



# रेल भर्ती बोर्ड / RAILWAY RECRUITMENT BOARDS



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

Test Date	27/12/2024
Test Time	12:45 PM - 2:15 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** The ratio of the number of boys to that of the girls in a school is 9 : 7. If the number of girls in the school is 189, then the number of boys in that school will be:

- Ans**
- ☒ 1. 126
  - ☒ 2. 243
  - ☒ 3. 168
  - ☒ 4. 147

**Q.2** 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 tablets are screens.

All screens are gadgets.

Conclusions:

(I) Some gadgets are tablets.

(II) No gadgets are tablets.

- 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.3** In November 2024, which Indian Institutes of Technology (IIT) unveiled a Mechanical Knee Rehabilitation Device, which is a mechanical Completely Mechanical Passive (CPM) machine unlike traditional motorised CPM machines, eliminating the need for electricity, batteries and motors?

- Ans**
- ☒ 1. IIT Kanpur
  - ☒ 2. IIT Ropar
  - ☒ 3. IIT Delhi
  - ☒ 4. IIT Mandi

**Q.4** A convex mirror created a highly diminished, point-sized virtual image, then the position of the image is:

- Ans**
- ☒ 1. in front of the mirror at the centre of curvature C
  - ☒ 2. behind the mirror at the focus F
  - ☒ 3. behind the mirror at the centre of curvature C
  - ☒ 4. in front of the mirror at the focus F

**Q.5** Select the triad which follows the same pattern as that followed by the two triads given below. Both triads follow the same pattern.

SOLD - DLSO - SLOD

TEAR - RATE - TAER

- Ans**
- ☒ 1. VOID - DIVO - VIOD
  - ☒ 2. LANG - ANLG - ANGL
  - ☒ 3. SALE - ELSA - ALSE
  - ☒ 4. GROW - GORW - WORG

**Q.6** ROSP is related to WTXU in a certain way based on the English alphabetical order. In the same way, TQUR is related to YVZW. To which of the following options is OLPM related, following the same logic?

- Ans**
- ☒ 1. QTRU
  - ☒ 2. TQUR
  - ☒ 3. TQRU
  - ☒ 4. QTUR

**Q.7** Three numbers are in the ratio 1 : 2 : 5, and their LCM is 1600. The HCF of the numbers is:

- Ans**
- ☒ 1. 320
  - ☒ 2. 800
  - ☒ 3. 480
  - ☒ 4. 160

**Q.8** Plasma membrane is made up of \_\_\_\_\_.

- Ans**
- ☒ 1. Only lipids
  - ☒ 2. Only cellulose
  - ☒ 3. Both proteins and lipids
  - ☒ 4. Only proteins

**Q.9** 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. GC-FH
  - ☒ 2. JF-IL
  - ☒ 3. MI-LN
  - ☒ 4. EA-DF

**Q.10** The area of the square formed on the diagonal of a rectangle as its side is  $108\frac{1}{3}\%$  more than the area of the rectangle. If the perimeter of the rectangle is 28 units, find the difference between the sides of the rectangle?

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

**Q.11** A sum of money doubles itself on compound interest in 15 years. In what duration will it become 8 times of itself, considering annual compounding?

- Ans**
- ☐ 1. 30 years
  - ☐ 2. 40 years
  - ☐ 3. 60 years
  - ☒ 4. 45 years

**Q.12** Variation is useful for the survival of species over time. These variations occur due to errors in:

- Ans**
- ☐ 1. formation of red blood cells
  - ☒ 2. DNA copying
  - ☐ 3. differentiation of white blood cells
  - ☐ 4. formation of neurons

**Q.13** If 85% of a number is added to 24, then the result is the same number. 75% of the same number is:

- Ans**
- ☐ 1. 90
  - ☐ 2. 160
  - ☒ 3. 120
  - ☐ 4. 150

**Q.14** Given below is a statement followed by two possible reasons numbered I and II. Read the statement carefully and decide which of the two explain(s) the event/observation/information given in the statement.

