



# रेल भर्ती बोर्ड / RAILWAY RECRUITMENT BOARDS

## सी ई एन आर आर बी - ०२/२०२४ - CEN RRB - 02/2024



Test Date	28/12/2024
Test Time	4:30 PM - 6:00 PM
Subject	RRB Technicians Grade III

**\* Note**

Correct Answer will carry 1 mark per Question.

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

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

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

### Section : RRB Technicians Grade III

**Q.1** Given below is a cause followed by possible effects numbered I, II and III. Read the cause carefully and decide which of the three can be a/the possible effect(s).

Cause:

Heavy rains and flash floods have inundated many low lying areas of City X.

Effects:

(I) The State Government has appointed a new head for the municipality of City X.

(II) The State Government has evacuated over 5500 people stranded in low lying areas of City X.

(III) Food and water is being distributed at multiple locations to help citizens who have been evacuated from City X.

- Ans**
- ☒ 1. Both I and II can be the possible effects
  - ☒ 2. Both II and III can be the possible effects
  - ☒ 3. Only II can be a possible effect
  - ☒ 4. Only I can be a possible effect

**Q.2** In a certain code language,  
 'P + Q' means 'P is the mother of Q',  
 'P - Q' means 'P is the wife of Q',  
 'P x Q' means 'P is the father of Q' and  
 'P ÷ Q' means 'P is the brother of Q'.  
 How is A related to E if 'A + B - C x D ÷ E'?

- Ans**
- ☒ 1. Mother's sister
  - ☒ 2. Mother's mother
  - ☒ 3. Father's mother
  - ☒ 4. Father's sister

**Q.3** A shopkeeper sells an item for ₹571.20 after giving two successive discounts of 20% and 15% on its marked price. What is the marked price (in ₹) of the item?

- Ans**
- ☒ 1. 780
  - ☒ 2. 820
  - ☒ 3. 840
  - ☒ 4. 760

**Q.4** Based on the English alphabetical order, three of the following four letter-clusters are alike in a certain way and thus form a group. Which letter-cluster does not belong to that group?

(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

- Ans**
- ☒ 1. PSN
  - ☒ 2. WZV
  - ☒ 3. UXS
  - ☒ 4. QTO

**Q.5** In 2024, what major upgrade did the Indian Air Force (IAF) focus on to enhance its defense capabilities?

- Ans**
- ☒ 1. Upgrading the Sukhoi-30MKI fleet with new avionics
  - ☒ 2. Acquisition of advanced drones for surveillance
  - ☒ 3. Development of indigenously produced submarines
  - ☒ 4. Expansion of the cyber defense unit

**Q.6** \_\_\_\_\_ is useful for the survival of species over time.

- Ans**
- ☒ 1. Variation
  - ☒ 2. Budding
  - ☒ 3. Reproduction
  - ☒ 4. Population

**Q.7** At what rate (in percentage) per annum will ₹1,300 give ₹650 as simple interest in 10 years?

- Ans**
- ☒ 1. 8%
  - ☒ 2. 7%
  - ☒ 3. 5%
  - ☒ 4. 4%

**Q.8** What will come in the place of '?' in the following equation, if '+' and '-' are interchanged and '×' and '÷' are interchanged?

$$24 \times 6 \div 3 - 11 + 13 = ?$$

- Ans**
- ☒ 1. 12
  - ☒ 2. 9
  - ☒ 3. 8
  - ☒ 4. 10

**Q.9** Which of the following was NOT one of the nine priority areas of Union Budget 2024-25, aimed at generating ample opportunities for all?

- Ans**
- ☒ 1. Employment and skilling
  - ☒ 2. Sustainable development of fisheries
  - ☒ 3. Energy security
  - ☒ 4. Manufacturing and services

**Q.10** YTXS is related to QLPK in a certain way based on the English alphabetical order. In the same way, UPTO is related to MHLG. To which of the following options is RMQJ related, following the same logic ?

- Ans**
- ☒ 1. EJID
  - ☒ 2. EJDI
  - ☒ 3. JEID
  - ☒ 4. JEDI

**Q.11** If each vowel in the word PLASTID is changed to the letter following it in the English alphabetical order and each consonant is changed to the letter preceding it in the English alphabetical order, and the set of letters thus arrived are then rearranged in reverse of English alphabetical order, then which of the following letters will be third from the left in the group of letter thus formed?

