



सत्यमेव जयते

# रेल भर्ती बोर्ड / RAILWAY RECRUITMENT BOARDS

## CEN 01/2024 - ALP / सहायक लोको पायलट



|           |                    |
|-----------|--------------------|
| Test Date | 28/11/2024         |
| Test Time | 9:00 AM - 10:00 AM |
| Subject   | ALP Stage 1        |

## \* 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 ALP

Q.1 The area of the largest triangle that can be inscribed in a semi-circle of radius 6 cm is:

- Ans
- 1.  $36 \text{ cm}^2$
  - 2.  $72 \text{ cm}^2$
  - 3.  $38 \text{ cm}^2$
  - 4.  $76 \text{ cm}^2$

Q.2 Which of the following options should come in place of the question mark (?) in the given series based on the English alphabetical order?

RJZ, PMW, NPT, LSQ, ?

- Ans
- 1. IVN
  - 2. JVN
  - 3. JUN
  - 4. IVM

Q.3 A sum of money, on compound interest, amounts to ₹578.40 in 2 years and to ₹614.55 in 3 years. The rate of interest per annum, in case of annual compounding, is:

- Ans
- 1.  $8\frac{1}{3}\%$
  - 2.  $6\frac{1}{4}\%$
  - 3.  $4\%$
  - 4.  $5\%$

Q.4 The problem of myopia in human eye can be corrected by using:

- Ans
- 1. a biconvex lens of suitable power
  - 2. a plain glass plate
  - 3. a concave lens of suitable power
  - 4. a convex lens of suitable power

Q.5 Anju ranked 18<sup>th</sup> from the bottom and 15<sup>th</sup> from the top in his class. How many students are there in his class?

- Ans
- 1. 32
  - 2. 33
  - 3. 31
  - 4. 21

Q.6 The distance between the pole and focus of a spherical mirror, in terms of its radius of curvature R, is equal to:

- Ans
- 1. R/2
  - 2. R/4
  - 3. 2R
  - 4. R

Q.7 On 26 June 2024, the Defence Research and Development Organisation (DRDO) handed over which of the following to the Indian Navy?

- Ans
- 1. Long Range Surface-to-Air Missile
  - 2. Advanced Torpedo
  - 3. Anti-Submarine Warfare Helicopter
  - 4. Medium Range-Microwave Obscurant Chaff Rocket (MR-MOCR)

Q.8 Which of the following solutions is identified by smell?

- Ans
- 1. Sugar in water
  - 2. Salt in water
  - 3. Potassium permanganate in water
  - 4. Dettol in water

Q.9 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 the 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 : 23 :: 476 : Y

- Ans
- 1. X = 322, Y = 34
  - 2. X = 368, Y = 27
  - 3. X = 346, Y = 29
  - 4. X = 314, Y = 21

Q.10 What is the least positive number that can be added to 2488 so that it is completely divisible by 3, 4, 5 and 6?

- Ans
- 1. 34
  - 2. 28
  - 3. 32
  - 4. 42

Q.11 Which of the following teams was the winner of the 17<sup>th</sup> Edition of Indian Premier league in 2024?

- Ans
- 1. Kolkata Knightriders
  - 2. Mumbai Indians
  - 3. Delhi Capitals
  - 4. Gujarat Titans

Q.12 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?

$$121 \text{ C } 21 \text{ D } 11 \text{ A } 11 \text{ B } 121 = ?$$

- Ans
- 1. 11
  - 2. 31
  - 3. 21
  - 4. 41

Q.13 What will come in the place of '?' in the following equation, if '+' and '−' are interchanged and '×' and '÷' are interchanged?

$$8 \times 2 + 3 - 2 \div 6 = ?$$

- Ans
- 1. 14
  - 2. 11
  - 3. 12
  - 4. 13

Q.14 If the perimeters of two similar triangles ABC and DEF are 75 cm and 40 cm respectively, and if  $\overline{BC}$  is 15 cm, then the length of  $\overline{EF}$  is:

- Ans
- 1. 6 cm
  - 2. 10 cm
  - 3. 12 cm
  - 4. 8 cm

Q.15 Which of the following formulas is used to calculate the volume by volume percentage of a solution?