Statement - Overweight and obesity are defined as abnormal or excessive fat accumulation that presents a risk to health.

Reasons:

I. Several factors can play a role in gaining and retaining excess weight. These include diet, lack of exercise, environmental factors, and genetics.

II. There are a number of scientifically proven ways you can keep the weight off, ranging from exercising, a proper diet to controlling stress.

- Ans**
- ☐ 1. Neither I nor II is a possible reason.
  - ☐ 2. Both I and II are possible reasons.
  - ☒ 3. Only I is a possible reason.
  - ☐ 4. Only II is a possible reason.

**Q.15** Which of the following is used in the oxidation of alcohol into carboxylic acid?

- Ans**
- ☐ 1. Palladium
  - ☐ 2. Zinc
  - ☒ 3. Alkaline potassium permanganate
  - ☐ 4. Nickel

**Q.16** The Union Budget 2024-25 introduced the Prime Minister's package, comprising how many schemes and initiatives, aimed at providing employment, skilling, and other opportunities to 4.1 crore youth over a five-year period?

- Ans**
- ☒ 1. Five
  - ☐ 2. Four
  - ☐ 3. Six
  - ☐ 4. Three

**Q.17** If the radius of a sphere is halved, then the new volume will become \_\_\_\_\_ the original volume.

- Ans**
- ☐ 1. 4 times
  - ☐ 2.  $\frac{1}{4}$  times
  - ☒ 3.  $\frac{1}{8}$  times
  - ☐ 4. 8 times

**Q.18** In the following number-pairs, the second number is obtained by applying certain mathematical operations to the first number. Which numbers should replace X and Y so that the pattern followed by the two numbers on the left side of :: is same as that on the right side of ::?

(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.)

X : 40 :: 18 : Y

- Ans**
- ☐ 1. X = 24, Y = 38
  - ☐ 2. X = 20, Y = 40
  - ☐ 3. X = 28, Y = 56
  - ☒ 4. X = 22, Y = 32

**Q.19** Amphibians have a \_\_\_\_\_ chambered heart.

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

**Q.20** Among the following which is NOT a homologous compound as compared to others?

- Ans**
- ☐ 1.  $\text{CH}_3\text{OH}$
  - ☐ 2.  $\text{C}_2\text{H}_5\text{OH}$
  - ☐ 3.  $\text{C}_3\text{H}_7\text{OH}$
  - ☒ 4.  $\text{C}_6\text{H}_5\text{OH}$

**Q.21** The twinkling of stars is due to \_\_\_\_\_.

- Ans**
- ☐ 1. the atmospheric reflection of light from the stars
  - ☒ 2. the atmospheric refraction of light from the star
  - ☐ 3. the interference of light from a star and moon
  - ☐ 4. the interference of light from different stars

**Q.22** 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 screens are mouse.

Some mouses are keyboards.

Conclusions:

(I) Some screens are keyboards.

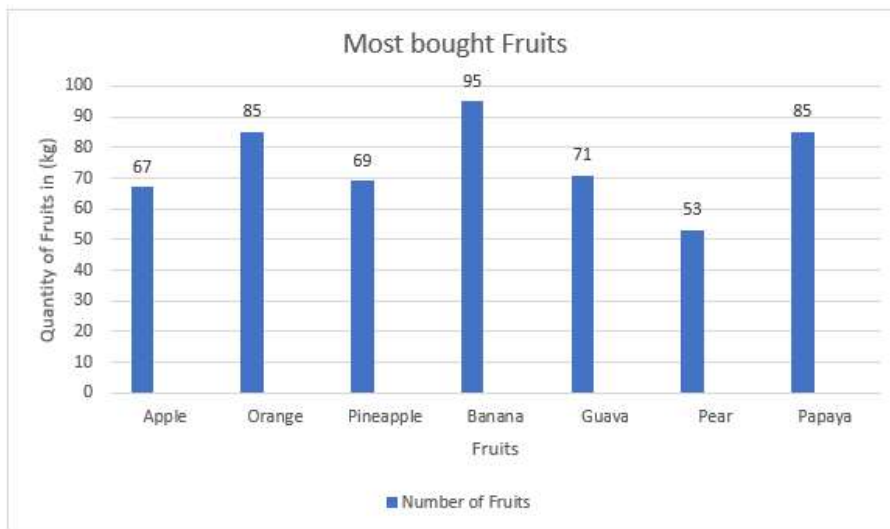
(II) No screen is a keyboard.

