are which of the following type of sleepers?

Ans
- ✗ 1. Chock sleepers
- ✓ 2. Cast iron sleepers
- ✗ 3. Concrete sleepers
- ✗ 4. Steel sleepers

Q.100 The kinetic head of water flowing through a pipe of diameter 60 cm is 4 m, whereas the total head of the water at a cross-section, which is 6 m above the datum line, is 60 m. Determine the pressure head of water.

Ans
- ✓ 1. 50 m
- ✗ 2. 48 m
- ✗ 3. 60 m
- ✗ 4. 56 m