



# 5<sup>th</sup> All India RPS OLYMPIAD 2023-24

Phase – II

Question Paper

Class - VIII

M.M:60

Time: 60 Minutes

## OFFLINE EXAMINATION (PHASE-II)

Name: \_\_\_\_\_ Reg. No. \_\_\_\_\_ Mobile No. \_\_\_\_\_

### General Instructions:

1. Duration of the examination is 60 Minutes. Question Paper contains 60 questions with maximum 60 marks.
2. There will be **negative marking** in Phase – II, i.e.  $\frac{1}{4}$  mark will be deducted for each incorrect answer.
3. Use of gadgets is not allowed.
4. Students must abide by the instructions issued during the examination by the invigilator or the centre incharge.
5. Before attempting the question paper ensure that it contains all pages & no question is missing.
6. Immediately fill the particulars on this page of the test booklet and **OMR** with **BLACK** ballpoint pen only. Use of pencil is strictly prohibited.
7. Darken the bubbles completely. Do not put a tick  or a cross . Fill the bubbles completely.
8. Half –filled or over-filled bubbles will not be read by the software & liable to be rejected.

### Correct Method



Student's Signature

### Wrong Method



Invigilator's Signature

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**English (15 Marks)**

**Choose the correct option:**

- Q1. When one gazes at the sky, the glimmer of stars \_\_\_\_\_ the vastness above.  
(a) fill                      (b) fills                      (c) to fill                      (d) is feeling
- Q2. If you move around hoping your problem \_\_\_\_\_, they won't.  
(a) will solve                      (b) will solved  
(c) will have solved                      (d) will be solved
- Q3. If he worked hard he \_\_\_\_\_ pass.  
(a) will                      (b) would  
(c) can                      (d) may
- Q4. She \_\_\_\_\_ recite the Ramayana when she was just eight.  
(a) can                      (b) may                      (c) will                      (d) would
- Q5. None of the candidates \_\_\_\_\_ cleared the entrance examination.  
(a) is                      (b) have                      (c) has                      (d) are
- Q6. The jury \_\_\_\_\_ divided in their opinions.  
(a) was                      (b) were                      (c) has                      (d) is
- Q7. Ragini invited \_\_\_\_\_ friends to her party.  
(a) a little                      (b) a many  
(c) a few                      (d) a number
- Q8. I don't want any \_\_\_\_\_ sugar. This is \_\_\_\_\_.  
(a) less, enough                      (b) less, most  
(c) more, much                      (d) more, enough
- Q9. He was convicted \_\_\_\_\_ murder.  
(a) about                      (b) of                      (c) off                      (d) for
- Q10. We bought the house with a view \_\_\_\_\_ retiring there.  
(a) of                      (b) at  
(c) to                      (d) None of the above

**Direction for Q11 and 12: Choose the correct Indirect form of the given sentences:**

- Q11. He said to me, "If you were present there, you would weep?"
- (a) He told me that if I were present there I would weep.
  - (b) He told me that if I had been present there I would weep.
  - (c) He told me that if I was present there I would weep.
  - (d) He told me that if you were present there you would weep.
- Q12. The peon said to the officer, "May I go out, sir?"
- (a) The peon asked the officer if he may go out.
  - (b) The peon asked the officer that he might go out.
  - (c) The peon asked the officer respectfully if he might go out.
  - (d) The peon asked the officer if I might go out.