- Ans
- 1.  $\frac{\text{Mass of solute}}{\text{Volume of solution}} \times 100$
  - 2.  $\frac{\text{Mass of solute}}{\text{Mass of solution}} \times 100$
  - 3.  $\frac{\text{Volume of solute}}{\text{Volume of solution}} \times 100$
  - 4.  $\frac{\text{Volume of solution}}{\text{Mass of solute}} \times 100$

- Q.16** A ball of mass 0.5 kg is thrown vertically upwards and rises to a height of 20 m. The initial velocity of the ball is:  
(Consider  $g = 10 \text{ m/s}^2$ )
- Ans**  1. 20 m/s  
 2. 15 m/s  
 3. 25 m/s  
 4. 10 m/s

- Q.17** HD Kumaraswamy, who won from Mandya parliamentary seat in Karnataka in 2024 general elections and became Minister of Heavy Industries, belongs to which political party?
- Ans**  1. Bhartiya Janata Party  
 2. Janata Dal (S)  
 3. Communist Party of India  
 4. BSR Congress

- Q.18** In an election between two candidates, one got 55% of the total valid votes and 20% of the votes were invalid. If the total number of votes was 7500, then the winner won the election by a majority of \_\_\_\_\_ votes.
- Ans**  1. 750  
 2. 800  
 3. 600  
 4. 700

- Q.19** Which of the following is a cup-shaped part of nephron with which each capillary cluster in the kidney is associated?
- Ans**  1. Proximal convoluted tubule  
 2. Bowman's capsule  
 3. Distal convoluted tubule  
 4. Glomerulus

- Q.20** In an election, only two candidates contested. One candidate secured 70% of the valid votes and won by a majority of 172 votes. The total number of valid votes was:
- Ans**  1. 570  
 2. 560  
 3. 430  
 4. 480

- Q.21** The \_\_\_\_\_ moves water and minerals obtained from the soil while \_\_\_\_\_ transports products of photosynthesis from the leaves where they are synthesised to other parts of the plant.
- Ans**  1. collenchyma, parenchyma  
 2. phloem, xylem  
 3. parenchyma, collenchyma  
 4. xylem, phloem

**Q.22** Seven people, A, B, C, D, E, F and G are sitting in a row, facing north. E sits third from the left end. Only three people sit between G and E. B is the immediate neighbour of C and F. D sits second to the left of C.

How many people sit between A and F?

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

**Q.23** Which of the following carbon compounds is classified as an alcohol?

- Ans**
- 1. Propanal
  - 2. Propanol
  - 3. Propanoic
  - 4. Propanone

**Q.24** Refer to the following number and symbol series and answer the question that follows. Counting to be done from left to right only.

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

How many such numbers are there, each of which is immediately preceded by a number and also immediately followed by a symbol?

- Ans**
- 1. Two
  - 2. More than two
  - 3. Zero
  - 4. One

**Q.25** What happens when acid is mixed with water?

- Ans**
- 1. It will increase the concentration of hydronium ions per unit volume.
  - 2. It will increase the concentration of hydroxyl ions per unit volume.
  - 3. There will be no effect on the concentration of ions.
  - 4. It will decrease the concentration of hydronium ions per unit volume.

**Q.26** FKUZ is related to CORD in a certain way based on the English alphabetical order. In the same way, QJKH is related to NNHL. To which of the following options is JIBP related, following the same logic?

- Ans**
- 1. HOZS
  - 2. HMZU
  - 3. GMYT
  - 4. FNAT

**Q.27** What repo rate was declared by the Reserve Bank of India's Monetary Policy Committee (MPC) on 9<sup>th</sup> October 2024?

- Ans**
- 1. 6.25%
  - 2. 6.10%
  - 3. 6.75%
  - 4. 6.50%

Q.28 If  $\cos^4\theta - \sin^4\theta = k$ , then the value of  $\frac{1-k}{1+k}$  is:

- Ans
- 1.  $\tan^2\theta$
  - 2.  $\sin^2\theta$
  - 3.  $\cot^2\theta$
  - 4.  $\operatorname{cosec}^2\theta$

Q.29 DIJH is related to KPQO in a certain way based on the English alphabetical order. In the same way, MRSQ is related to TYZX. To which of the following options is BGHF related, following the same logic?