- Ans**
- ☐ 1. H
  - ☐ 2. K
  - ☒ 3. O
  - ☐ 4. R

**Q.12** What happens to the motion of an object when balanced forces act on it?

- Ans**
- ☐ 1. It slows down.
  - ☒ 2. Its state of motion remains unchanged.
  - ☐ 3. It changes its direction of motion.
  - ☐ 4. It speeds up.

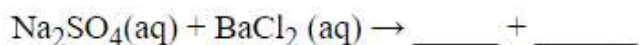
**Q.13** Find the magnitude of applied force on a box of mass 10 kg for 20 s. It increases the box's velocity from  $5 \text{ m s}^{-1}$  to  $15 \text{ m s}^{-1}$ .

- Ans**
- ☒ 1. 5 N
  - ☐ 2. 10 N
  - ☐ 3. 4 N
  - ☐ 4. 1 N

**Q.14** In a certain code language, 'POEM' is coded as '7591' and 'MINT' is coded as '6728'. What is the code for 'M' in the given code language?

- Ans**
- ☐ 1. 2
  - ☒ 2. 7
  - ☐ 3. 6
  - ☐ 4. 1

**Q.15** What are the balanced products of the following reaction?



- Ans**
- ☐ 1.  $2\text{BaSO}_2(\text{s}) + 2\text{NaCl}(\text{aq}) + 2\text{O}_2(\text{g})$
  - ☐ 2.  $\text{BaSO}_2(\text{s}) + \text{NaCl}(\text{aq}) + \text{O}_2(\text{g})$
  - ☒ 3.  $\text{BaSO}_4(\text{s}) + 2\text{NaCl}(\text{aq})$
  - ☐ 4.  $\text{BaSO}_4(\text{s}) + 2\text{NaCl}_2(\text{aq})$

**Q.16** The smallest ratio out of 1 : 1, 2 : 1, 1 : 3 and 3 : 1 is:

- Ans**
- ☐ 1. 3 : 1
  - ☒ 2. 1 : 3
  - ☐ 3. 2 : 1
  - ☐ 4. 1 : 1

**Q.17** Which of the following options should come in place of the question mark (?) in the given series to make it logically complete?

HN18, KQ27, NT36, QW45, ?

- Ans**
- ☒ 1. TZ55
  - ☒ 2. TZ54
  - ☐ 3. SY54
  - ☐ 4. SY55

**Q.18** A spherical mirror, whose reflecting surface faces towards the centre of the sphere, is called a \_\_\_\_\_.

- Ans**
- ☒ 1. concave mirror
  - ☐ 2. plane mirror
  - ☐ 3. convex mirror
  - ☐ 4. plano-convex mirror

**Q.19** Express the speed of 36 km/h in m/s.

- Ans**
- ☐ 1. 78 m/s
  - ☒ 2. 10 m/s
  - ☐ 3. 60 m/s
  - ☐ 4. 11 m/s

**Q.20** Which of the following represents the molecular formula for carbon monoxide?

- Ans**
- ☒ 1. CO
  - ☐ 2. CO<sub>2</sub>
  - ☐ 3. CO<sub>3</sub>
  - ☐ 4. C<sub>2</sub>O

**Q.21** The wickets taken by a bowler in 10 cricket matches are 2, 6, 4, 5, 0, 2, 1, 3, 2, 3. The mode of the data is:

- Ans**
- ☒ 1. 2
  - ☐ 2. 3
  - ☐ 3. 1
  - ☐ 4. 0

**Q.22** Due to decrease in manpower, the production in a factory decreases by 25%. By what percentage should the working hours be increased to restore the original production?