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

**Q.23** Which of the following represents voltage?

- Ans**
- ☐ 1. Work done  $\times$  Charge
  - ☐ 2. Work done  $\times$  Charge  $\times$  Time
  - ☐ 3.  $\frac{\text{Work done}}{\text{Current} \times \text{Charge}}$
  - ☒ 4.  $\frac{\text{Work done}}{\text{Current} \times \text{Time}}$

**Q.24** Study the following bar graph and answer the question below.



What is the average weight of fruits bought?

- Ans**
- ☐ 1. 57 kg
  - ☐ 2. 85 kg
  - ☒ 3. 75 kg
  - ☐ 4. 80 kg



**Q.25** Which of the following options should come in place of the question mark (?) in the given series to make it logically complete?

52, 34, 69, 56, 86, 78, 103, ?

- Ans**
- ☐ 1. 94
  - ☐ 2. 120
  - ☐ 3. 108
  - ☒ 4. 100

**Q.26** Which of the following is a unicellular ciliary organism?

- Ans**
- ☒ 1. Paramecium
  - ☐ 2. Ticks
  - ☐ 3. Leeches
  - ☐ 4. Amoeba

**Q.27** If the surface area is increased, the rate of evaporation is:

- Ans**
- ☐ 1. First increases then decreases
  - ☒ 2. increased
  - ☐ 3. constant
  - ☐ 4. decreased

**Q.28** The present age of a teacher is  $1\frac{1}{2}$  times the sum of the present ages of his two students. Six years hence, the ratio of his age to the sum of the ages of both the students will be 6 : 5. The present age of the teacher is:

- Ans**
- ☒ 1. 42 years
  - ☐ 2. 45 years
  - ☐ 3. 50 years
  - ☐ 4. 36 years

**Q.29** Which of the following is a saturated carbon compound?

- Ans**
- ☐ 1. Alkyne
  - ☐ 2. Ethylene
  - ☐ 3. Alkene
  - ☒ 4. Alkane

**Q.30** Which of the following pairs of the name reaction and its example is/are correctly matched?

- (a) Saponification: The reaction of ethanol with conc.  $\text{H}_2\text{SO}_4$  to form ethene.  
(b) Esterification: The reaction of ethanoic acid with ethanol in the presence of acid catalyst to form ester.  
(c) Dehydration: The reaction of esters with sodium hydroxide to form sodium salt of carboxylic acid.

- Ans**
- ☐ 1. (a), (b) and (c) are correct.
  - ☐ 2. Only (a) is correct.
  - ☒ 3. Only (b) is correct.
  - ☐ 4. Only (c) is correct.

**Q.31** In a row of 51 students, facing north, Tinu is 24<sup>th</sup> from the left end. If Shivangi is 11<sup>th</sup> to the right of Tinu, what is Shivangi's position from the right end of the row?

- Ans**
- ☐ 1. 18<sup>th</sup>
  - ☐ 2. 16<sup>th</sup>
  - ☐ 3. 15<sup>th</sup>
  - ☒ 4. 17<sup>th</sup>

**Q.32** The HCF and LCM of two numbers are 6 and 1824, respectively. If one number is 96, then the other number is:

- Ans**
- ☐ 1. 112
  - ☒ 2. 114
  - ☐ 3. 216
  - ☐ 4. 192

**Q.33** Copper is more reactive than which of the following elements?

- Ans**
- ☐ 1. Calcium
  - ☒ 2. Silver
  - ☐ 3. Potassium
  - ☐ 4. Sodium

**Q.34** The highest common factor of any two distinct prime numbers is:

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

**Q.35** Two trains of length 120 m and 280 m are running towards each other on parallel lines at 42 km/h and 30 km/h, respectively. In how much time will they be clear of each other from the moment they meet?