- Ans
- 1. IMQN
  - 2. INOM
  - 3. JMON
  - 4. JNQM

Q.30 In this question, two statements, I and II, have been given. These statements maybe independent causes, or effects of independent causes or a common cause. One of the statements maybe the effect of the other statement. Read both the statements and select the correct answer.

I. Government authorities of city X are finding different solutions to reduce air pollution in the city during winter.

II. City X has seen an acute rise in asthma cases during the last winter.

- Ans
- 1. Both I and II are independent causes.
  - 2. Both I and II are effects of independent causes.
  - 3. I is the cause and II is its possible effect.
  - 4. II is the cause and I is its possible effect.

Q.31 The kinetic energy possessed by a body of mass 2 kg is 100 J. The velocity of the body will be:

- Ans
- 1. 10 m/s
  - 2. 0 m/s
  - 3. 50 m/s
  - 4. 20 m/s

Q.32 A man sells 320 mangoes at the cost price of 400 mangoes (Cost price of all the articles is same. Selling price of all the articles is same). His gain percentage is:

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

Q.33 Select the process responsible for stability of populations of species.

- Ans
- 1. Reproduction
  - 2. Mutation
  - 3. Evolution
  - 4. Variation

Q.34 The value of  $(0.04)^{-1.5}$  is:

- Ans
- 1. 25
  - 2. 250
  - 3. 625
  - 4. 125

Q.35 Which of the following conditions is required to have the value of displacement of an object zero?

- Ans
- 1. When the initial and final position of the object is the same.
  - 2. When distance travelled is equal to the displacement of the object.
  - 3. When distance travelled is less than the displacement of the object.
  - 4. When distance travelled is greater than the displacement of the object.

Q.36 In 2024, which program organised youth exchange visits across states, focusing on the '5 Ps', namely Paryatan (Tourism), Parampara (Traditions), Pragati (Development), Paraspar Sampark (People-to-people connect) and Prodyogiki (Technology)?

- Ans
- 1. Bharat Parv
  - 2. Yuva Sangam
  - 3. India Unites
  - 4. National Youth Exchange

Q.37 On which date did India and the USA sign their first-ever Cultural Property Agreement (CPA)?

- Ans
- 1. 20 June 2024
  - 2. 10 August 2024
  - 3. 26 July 2024
  - 4. 15 May 2024

Q.38 The sum of five consecutive even numbers is 3720. The sum of the third largest and the largest even numbers among them is:

- Ans
- 1. 1392
  - 2. 1488
  - 3. 1492
  - 4. 1388

Q.39 When  $0.292929.....$  is converted into a fraction, then the result is:

- Ans
- 1.  $\frac{1}{5}$
  - 2.  $\frac{29}{99}$
  - 3.  $\frac{2}{9}$
  - 4.  $\frac{29}{100}$

Q.40 The volume of a cylinder is  $5500 \text{ m}^3$ . Find its diameter of base if the height of the cylinder is 70 m. [Use  $\pi = \frac{22}{7}$ ]

- Ans
- 1. 12 m
  - 2. 8 m
  - 3. 10 m
  - 4. 5 m

Q.41 Which of the following options should come in place of the question mark (?) in the given series?

75 65 56 48 41 ?

- Ans
- 1. 34
  - 2. 31
  - 3. 35
  - 4. 33

Q.42 The shopkeeper offers two successive discounts on a machine that is marked at ₹18,000 so that its selling price gets reduced to ₹12,960. If 10% and  $x\%$  are the respective discounts, the value of  $x$  is:

- Ans
- 1. 20
  - 2. 10
  - 3. 15
  - 4. 12

Q.43 Subtract the sum of  $2x - 3y + 7z$  and  $4z - 5x$  from  $13x - z$ .

- Ans
- 1.  $3x + 3y - 3z$
  - 2.  $x + 12y - 12z$
  - 3.  $4x + 7y$
  - 4.  $16x + 3y - 12z$

Q.44 If  $a : b = 3 : 4$  and  $b : c = 2 : 3$ , then  $a : b : c = ?$

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

Q.45 When did the Department for Promotion of Industry and Internal Trade (DPIIT) organise the Startup India Innovation Week 2024?