**Direction for Q13 and 14: Select the option that expresses the given sentences in passive voice:**

- Q13. Didn't they tell you to be here by six O'clock?
- (a) Weren't you told to be here by six O'clock?
  - (b) Haven't they told you to be here by six O'clock?
  - (c) You were expected to be here by six O'clock
  - (d) They expected you to be here by six O'clock
- Q14. Must we cut this tree?
- (a) Must this tree has been cut?
  - (b) Must this tree be cut?
  - (c) Must this tree was cut?
  - (d) Must this tree is cut?
- Q15. The story is about \_\_\_\_\_ little boy and \_\_\_\_\_ squirrel.
- (a) the, the
  - (b) a, the
  - (c) a, a
  - (d) the, a

**Maths (15 Marks)**

Q16. Simplify :  $\frac{[x^{2^{n-1}} + y^{2^{n-1}}][x^{2^{n-1}} - y^{2^{n-1}}]}{x^{2^n} - y^{2^n}}$

- (a)  $(xy)^{n^2}$  (b)  $x^n y^n$   
(c) 1 (d)  $x^{2^{n-1}} + y^{2^{n-1}}$

Q17. If P is 28% of Q and R is 56% of Q, then P is what percent of R?

- (a) 20% (b) 25% (c) 50% (d) 75%

Q18. Find the square root of  $x^{m^2-n^2} \cdot x^{n^2+2mn} \cdot x^{n^2}$ .

- (a)  $x^{\frac{(m+n)^2}{2}}$  (b)  $x^{(m+n)^2}$  (c)  $x^{\frac{m+n+2mn}{2}}$  (d)  $x^2 \cdot x^{2m}$

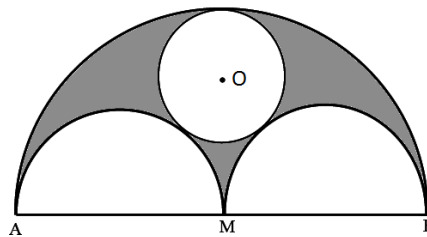
Q19.  $\frac{0.5 \times 0.5 \times 0.5 - 0.2 \times 0.2 \times 0.2 + 0.3 \times 0.3 \times 0.3 + 3 \times 0.5 \times 0.3 \times 0.2}{0.5 \times 0.5 + 0.2 \times 0.2 + 0.3 \times 0.3 + 0.5 \times 0.2 + 0.2 \times 0.3 - 0.5 \times 0.3} = ?$

- (a) 1 (b) 0.6 (c) 0.4 (d) 0.03

Q20. A farmer divides his herd of n cows among his four sons so that first son gets one half the herd, the second son gets one fourth, the third son gets one fifth, and the fourth son gets 7 cows, then n is:

- (a) 180 (b) 140 (c) 240 (d) 100

Q21. In the given figure, M is the mid point of line segment AB whose length is 2a. Semicircles having diameters AM, MB and AB are drawn at the same side of the line. The radius of a circle touching all the three semicircle is



- (a)  $\frac{2a}{3}$  (b)  $\frac{a}{2}$  (c)  $\frac{a}{3}$  (d)  $\frac{a}{4}$

Q22. The ratio of exterior angle to interior angle of a regular polygon is 1:4. Find the number of sides of the polygon.

- (a) 15 (b) 10 (c) 20 (d) 30

Q23. If  $x = -\frac{1}{3}$  and  $y = \frac{2}{7}$ , then  $|-x+y|$  is:

(a)  $>|x|+|y|$

(b)  $=|x|+|y|$

(c)  $<|x|+|y|$

(d)  $=x+y$

Q24. If  $\left(x^{\frac{3}{2}} - xy^{\frac{1}{2}} + x^{\frac{1}{2}}y - y^{\frac{3}{2}}\right)$  is divided by  $\left(x^{\frac{1}{2}} - y^{\frac{1}{2}}\right)$ , then the quotient is:

(a)  $x+y$

(b)  $x-y$

(c)  $x^{1/2} + y^{1/2}$

(d)  $x^2 - y^2$

Q25. Simplify:

$$4\sqrt{3}(2\sqrt{27} - 4\sqrt{48}) - 5\sqrt{3}(\sqrt{12} - 3\sqrt{75})$$

(a) 75

(b) 48

(c) 78

(d) 57

Q26. If  $6^x - 6^{x-3} = 7740$ , then  $x^x =$

(a) 7796

(b) 243

(c) 3125

(d) 46656

Q27. If  $\frac{x}{2a-3b} = \frac{y}{3b-4c} = \frac{z}{4c-2a} = 2$ , then evaluate  $x^3 + y^3 + z^3$