- Ans**
- ☐ 1. 21 sec
  - ☐ 2. 25 sec
  - ☒ 3. 20 sec
  - ☐ 4. 10 sec

**Q.36** If the area of an equilateral triangle is  $25\sqrt{3}$  sq cm, then perimeter of the triangle is:

- Ans**
- ☐ 1. 10 cm
  - ☐ 2. 12 cm
  - ☒ 3. 30 cm
  - ☐ 4. 24 cm

**Q.37** Biodegradable material are broken down into simpler material by the action of which of the following?

- Ans**
- ☐ 1. Sunlight
  - ☐ 2. Virus
  - ☒ 3. Bacteria
  - ☐ 4. Wind

Q.38

In a certain code language,

'P + Q' means 'P is the son of Q',

'P – Q' means 'P is the husband of Q',

'P x Q' means 'P is the daughter of Q' and

'P ÷ Q' means 'P is the wife of Q'.

How is A related to E if 'A + B – C x D ÷ E'?

Ans

☐ 1. Son

☐ 2. Brother

☒ 3. Daughter's son

☐ 4. Son's son

Q.39

In the following number-pairs, the second number is obtained by applying certain mathematical operations to the first number. 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.)

16, 53

21, 68

Ans

☐ 1. 25, 70

☐ 2. 28, 84

☒ 3. 19, 62

☐ 4. 12, 31

Q.40

The sum of all the prime numbers between 51 and 100 is:

Ans

☐ 1. 724

☒ 2. 732

☐ 3. 683

☐ 4. 687

Q.41

Which of the following Indian languages were given the status of classical languages of India in October 2024?

Ans

☐ 1. Malayalam, Odia, Prakrit, Assamese and Bengali

☐ 2. Marathi, Odia, Prakrit, Assamese and Bengali

☒ 3. Marathi, Pali, Prakrit, Assamese and Bengali

☐ 4. Marathi, Malayalam, Prakrit, Assamese and Bengali

Q.42

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

Ans

☒ 1. 3

☐ 2. 0

☐ 3. 1

☐ 4. 2

Q.43

Ram applied the brakes to his cycle and an acceleration of  $2 \text{ m s}^{-2}$  is produced in the opposite direction to the motion. If the cycle takes 10 s to stop after the application of brakes, calculate the distance it travels during this time.

Ans

☐ 1. 50 m

☐ 2. 150 m

☐ 3. 200 m

☒ 4. 100 m



**Q.44** In males, if the \_\_\_\_\_ is surgically cut, sperm transfer will be prevented.

- Ans**
- ☐ 1. prostate gland
  - ☐ 2. fallopian tube
  - ☒ 3. vas deferens
  - ☐ 4. seminal vesicle

**Q.45** A man has invested ₹75,000 at a rate of  $7\frac{1}{2}\%$  per annum simple interest for 6 years. Find the amount that he will receive after 6 years.

- Ans**
- ☒ 1. ₹1,08,750
  - ☐ 2. ₹75,000
  - ☐ 3. ₹69,600
  - ☐ 4. ₹1,12,500

**Q.46** There are two sections A and B of a class, consisting of 36 and 44 students, respectively. If the average weight of students of section A is 40 kg and that of section B is 35 kg, find the average weight of the whole class.