- Ans
- 1. 12 January 2024 to 20 January 2024
  - 2. 11 January 2024 to 19 January 2024
  - 3. 13 January 2024 to 21 January 2024
  - 4. 10 January 2024 to 18 January 2024

Q.46 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. XR – CW
  - 2. ZT - PG
  - 3. TN – YS
  - 4. BV – GA

Q.47 The ages of Anita and Sunita differ by 30 years. If 5 years ago, Anita was 3 times as old as Sunita, then the present age of Sunita is:

- Ans
- 1. 30 years
  - 2. 25 years
  - 3. 20 years
  - 4. 35 years

Q.48 Pradhan Mantri Janjatiya Unnat Gram Abhiyan will improve the socio-economic condition of tribal communities, covering around \_\_\_\_\_ villages as per Union Budget 2024-25.

- Ans
- 1. 76,000
  - 2. 63,000
  - 3. 56,000
  - 4. 53,000

Q.49 In a certain code language,

‘A + B’ means ‘A is the mother of B’,

‘A – B’ means ‘A is the brother of B’,

‘A x B’ means ‘A is the wife of B’ and

‘A ÷ B’ means ‘A is the father of B’.

How is M related to T if ‘M – N + P ÷ S x T’?

- Ans
- 1. Wife's father's brother
  - 2. Wife's father's father's brother
  - 3. Wife's father's mother's father
  - 4. Wife's father's mother's brother

Q.50 If the length of a conductor is tripled, keeping other factors same, the resistance of the conductor will be:

- Ans
- 1. one sixth
  - 2. tripled
  - 3. one third
  - 4. same

**Q.51** Venu starts from Point Y and drives 7 km towards south. He then takes a left turn, drives 15 km, turns right and drives 38 km. He then takes a left turn and drives 13 km. He takes a left turn, drives 31 km. He then turns left, drives 28km, turns left and drives 13 km to stop at Point Z. How far (shortest distance) and towards which direction should he drive in order to reach Point Y again? (All turns are 90 degrees turns only unless specified)

- Ans**
- 1. 24 km towards south
  - 2. 28 km towards east
  - 3. 20 km towards south
  - 4. 27 km towards north

**Q.52** 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:

Some ribbons are balloons.

Some balloons are eagles.

Conclusions:

(I) All eagles are ribbons.

(II) No ribbons are eagles.

- 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.53** Study the following table and answer the question.

The table depicts the number of cars and bikes manufactured by a company in the year 2012 and 2013.

| Years | Number of cars<br>(In Thousand) | Number of bikes<br>(In Thousand) |
|-------|---------------------------------|----------------------------------|
| 2012  | 45                              | 50                               |
| 2013  | 40                              | 60                               |

How many cars (In Thousand) were manufactured in the year 2012 and 2013 together?

- Ans**
- 1. 75
  - 2. 85
  - 3. 105
  - 4. 95

**Q.54** 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:

Some trees are flowers.

All flowers are leaves.

Conclusions:

(I) All leaves are trees.

(II) All flowers are trees.

**Ans** ✓ 1. Neither conclusion (I) nor (II) follows.

✗ 2. Only conclusion (II) follows.

✗ 3. Only conclusion (I) follows.

✗ 4. Both conclusions (I) and (II) follow.

**Q.55** The atomic radius of a hydrogen atom is:

**Ans** ✓ 1.  $10^{-10}$  m

✗ 2.  $10^{-7}$  m

✗ 3.  $10^{-8}$  m

✗ 4.  $10^{-9}$  m

**Q.56** What type of reaction occurs when limestone gets converted into quicklime on heating?

**Ans** ✓ 1. Decomposition

✗ 2. Combination

✗ 3. Displacement

✗ 4. Double displacement

**Q.57** The sum of the first 8 prime numbers divided by 7 is equal to \_\_\_\_\_.

**Ans** ✗ 1. 14

✗ 2. 13

✓ 3. 11

✗ 4. 10

**Q.58** 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 the 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 : 58 :: 430 : Y

- Ans**
- 1. X = 355, Y = 95
  - 2. X = 295, Y = 85
  - 3. X = 310, Y = 70
  - 4. X = 260, Y = 90

**Q.59** According to the Economic Survey 2023-24, India's cumulative installed solar power capacity reached \_\_\_\_\_ on 30 April 2024, after adding 15.03 GW in 2023-24.