- Ans**
- ☐ 1.  $43\frac{6}{7}\%$
  - ☐ 2. 50%
  - ☐ 3. 25%
  - ☒ 4.  $33\frac{1}{3}\%$

**Q.23** Which of the following is produced when carbon dioxide reacts with calcium hydroxide?

- Ans**
- ☐ 1. CaO + H<sub>2</sub>O
  - ☐ 2. CO + H<sub>2</sub>O
  - ☐ 3. H<sub>2</sub>CO<sub>3</sub> + H<sub>2</sub>O
  - ☒ 4. CaCO<sub>3</sub> + H<sub>2</sub>O

**Q.24** The sum of three consecutive multiples of 9 is 2457, find the smallest one.

- Ans**
- ☐ 1. 999
  - ☐ 2. 990
  - ☒ 3. 810
  - ☐ 4. 819

**Q.25** Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which pair does not belong to that group?

(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

- Ans**
- ☐ 1. WC – BF
  - ☐ 2. TZ – YC
  - ☐ 3. BH – GK
  - ☒ 4. AD – YW

**Q.26** 18 boys and 24 girls can complete a piece of work in 16 days. All of them started working together but after 12 working days, all girls and 6 boys stopped working. 12 boys completed the remaining work in 9 days. How many days will it take to complete the entire job if only 24 girls have to complete the job?

- Ans**
- ☐ 1. 40 days
  - ☒ 2. 48 days
  - ☐ 3. 24 days
  - ☐ 4. 32 days

**Q.27** If + means  $\div$ ,  $\div$  means  $\times$ ,  $\times$  means  $+$ , and  $+$  means  $-$ , then what will come in place of the question mark (?) in the following equation?

$$27 \div 66 \times 11 - 7 + 10 = ?$$

- Ans**
- ☒ 1. 59
  - ☐ 2. 60
  - ☐ 3. 58
  - ☐ 4. 56

**Q.28** A tank was filled with 300 ltr of water. During the day, 87 ltr 225 ml of water was used. How much water was left in the tank at the end of the day?

- Ans**
- ☒ 1. 212 ltr 775 ml
  - ☐ 2. 212 ltr 675 ml
  - ☐ 3. 212 ltr 875 ml
  - ☐ 4. 212 ltr 825 ml

**Q.29** Two numbers are respectively 20% and 25% more than a third number. What percentage of the second number is the first number?

- Ans**
- ☐ 1. 80%
  - ☐ 2. 125%
  - ☒ 3. 96%
  - ☐ 4. 85%



**Q.30** 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.)

(7, 28, 56)

(9, 36, 72)

- Ans**
- ☒ 1. (13, 50, 104)
  - ☒ 2. (13, 52, 104)
  - ☒ 3. (11, 52, 104)
  - ☒ 4. (13, 52, 94)

**Q.31** A dealer buys three varieties of apples at ₹50, ₹40 and ₹30 per kilogram respectively. He mixes them in the ratio 2 : 4 : 9 respectively, by weight, and sells them at a profit of 30%. At what approximate price (per kilogram) does he sell the mixed variety of apples?

- Ans**
- ☒ 1. ₹23.50
  - ☒ 2. ₹45.90
  - ☒ 3. ₹10.80
  - ☒ 4. ₹75.00

**Q.32** Cranial nerves arising from the brain and spinal nerves arising from the spinal cord together constitute the:

- Ans**
- ☒ 1. peripheral nervous system
  - ☒ 2. autonomic nervous system
  - ☒ 3. endocrine system
  - ☒ 4. central nervous system

**Q.33** Which one of the following options is correctly paired according to their mode of action?

- Ans**
- ☒ 1. Condom – Mechanical barrier
  - ☒ 2. Tubectomy – Chemical barrier
  - ☒ 3. Contraceptive pills – Uterine device
  - ☒ 4. Copper T – Hormonal imbalance

**Q.34** Where is glucose converted into pyruvate?

- Ans**
- ☒ 1. Ribosome
  - ☒ 2. Cytoplasm
  - ☒ 3. Golgi-complex
  - ☒ 4. Mitochondria

**Q.35** Who among the following is a Tamil Nadu bus conductor, known for planting 3 lakh saplings over 30 years, has won multiple awards for his eco-activism?

- Ans**
- ☒ 1. MS Swaminathan
  - ☒ 2. Vijay Kumar
  - ☒ 3. Sundar Pichai
  - ☒ 4. Marimuthu Yoganathan

**Q.36** Select the triad which follows the same pattern as that followed by the two triads given below. Both triads follow the same pattern.