- Ans**
- ☐ 1. 36.75 kg
  - ☐ 2. 37.75 kg
  - ☐ 3. 36.25 kg
  - ☒ 4. 37.25 kg

**Q.47** If 'A' stands for '+', 'B' stands for '×', 'C' stands for '÷' and 'D' stands for '−', what will come in place of the question mark '?' in the following equation?

$$44 \text{ A } 4 \text{ C } 12 \text{ B } 2 \text{ D } 1 = ?$$

- Ans**
- ☐ 1. 32
  - ☐ 2. 33
  - ☐ 3. 31
  - ☒ 4. 34

**Q.48** What will come in the place of '?' in the following equation, if '+' and '×' are interchanged?

$$13 + 11 \div 32 \times 4 - 10 = ?$$

- Ans**
- ☐ 1. 94
  - ☐ 2. 85
  - ☐ 3. 90
  - ☒ 4. 91

**Q.49** Suresh spends 30% of his income on petrol,  $\frac{1}{4}$  of the remaining income on house rent, and the balance on food. If he spends ₹300 on petrol, then what is his expenditure on house rent?

- Ans**
- ☐ 1. ₹675
  - ☒ 2. ₹175
  - ☐ 3. ₹525
  - ☐ 4. ₹1,000

**Q.50** Which of the following options should come in place of the question mark (?) in the given series based on the English alphabetical order?

NPR, MOQ, LNP, KMO, ?

- Ans**
- ☐ 1. NJL
  - ☐ 2. JNL
  - ☒ 3. JLN
  - ☐ 4. NLJ

**Q.51** The most scattered colour of the sun light when it enters the earth's atmosphere is \_\_\_\_\_.

- Ans**
- ☒ 1. blue
  - ☐ 2. red
  - ☐ 3. pink
  - ☐ 4. green

**Q.52** D, E, F, G, L, M and N are sitting around a circular table facing the centre. N sits third to the left of M. L sits second to the left of G. M is an immediate neighbour of both E and L. D is not an immediate neighbour of N. How many people sit between F and L when counted from the right of F?

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

**Q.53** Refer to the given number and symbol series and answer the question that follows. Counting to be done from left to right only.

(Left) 3 Ω 2 \* £ 1 + & & % 4 6 @ 8 S 7 5 9 # 1 @ 5 (Right)

If all the symbols are dropped from the series, which of the following will be seventh from the left?

- Ans**
- ☐ 1. 6
  - ☐ 2. 4
  - ☐ 3. 8
  - ☒ 4. 7

**Q.54** 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. TQ – OG
  - ☐ 2. ZW – UM
  - ☒ 3. GK – PW
  - ☐ 4. BY – WO

**Q.55** Which of the following states of matter is/are highly compressible?

- Ans**
- ☐ 1. Both solid state and liquid state
  - ☐ 2. The solid state
  - ☒ 3. The gaseous state
  - ☐ 4. The liquid state

**Q.56** Which of the following statements is/are correct related to respiration?

- (i) Pyruvate is converted into ethanol and carbon dioxide in yeast during fermentation.
- (ii) The break-down of pyruvate using oxygen takes place in chloroplast.
- (iii) In muscle cells, pyruvate is converted into lactic acid.

**Ans** ☒ 1. (i), (ii) and (iii)

☒ 2. Only (i)

☒ 3. Only (i) and (iii)

☒ 4. Only (i) and (ii)

**Q.57** Which state's Governor launched the book titled 'Sri Rama in Tamilagam – An Inseparable Bond' in September 2024?

**Ans** ☒ 1. Karnataka

☒ 2. Tamil Nadu

☒ 3. Telangana

☒ 4. Kerala

**Q.58** Complete the given statement by selecting the correct option.

Isobars have different atomic numbers but the \_\_\_\_\_.

**Ans** ☒ 1. same number of electrons

☒ 2. same atomic mass

☒ 3. same number of protons

☒ 4. different atomic mass

**Q.59** Which of the following was a significant outcome of the informal meeting between Xi Jinping and Narendra Modi at the 2023 BRICS summit?

**Ans** ☒ 1. Agreement on joint military patrols

☒ 2. A decision to increase trade between the two countries

☒ 3. A commitment to de-escalate tensions along the contested border

☒ 4. A pledge to resolve territorial disputes through war

**Q.60** If each vowel in the word SHOWING is changed to the letter immediately preceding it in the English alphabetical order and each consonant is changed to the letter immediately following it in the English alphabetical order, then how many letters in the original word will also appear in the group of letters thus formed?