- Ans**
- 1. 89.64 GW
  - 2. 86.64 GW
  - 3. 80.64 GW
  - 4. 82.64 GW

**Q.60** Rama walks to her office 5 km away from home. In the morning, she covers the distance in 1 hour whereas, while returning home in the evening, she takes 15 more minutes to cover the same distance. Find her average speed (in km/h) during the two-way journey.

- Ans**
- 1.  $3\frac{3}{5}$
  - 2.  $4\frac{4}{9}$
  - 3.  $3\frac{1}{8}$
  - 4.  $4\frac{2}{3}$

**Q.61** In a certain code language, 'MEANS' is coded as '75821', 'RANGE' is coded as '84592', and 'PRIME' is coded as '64237'. What is the code for 'G' in the given code language?

- Ans**
- 1. 5
  - 2. 4
  - 3. 9
  - 4. 8

**Q.62** For current carrying circular loop, the field strength is:

- Ans**
- 1. maximum at the centre
  - 2. maximum at the periphery
  - 3. undetermined at the periphery
  - 4. minimum at the centre

**Q.63** Which of the following options should come in place of the question mark (?) in the given series based on the English alphabetical order?

ORN, PSO, QTP, RUQ, ?

- Ans**
- 1. VSR
  - 2. SUR
  - 3. USR
  - 4. SVR

**Q.64** Who among the following were the co-flag bearers for India in the closing ceremony of Paris Olympics 2024?

- Ans**
- 1. Manu Bhaker and Neeraj Chopra
  - 2. Swapnil Kusale and Aman Sehrawat
  - 3. Neeraj Chopra and PR Sreejesh
  - 4. Manu Bhaker and PR Sreejesh

**Q.65** 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. KM-PJ
  - 2. OQ-TN
  - 3. IK-NH
  - 4. GI-LE

**Q.66** A can complete a piece of work in 20 days and B can do the same work in 15 days. B worked alone for 6 days and left. In how many days can A complete the remaining work alone?

- Ans**
- 1. 10
  - 2. 12
  - 3.  $10\frac{1}{2}$
  - 4. 16

**Q.67** Refer to the following number and symbol series and answer the question that follows. Counting to be done from left to right only.

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

How many such numbers are there, each of which is immediately preceded by a symbol and also immediately followed by a symbol?

- Ans**
- 1. Two
  - 2. One
  - 3. Zero
  - 4. Four

**Q.68** A, B, C, D, E and F are sitting around a circular table facing the centre. D sits to the immediate left of F. B is the immediate neighbour of C and F. A is the immediate neighbour of E and C.

What is the position of D with respect to E?

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

**Q.69** Refer to the following number and symbol series and answer the question that follows. Counting to be done from left to right only.

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

How many such symbols are there, each of which is immediately preceded by a symbol and also immediately followed by a number?

- Ans**
- 1. One
  - 2. Two
  - 3. More than two
  - 4. Zero

**Q.70** In the food vacuole of which organism, complex substances are broken down into simpler ones which then diffuse into the cytoplasm?

- Ans**
- 1. Amoeba
  - 2. Lichen
  - 3. Plasmodium
  - 4. Spirogyra

**Q.71** In a certain code language, 'PING' is coded as '7953' and 'NOSE' is coded as '4638'. What is the code for 'N' in the given code language?

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

**Q.72** In which organism does cell division or fission lead to the creation of new individuals?

- Ans**
- 1. Plants
  - 2. Mammals
  - 3. Unicellular organisms
  - 4. Reptiles

**Q.73** Which of following compounds is used as an ingredient in antacids?

- Ans**
- 1. Nitric acid
  - 2. Sodium chloride
  - 3. Copper sulphate
  - 4. Sodium hydrogen carbonate

Q.74 The value of  $K$ , satisfying the equation  $\frac{0.009}{K} = 0.01$  is:

- Ans
- 1. 0.0009
  - 2. 0.09
  - 3. 0.9
  - 4. 9

Q.75 Which of the following is the specialised cell that conducts information via electrical impulses from one part of the body to another?

- Ans
- 1. Nucleus
  - 2. Neuron
  - 3. Dendrite
  - 4. Axon

2024/12/02-23:03:36

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