HE-JG-LN

MJ-OL-QS

- Ans**
- ☐ 1. PM-RO-TU
  - ☒ 2. QN-SP-UW
  - ☐ 3. OL-QN-ST
  - ☐ 4. RO-TQ-VW

**Q.37** At what temperature does water transform into steam under normal atmospheric pressure?

- Ans**
- ☐ 1. 50°C (122°F)
  - ☒ 2. 100°C (212°F)
  - ☐ 3. 80°C (176°F)
  - ☐ 4. 0°C (32°F)

**Q.38** Which gas is primarily produced during the burning of coke?

- Ans**
- ☐ 1. Oxygen
  - ☐ 2. Sulphur dioxide
  - ☒ 3. Carbon dioxide
  - ☐ 4. Nitrogen dioxide

**Q.39** Seven boxes, A, B, E, F, L, M and P, are kept one over the other but not necessarily in the same order. Only A is kept above E. Only two boxes are kept between E and F. Only P is kept below M. B is not kept immediately above F. Which box is kept second above L?

- Ans**
- ☐ 1. A
  - ☒ 2. E
  - ☐ 3. B
  - ☐ 4. F

**Q.40** Project PARI is an initiative launched by which of the following organisations/Ministries to celebrate and enhance the public art scene in India?

- Ans**
- ☐ 1. Sahitya Akademi
  - ☐ 2. Lalit Kala Akademi
  - ☐ 3. Centre for Cultural Resources and Training (CCRT)
  - ☒ 4. Union Ministry of Culture

**Q.41** The displacement of a body is perpendicular to the direction in which the force is applied; the work done in this case will be:

- Ans**
- ☐ 1. Negative
  - ☐ 2. Infinite
  - ☐ 3. Positive
  - ☒ 4. Zero

Q.42 Burning of unsaturated compounds gives which of the following?

- Ans
- ☐ 1. Clean flame
  - ☐ 2. Green flame
  - ☒ 3. Yellow flame
  - ☐ 4. Red flame

Q.43 In surrogacy cases, the surrogate as well as the commissioning mother may be granted maternity leave of how many days, in case either or both of them are government servants, as per new rule passed by the Indian Government in June 2024?

- Ans
- ☐ 1. 45
  - ☐ 2. 30
  - ☒ 3. 180
  - ☐ 4. 90

Q.44 In a certain code language, 'PAIN' is coded as '9315' and 'LIFT' is coded as '4256'. What is the code for 'T' in the given code language?

- Ans
- ☒ 1. 5
  - ☐ 2. 2
  - ☐ 3. 4
  - ☐ 4. 1

Q.45 If a sum of money doubles itself in 10 years on compound interest, then in how many more years will it become 16 times of itself at the same rate of interest?

- Ans
- ☐ 1. 10
  - ☐ 2. 20
  - ☐ 3. 40
  - ☒ 4. 30

Q.46 If the volume of a cube is  $512 \text{ cm}^3$ , then the measure of the main diagonal of the cube will be:

- Ans
- ☐ 1.  $17\sqrt{3} \text{ cm}$
  - ☐ 2.  $14\sqrt{3} \text{ cm}$
  - ☐ 3.  $7\sqrt{3} \text{ cm}$
  - ☒ 4.  $8\sqrt{3} \text{ cm}$

Q.47 Find the area of a rhombus whose side is 25 cm and one of the diagonals is 30 cm?

- Ans
- ☐ 1. 360 sq cm
  - ☒ 2. 600 sq cm
  - ☐ 3. 225 sq cm
  - ☐ 4. 720 sq cm

Q.48 The ratio between the present ages of Amit and Amita is 7 : 5, respectively. The ratio between Amit's age 5 years ago and Amita's age 5 years hence is 1 : 1. What is the sum of the present age of Amit and Amita?

- Ans
- ☐ 1. 70 years
  - ☐ 2. 40 years
  - ☐ 3. 50 years
  - ☒ 4. 60 years



**Q.49** Match the hormones with their respective functions.

Hormones	Functions
1. Thyroxin	a. Control body's growth and development
2. Growth hormone	b. Male sex organ development
3. Testosterone	c. Controls the level of blood sugar in the body
4. Insulin	d. Controls the body's metabolism of fat, protein and carbohydrates.