(a)  $96(2a-3b)(3b-4c)(4c-2a)$

(b)  $48(2a-4c)(2a-3c)(3b+4c)$

(c)  $24(2a-3b)(3b-4c)(4c-2a)$

(d)  $12(3b-2a)(4c-3b)(2a-3b)$

Q28. If 64 buckets of water are removed from a cubical shaped water tank completely filled with water,  $\frac{1}{3}$  of the tank remains filled water. The length of each side of the tank is 1.2m. Assuming that all buckets are of the same measures then the volume (in litres) of water contained by each bucket is

(a) 16

(b) 18

(c) 12

(d) 15

Q29. Twenty four men can complete a work in sixteen days. Thirty two women can complete the same work in twenty four days. Sixteen men and sixteen women started working and worked for 12 days. How many more men are to be added to complete the remaining work in 2 days?

(a) 16

(b) 24

(c) 36

(d) 48

Q30. If three times the larger of the two numbers is divided by the smaller one, we get 4 as quotient and 3 as remainder. Also if seven times the smaller number is divided by the larger one, we get 5 as quotient and 1 as remainder. Find the sum of the numbers.

(a) 34

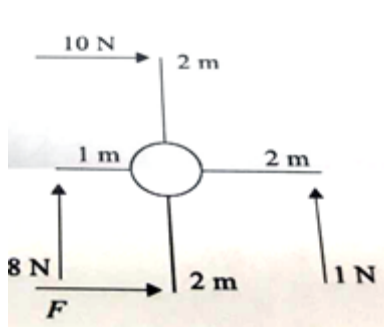
(b) 43

(c) 47

(d) 74

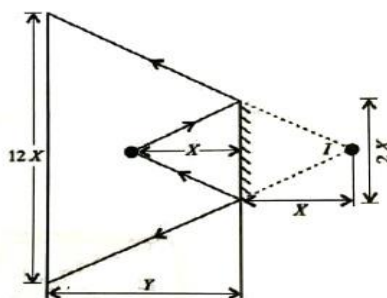
**Physics (5 Marks)**

Q31. A windmill is pushed by four external forces as shown in the given figure. The force  $F$  required to make the windmill stand still is:



- (a) 10N                                      (b) 13N                                      (c) 15N                                      (d) 18N

Q32. A mirror of length  $2X$  is kept in front of a road as shown in figure. A point object is kept at a distance  $X$  from the mirror. An observer is able to see the image till distance  $12X$  while moving along the road. What is the distance  $Y$  between the road and the mirror in terms of  $X$ ?

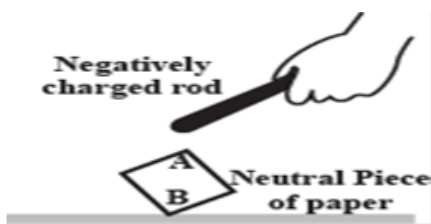


- (a)  $Y=X$                                       (b)  $Y=12X$   
 (c)  $Y=5X$                                       (d)  $Y=2X$

Q33. A man standing in front of a large wall, claps two objects against each other at an interval of  $1.2s$  regularly. The echo of the first clap coincides with the fifth clap. If the speed of sound in air is  $340ms^{-1}$ . The distance between the man and the wall is \_\_\_\_\_.