**Ans** ☒ 1. 2

☒ 2. 1

☒ 3. 4

☒ 4. 3

**Q.61** Rahul can do a piece of work in 20 days whereas Rohan can do the same work in 30 days. Both started the work together and worked for 6 days with full efficiency, and in the next 6 days with half of their efficiencies. In how many days will the remaining work be finished if both work with their full efficiencies for the remaining period?

**Ans** ☒ 1. 7 days

☒ 2. 5 days

☒ 3. 10 days

☒ 4. 3 days

Q.62 Simplify the following expression:

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

- Ans
- ☐ 1.  $2 \cos \theta$
  - ☒ 2.  $2 \operatorname{cosec} \theta$
  - ☐ 3.  $2 \sec \theta$
  - ☐ 4.  $2 \sin \theta$

Q.63 What is the unit of universal gravitational constant (G)?

- Ans
- ☐ 1.  $\text{N m}^2 \text{ kg}^{-1}$
  - ☒ 2.  $\text{N m}^2 \text{ kg}^{-2}$
  - ☐ 3.  $\text{N m}^2$
  - ☐ 4.  $\text{N m}^2 \text{ kg}$

Q.64 Where was the first leg of the 2024 Khelo India Winter Games held?

- Ans
- ☐ 1. Himachal Pradesh
  - ☒ 2. Ladakh
  - ☐ 3. Uttarakhand
  - ☐ 4. Jammu and Kashmir

Q.65 Bihar state has what percentage of poor population of the country as per Economic Survey of India 2023-24?

- Ans
- ☐ 1. Between 11% and 15%
  - ☐ 2. Between 26% and 30%
  - ☐ 3. Between 5% and 10%
  - ☒ 4. Between 16% and 25%

Q.66 The apparent position of a star keeps on changing slightly because:

- Ans
- ☐ 1. Stars are very close to the surface of the earth.
  - ☐ 2. Different layers of the atmosphere are of same density
  - ☒ 3. Different layers of the atmosphere have different density
  - ☐ 4. Star doesn't have its own light

Q.67 Seven people, A, B, E, F, P, Q and R are sitting in a row, facing north. Only B sits to the left of A. Only four people sit between B and Q. Only E sits between R and P and R is not an immediate neighbour of Q. Who sits at the extreme right of the row?

- Ans
- ☐ 1. R
  - ☐ 2. P
  - ☐ 3. E
  - ☒ 4. F

**Q.68** A pipe can fill a tank in 8 hours. Another pipe can empty the filled tank in 72 hours. If both the pipes are opened simultaneously, then the time (in hours) in which the tank will be one-third filled, is:

- Ans**
- ☐ 1. 6
  - ☐ 2. 9
  - ☐ 3. 12
  - ☒ 4. 3

**Q.69** In a certain code language, 'POKED' is coded as '85263' and 'TOKED' is coded as '36584'. What is the code for 'T' in the given code language?

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

**Q.70** Which of the following options should come in place of the question mark (?) in the given series based on the English alphabetical order?

PRT, QSU, RTV, SUW, ?

- Ans**
- ☐ 1. VXT
  - ☐ 2. VTX
  - ☐ 3. TXV
  - ☒ 4. TVX

**Q.71** Spinal cord is made up of which tissue?

- Ans**
- ☒ 1. Nervous tissue
  - ☐ 2. Connective tissue
  - ☐ 3. Epithelial tissue
  - ☐ 4. Muscular tissue

**Q.72** Which of the following statements is/are correct?

1. Some metals can be beaten into thin sheets. This property is called malleability.
2. Metals can be drawn into thin wires.
3. Metals are good conductors of heat.