- Ans**
- ☐ 1. 1-d, 2-b, 3-c, 4-a
  - ☐ 2. 1-b, 2-a, 3-d, 4-c
  - ☒ 3. 1-d, 2-a, 3-b, 4-c
  - ☐ 4. 1-a, 2-c, 3-b, 4-d

**Q.50** In September 2024, L&T Semiconductor Technologies (SiLT) signed an agreement with which of the following companies to co-develop advanced processors for edge devices, hybrid cloud systems and areas like mobility, industrial, energy and servers?

- Ans**
- ☐ 1. Dell
  - ☐ 2. Intel
  - ☐ 3. Nvidia
  - ☒ 4. IBM

**Q.51** A, B, E, F, P, Q and R are sitting around a circular table facing the centre. A sits fourth to the right of F. Only two people sit between A and Q. Only two people sit between R and Q. P sits to the immediate left of B. How many people sit between P and E when counted from the right of E?

- Ans**
- ☐ 1. Three
  - ☒ 2. Two
  - ☐ 3. One
  - ☐ 4. Four

**Q.52** How many seats did the Indian National Congress win in Rajasthan in Lok Sabha election 2024?

- Ans**
- ☒ 1. 8
  - ☐ 2. 14
  - ☐ 3. 25
  - ☐ 4. 1

**Q.53** Which of the options below represents the correct chemical formula of calcium hydroxide?

- Ans**
- ☒ 1.  $\text{Ca(OH)}_2$
  - ☐ 2.  $\text{Mg(OH)}_2$
  - ☐ 3. NaOH
  - ☐ 4. KOH

**Q.54** The pressure exerted on a body is  $10 \text{ Nm}^{-2}$ , if the area of the body is  $2 \text{ m}^2$ ; then the thrust acting on the body will be:

- Ans**
- ☐ 1. 2 N
  - ☐ 2. 5 N
  - ☐ 3. 10 N
  - ☒ 4. 20 N

**Q.55** Study the table given below and answer the question. The table shows the sale and profits of Company X.

Year	Sale (in cr)	Profits (in cr)
2019	20	2
2020	25	4
2021	30	6
2022	32	6.5
2023	34	7

What were the profits as a percentage of sale in 2021?

- Ans**
- ☐ 1. 10%
  - ☐ 2. 15%
  - ☐ 3. 25%
  - ☒ 4. 20%

**Q.56** What is the filtration unit of the kidney?

- Ans**
- ☐ 1. Seminiferous tubule
  - ☒ 2. Nephron
  - ☐ 3. Neuron
  - ☐ 4. Sperm

**Q.57** The ratio of copper and zinc in the brass is 13 : 7. How much zinc will there be in 100 kg of brass?

- Ans**
- ☒ 1. 35 kg
  - ☐ 2. 14 kg
  - ☐ 3. 42 kg
  - ☐ 4. 70 kg

**Q.58** Simplify the following expression:

$$\frac{\cos \theta}{1 - \sin \theta} + \frac{1 - \sin \theta}{\cos \theta}$$

- Ans**
- ☒ 1.  $2 \sec \theta$
  - ☐ 2.  $2 \cos \theta$
  - ☐ 3.  $2 \sin \theta$
  - ☐ 4.  $1 + 2 \sin \theta$

**Q.59** A can do a piece of work in 5 days. B can do it in 20 days. With the assistance of C, they completed the work in 2 days. C alone can do it in \_\_\_\_\_ days.

- Ans**
- ☐ 1. 3
  - ☒ 2. 4
  - ☐ 3. 5
  - ☐ 4. 6

**Q.60** Methane, on burning with oxygen, gives which of the following products?

- Ans**
- ☐ 1. Carbonic acid
  - ☐ 2. Carbon monoxide only
  - ☐ 3. Carbon monoxide and water
  - ☒ 4. Carbon dioxide and water

**Q.61** Which of the following statements about a colloidal solution is INCORRECT?

- Ans**
- ☒ 1. Components cannot be separated by the process of filtration.
  - ☒ 2. Colloidal solutions are a heterogeneous mixture.
  - ☒ 3. Milk is not a colloidal solution.
  - ☒ 4. Fog is an example of a colloidal solution.

**Q.62** Organisms whose cells lack a nuclear membrane are called \_\_\_\_\_.

- Ans**
- ☒ 1. cytoplasm
  - ☒ 2. chromatin
  - ☒ 3. eukaryotes
  - ☒ 4. prokaryotes

**Q.63** Asexual reproduction does NOT involve the formation of \_\_\_\_\_.

- Ans**
- ☒ 1. zygotes
  - ☒ 2. spores
  - ☒ 3. buds
  - ☒ 4. leaves

**Q.64** Which of the following symbols were used by Bohr to represent different electron orbits in his atomic model?

- Ans**
- ☒ 1. R, S T, U, V....
  - ☒ 2. A, B, C, D, E....
  - ☒ 3. K, L, M, N, O....
  - ☒ 4. W, X, Y, Z, A....

**Q.65** Read the given statements and conclusions carefully. You have to take the given statements to be true even if they seem to be at variance from commonly known facts and decide which conclusion(s) logically follow(s) from the given statements.

Statements:

All roses are lilies.

No lily is a marigold.

Conclusions:

(I) All lilies are roses.

(II) No rose is a marigold.

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

**Q.66** Who was appointed as the Head Coach of the Indian men's cricket team in July 2024?

- Ans**
- ☒ 1. MS Dhoni
  - ☒ 2. VVS Laxman
  - ☒ 3. Gautam Gambhir
  - ☒ 4. Rahul Dravid

**Q.67** If each vowel in the word DREAMS is changed to the letter following it in the English alphabetical order and each consonant is changed to the letter following it in the English alphabetical order and the set of letters thus arrived are then rearranged in English alphabetical order, then which of the following letters will be fourth from the right in the group of letters thus formed?

- Ans**
- ☒ 1. F
  - ☐ 2. N
  - ☐ 3. E
  - ☐ 4. S

**Q.68** Read the given statements and conclusions carefully. You have to take the given statements to be true even if they seem to be at variance from commonly known facts and decide which conclusion(s) logically follow(s) from the given statements.

Statements:

All watches are perfumes.

No watch is a tie.

Conclusions:

(I) All perfumes are watches.

(II) No perfume is a tie.

- 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.69** Refer to the given series and answer the question that follows (all numbers are single-digit numbers only, and all counting is to be done from left to right).

(Left) 7 2 5 5 2 1 9 2 4 1 2 2 6 9 5 5 5 3 8 5 5 3 1 1 6 3 3 (Right)

How many such even digits are there, each of which is immediately preceded by a perfect square and immediately followed by an even digit? (Note: 1 will be considered as a perfect square.)

- Ans**
- ☐ 1. 0
  - ☒ 2. 2
  - ☐ 3. 3
  - ☐ 4. 1

**Q.70** If a 4-digit number  $12z4$  is divisible by 4, then the greatest possible value of 'z' is:

- Ans**
- ☐ 1. 6
  - ☐ 2. 4
  - ☐ 3. 2
  - ☒ 4. 8

**Q.71** If  $AB = k + 3$ ,  $BC = 2k$  and  $AC = 4k - 5$ , then for what value of 'k' does B lie on AC?

- Ans**
- ☐ 1. 3
  - ☒ 2. 8
  - ☐ 3. 2
  - ☐ 4. 5

Q.72 Which of the following metals is most ductile?

- Ans
- ☐ 1. Lead
  - ☐ 2. Sodium
  - ☒ 3. Gold
  - ☐ 4. Lithium

Q.73 Where was the Ministry of Coal's first-ever coal gallery, an exhibition titled 'Black Diamond: Unveiling the Depths,' inaugurated in October 2024?

- Ans
- ☐ 1. Raipur
  - ☒ 2. New Delhi
  - ☐ 3. Dhanbad
  - ☐ 4. Ranchi

Q.74 Which of the following correctly represents the relationship between  $u$  (object distance),  $v$  (image distance) and  $f$  (focal length) of a spherical mirror?