- Ans**
- ☐ 1. Only 1
  - ☐ 2. Only 1 and 2
  - ☒ 3. 1, 2 and 3
  - ☐ 4. Only 1 and 3

**Q.73** The planets go around the sun due to \_\_\_\_\_ force.

- Ans**
- ☐ 1. Magnetic
  - ☐ 2. Frictional
  - ☐ 3. Electrical
  - ☒ 4. Gravitational



**Q.74** Which institute hosted International Chess Federation (FIDE)-rated Rapid Chess Tournament in March 2024?

- Ans**
- ☒ 1. IIT Madaras
  - ☐ 2. IIT Hyderabad
  - ☐ 3. IIT Bombay
  - ☐ 4. IIT Delhi

**Q.75** Gaurav starts from point A and drives 3 km South. He then takes a left turn and drives 2 km. He takes another left turn and drives 2 km. He then takes a right turn and drives 3 km. He takes a final left turn and drives 1 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 West
  - ☐ 2. 4 km South
  - ☐ 3. 2 km South
  - ☒ 4. 5 km West

**Q.76** What did Rutherford's gold foil experiment conclude about the structure of an atom?

- Ans**
- ☐ 1. Atoms are composed of protons, neutrons, and electrons in a random arrangement.
  - ☐ 2. Atoms have a uniform positive charge spread throughout their volume.
  - ☒ 3. Atoms consist of a positively charged nucleus and negatively charged electrons.
  - ☐ 4. Atoms are indivisible and are solid spheres.

**Q.77** If the magnetic field due to a single turn circular coil is B. Then the value of magnetic field due a circular coil with 10 turns will be:  
(Other parameters are to be kept same)

- Ans**
- ☒ 1. 10B
  - ☐ 2. 5B
  - ☐ 3. 100B
  - ☐ 4. B

**Q.78** In a certain code language, 'REST' is coded as '4529' and 'HERS' is coded as '5279'. What is the code for 'H' in the given code language?

- Ans**
- ☒ 1. 7
  - ☐ 2. 2
  - ☐ 3. 5
  - ☐ 4. 9

**Q.79** By selling an article for ₹19.50, a dealer makes a profit of 30%. By how much should he increase his selling price so as to make a profit of 40%?

- Ans**
- ☐ 1. ₹3
  - ☐ 2. ₹1.75
  - ☐ 3. ₹2
  - ☒ 4. ₹1.50

**Q.80** If  $x + y = 20$  and  $xy = 84$ , find the value of  $x^2 + y^2$ .

- Ans**
- ☐ 1. 264
  - ☐ 2. 212
  - ☒ 3. 232
  - ☐ 4. 244

Q.81 Which of the following statements is/are correct?

**Statements:**

I) A current carrying coil produces magnetic field.

II) A current carrying solenoid behaves like a bar magnet.

Ans ☐ 1. Neither Statement I nor II

☐ 2. Statement I only

☐ 3. Statement II only

☒ 4. Both Statements I and II

Q.82 If  $1.6 : 0.6 :: 0.6 : x$ , find the value of x.

Ans ☐ 1. 0.275

☒ 2. 0.225

☐ 3. 0.25

☐ 4. 0.98

Q.83 The male organ, the penis, helps in transfer of:

Ans ☒ 1. sperms

☐ 2. zygotes

☐ 3. eggs

☐ 4. polar bodies

Q.84 Which of the following is a property of isomers in organic chemistry?

Ans ☐ 1. They have different molecular formulas but the same structural arrangement.

☐ 2. They have no carbon atoms in their structure.

☒ 3. They have the same molecular formula but different structural arrangements.

☐ 4. They have the same molecular formula and the same structural arrangement.

Q.85 The sum of the present ages of Sarala and Kishore is 26 years. If 3 years ago, Kishore was  $\frac{3}{2}$  times as old as Sarala, then the present age of Sarala is:

Ans ☐ 1. 10 years

☐ 2. 9 years

☐ 3. 12 years

☒ 4. 11 years

Q.86 If the magnification of any mirror is +2.3, which type of mirror is it?

Ans ☐ 1. Convex mirror

☐ 2. Plane mirror

☒ 3. Concave mirror

☐ 4. Planoconvex mirror

Q.87 Which of the following glands secretes trypsin enzyme?