- Ans
- ☐ 1.  $\frac{1}{v} - \frac{1}{u} = \frac{1}{2f}$
  - ☐ 2.  $\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$
  - ☒ 3.  $\frac{1}{v} + \frac{1}{u} = \frac{1}{f}$
  - ☐ 4.  $\frac{1}{v} + \frac{1}{u} = \frac{1}{2f}$

Q.75 If  $y^3 = 0.008$ , then the value of  $y^5$  is:

- Ans
- ☐ 1. 0.0032
  - ☐ 2. 0.000032
  - ☒ 3. 0.00032
  - ☐ 4. 0.032

Q.76 If a current of 1 A is flowing through a conductor for 10 secs, then the charge flowing through it (in coulombs) will be:

- Ans
- ☒ 1. 10
  - ☐ 2. 100
  - ☐ 3. 1
  - ☐ 4. 0.1

Q.77 If a stone is thrown up, the value of acceleration due to gravity ' $g$ ' will be taken as \_\_\_\_\_.

- Ans
- ☐ 1. zero
  - ☐ 2. infinite
  - ☐ 3. positive
  - ☒ 4. negative



**Q.78** Divit starts from point A and drives 4 km towards the East. He then takes two simultaneous right turns and drives 2 km and 4 km, respectively. He takes another right turn and drives 5 km. He then takes a left turn and drives 3 km. He takes a final left turn and drives 3 km to reach point B. How far (shortest distance) and towards which direction should he drive to reach Point A again? (All turns are 90 degrees turns only unless specified.)

- Ans**
- ☐ 1. 3 km north
  - ☐ 2. 3 km South
  - ☒ 3. 3 km East
  - ☐ 4. 3 km West

**Q.79** D, E, F, G, L, M and N are sitting around a circular table facing the centre. Only one person sits between F and G when counted from the right of F. Only one person sits between G and D when counted from right of G. Only one person sits between F and L when counted from left of F. Only two people sit between E and D when counted from left of D. Only one person sits between N and L when counted from right of N. Who sits to the immediate right and left of M, respectively?

- Ans**
- ☐ 1. N and E
  - ☐ 2. E and N
  - ☐ 3. D and E
  - ☒ 4. F and L

**Q.80** The effective resistance of the parallel combination of two resistors is always \_\_\_\_\_.

- Ans**
- ☐ 1. greater than the resistance of the individual resistors
  - ☐ 2. equal to the product of resistance of the individual resistors
  - ☐ 3. equal to the sum of the resistance of the resistors
  - ☒ 4. less than the resistance of the individual resistors

**Q.81** If  $a + b + c = 9$  and  $ab + bc + ca = 23$ , then  $a^2 + b^2 + c^2 = ?$

- Ans**
- ☐ 1. 127
  - ☒ 2. 35
  - ☐ 3. 25
  - ☐ 4. 58

**Q.82** Which of the following options is the same as Newton's second law of motion?

- Ans**
- ☐ 1. The rate of change of momentum of an object is independent of the applied unbalanced force.
  - ☐ 2. Applied force on a body is inversely proportional to the acceleration of the body.
  - ☒ 3. If an object is in motion, applied force is directly proportional to the acceleration.
  - ☐ 4. An object at rest will remain at rest when external force is not applied.

**Q.83** The ovule develops and gets converted into which of the following after fertilisation?

- Ans**
- ☐ 1. Fruit
  - ☒ 2. Seed
  - ☐ 3. Sepal
  - ☐ 4. Anther

**Q.84** An electric lamp, whose resistance is  $10\ \Omega$ , and a conductor of  $2\ \Omega$  resistance are connected to a  $24\ \text{V}$  battery in series. Then the current through the circuit will be \_\_\_\_\_.

- Ans**
- ☒ 1.  $2\ \text{A}$
  - ☐ 2.  $3\ \text{A}$
  - ☐ 3.  $1\ \text{A}$
  - ☐ 4.  $4\ \text{A}$

**Q.85** 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.)

$(6, 12, 48)$

$(8, 16, 64)$

- Ans**
- ☐ 1.  $(15, 30, 130)$
  - ☐ 2.  $(5, 30, 120)$
  - ☒ 3.  $(15, 30, 120)$
  - ☐ 4.  $(15, 40, 120)$

**Q.86** Which of the following shows Tyndall effect?

- Ans**
- ☐ 1. Solutions
  - ☒ 2. Colloids
  - ☐ 3. Gases
  - ☐ 4. Metals

**Q.87** The sum of the first five prime numbers is:

- Ans**
- ☐ 1.  $27$
  - ☒ 2.  $28$
  - ☐ 3.  $29$
  - ☐ 4.  $26$

**Q.88** Which of the following options should come in place of the question mark (?) in the given series to make it logically complete?

$19, 26, 33, 40, 47, ?$

- Ans**
- ☒ 1.  $54$
  - ☐ 2.  $52$
  - ☐ 3.  $51$
  - ☐ 4.  $53$

**Q.89** Which of the given statements is/are correct?

- a) There are two types of waste: biodegradable and non-biodegradable.
- b) We should collect dry waste and wet waste separately.

- Ans**
- ☐ 1. Only b)
  - ☒ 2. Both a) and b)
  - ☐ 3. Neither a) nor b)
  - ☐ 4. Only a)

**Q.90** Which of the following options should come in place of the question mark (?) in the given series based on the English alphabetical order?

GKF JNI MQL PTO ?

- Ans**
- ☒ 1. SWR
  - ☐ 2. WRS
  - ☐ 3. WSR
  - ☐ 4. SRW

**Q.91** Which part of the flower grows and ripens to form a fruit?

- Ans**
- ☐ 1. Pollen tube
  - ☐ 2. Petal
  - ☐ 3. Anther
  - ☒ 4. Ovary

**Q.92** The value of acceleration due to gravity 'g' is \_\_\_\_\_.

- Ans**
- ☒ 1. greater at the poles than at the equator
  - ☐ 2. greater at the equator than at the poles
  - ☐ 3. the same at the poles and equator
  - ☐ 4. negative at the equator and positive at the poles

**Q.93** Identify the process with the given description.

'The seed contains the future plant or embryo which develops into a seedling under appropriate conditions'.

- Ans**
- ☐ 1. Regeneration
  - ☒ 2. Germination
  - ☐ 3. Plantation
  - ☐ 4. Fermentation

**Q.94** Nine men went to a restaurant. Eight of them spent ₹3 each on their meals and the ninth spent ₹2 more than the average expenditure of all the nine. Determine the total money spent by them.

- Ans**
- ☒ 1. ₹29.25
  - ☐ 2. ₹30.25
  - ☐ 3. ₹32
  - ☐ 4. ₹35

**Q.95** Genes that control the characteristics of a trait are located on:

- Ans**
- ☐ 1. lysosome
  - ☐ 2. vacuoles
  - ☒ 3. chromosomes
  - ☐ 4. endoplasmic reticulum

**Q.96** Which team won the Khelo India Para Games 2023 held in New Delhi in December 2023?

- Ans**
- ☒ 1. Haryana
  - ☐ 2. Uttar Pradesh
  - ☐ 3. Gujarat
  - ☐ 4. Tamil Nadu

**Q.97** A negative sign in magnification of spherical mirrors indicates that the \_\_\_\_\_.

- Ans**
- ☒ 1. image is real
  - ☐ 2. image is virtual
  - ☐ 3. image is enlarged
  - ☐ 4. image is diminished

**Q.98** Which of the following has two ends: one which is hydrophilic and the other which is hydrophobic?

- Ans**
- ☐ 1. Perfume
  - ☒ 2. Soap
  - ☐ 3. Water
  - ☐ 4. Cream

**Q.99** Nutrition is provided to the embryo from the mother's blood with the help of the:

- Ans**
- ☐ 1. oviduct
  - ☒ 2. placenta
  - ☐ 3. ovary
  - ☐ 4. scrotum

**Q.100** Find the greatest number by which when the numbers 57, 95 and 211 are divided, it leaves the same remainder in each case.

- Ans**
- ☐ 1. 4
  - ☒ 2. 2
  - ☐ 3. 1
  - ☐ 4. 3