- Ans
- ☐ 1. Gastric gland
  - ☐ 2. Salivary gland
  - ☒ 3. Pancreas
  - ☐ 4. Liver

Q.88 Which of the following statements is/are NOT correct?

- (i) Resistance of a conductor is independent of temperature.
- (ii) The more the voltage across a resistor, the more is the current flowing through it.
- (iii) The S.I unit of resistance is ohm.

- Ans
- ☐ 1. Both (ii) and (iii)
  - ☒ 2. Only (i)
  - ☐ 3. Only (ii)
  - ☐ 4. Both (i) and (ii)

Q.89 Conventionally, the germ-cell containing the stored food is called the:

- Ans
- ☐ 1. immature egg
  - ☒ 2. female gamete
  - ☐ 3. motile gamete
  - ☐ 4. male gamete

Q.90 The value of M, satisfying  $2^3 \times 3^3 \times 6^3 = 6^M$  is:

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

Q.91 Out of the following, which is a unit used for measuring the amount of work done on a body:

- Ans
- ☐ 1. Newton
  - ☐ 2. Meter
  - ☒ 3. Joule
  - ☐ 4. Kilogram

Q.92 The Chlor-alkali process is used for the formation of which of the following?

- Ans
- ☐ 1. Sodium carbonate
  - ☐ 2. Sodium chloride
  - ☒ 3. Sodium hydroxide
  - ☐ 4. Sodium bicarbonate

**Q.93** The position(s) of how many letters will remain unchanged if each of the letters in the word DRAWING is arranged in the English alphabetical order ?

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

**Q.94** Which of the following scientists made the following statement?  
“All cells arise from preexisting cells.”

- Ans**
- ☒ 1. Rudolf Virchow
  - ☐ 2. Robert Brown
  - ☐ 3. Purkinje
  - ☐ 4. Robert Hooke

**Q.95** Which of the following cell organelles have their own DNA and ribosomes?

- Ans**
- ☐ 1. Golgi apparatus
  - ☐ 2. Lysosomes
  - ☐ 3. Endoplasmic reticulum
  - ☒ 4. Mitochondria

**Q.96** What is the key objective of the Swachh Diwali Shubh Diwali campaign 2024?

- Ans**
- ☐ 1. Celebrating Diwali with maximum decorations
  - ☒ 2. Promoting cleanliness and sustainability during Diwali
  - ☐ 3. Increasing urban industrialisation
  - ☐ 4. Enhancing rural electrification

**Q.97** Match the UNESCO World Heritage Sites of India (declared between 2021 and 2024) in List I with their location states in List II and select the correct answer.


List I (UNESCO World Heritage Sites) List II (States)  
(1) Kakatiya Rudreshwara (Ramappa) Temple (A) Telangana  
(2) Santiniketan, India (B) West Bengal  
(3) Sacred Ensemble of Hoysalas (C) Karnataka  
(4) Charaideo Moidam (D) Assam


- Ans**
- ☐ 1. 1 - A, 2 - C, 3 - B, 4 - D
  - ☐ 2. 1 - D, 2 - B, 3 - C, 4 - A
  - ☒ 3. 1 - A, 2 - B, 3 - C, 4 - D
  - ☐ 4. 1 - D, 2 - C, 3 - B, 4 - A


**Q.98** The marked price of an item was ₹2,000, but the shopkeeper offered successive discounts of 20% and 15% on its sale. How much did he finally sell the item for?


- Ans**
- ☒ 1. ₹1,360
  - ☐ 2. ₹1,380
  - ☐ 3. ₹1,260
  - ☐ 4. ₹1,280

Q.99 Identify the nature of the functional group present in butanal.


Ans  1. Aldehydes

 2. Alcohol


 3. Alkene


 4. Ketone

Q.100 Where does the oxygen-rich blood from the lungs come into the heart?

Ans  1. the pulmonary arteries

 2. the left ventricle

 3. the pulmonary veins

 4. the left atrium