- (a) 408m                                      (b) 1632m  
 (c) 816m                                      (d) 204m

Q34. A piece of paper appears to be attracted to a charged ebonite rod, even before they touch (see fig). The charge B is:



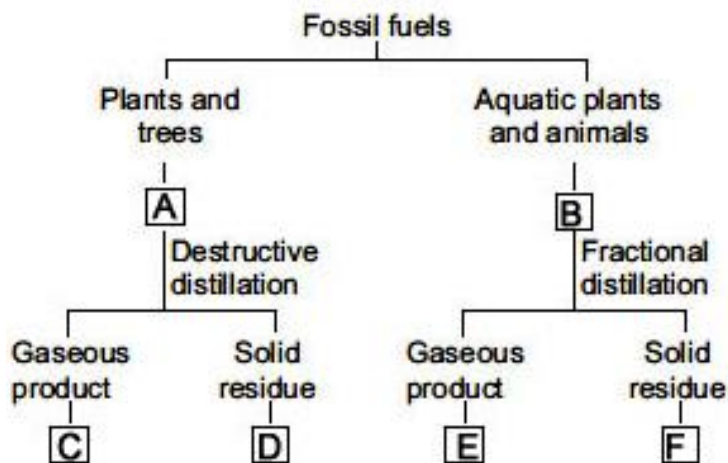
- (a) Positive (b) May be positive or negative  
 (c) No charge (d) Negative

Q35. A body of mass 5kg rests on a rough horizontal surface of coefficient of friction 0.2. The body is pulled through a distance of 10m by a horizontal force of 25N. The kinetic energy acquired by it is:

- (a) 200J (b) 150J (c) 100J (d) 50J

**Chemistry (5 Marks)**

Q36. Fill in the blanks left in the classification of fossil fuels.



- |     | A         | B         | C         | D        | E             | F        |
|-----|-----------|-----------|-----------|----------|---------------|----------|
| (a) | Petroleum | Coal      | Petroleum | Bitumen  | Coal gas      | Coke     |
| (b) | Coal      | Petroleum | Coal gas  | Coke     | Petroleum gas | Bitumen  |
| (c) | Coal      | Petroleum | Coal gas  | Charcoal | Gasoline      | Coal tar |
| (d) | Petroleum | Coal      | Gasoline  | Bitumen  | Natural gas   | Coke     |



- Q37. Producer gas is not a good fuel because
- (a) it contains CO which is poisonous
  - (b) it contains O<sub>2</sub> which does not burn
  - (c) it contains N<sub>2</sub> which does not burn
  - (d) it contains CO<sub>2</sub> which does not burn
- Q38. When water is poured over burning wood, the fire goes out. This is because
- (a) temperature of wood decreases
  - (b) temperature of water goes up
  - (c) molecules of water react with oxygen present in the flame
  - (d) the flame vapourises
- Q39. Which type of fire extinguisher is used to extinguish fire caused by burning oil and petrol?
- (a) Foam type
  - (b) Water type
  - (c) Soda acid type
  - (d) CCl<sub>4</sub> type
- Q40. During the electrolysis of dilute sulphuric acid, it liberates
- (a) oxygen gas and hydrogen gas
  - (b) oxygen ions and hydrogen ions and sulphate ions
  - (c) oxygen ions and sulphate ions
  - (d) hydrogen ions and sulphate ions

**Biology (5 Marks)**

- Q41. Severe Acute Respiratory Syndrome (SARS):
- (a) Is caused by a variant of Pneumococcus pneumoniaeb.
  - (b) Is caused by a variant of the common cold virus (corona virus).
  - (c) Is an acute form of asthma.
  - (d) Affects non-vegetarians much faster than the vegetarians.
- Q42. HIV infects:
- (a) RBC
  - (b) T- helper cells
  - (c) B- cells
  - (d) Basophils

Q43. Thyroxine controls \_\_\_\_\_ in frogs and development of \_\_\_\_\_ and \_\_\_\_\_ during embryonic development of other vertebrates. Thyroxine production requires the presence of \_\_\_\_\_ in diet.

- (a) Development, Circulatory system, Muscles, Iodine.
- (b) Metamorphosis, Circulatory system, Muscles, Calcium.
- (c) Development, Bones, Nervous system, Iron.
- (d) Metamorphosis, Bones, Nervous system, Iodine.

Q44. Read the following statements and select the correct option.

Statement 1: Wind pollinated flowers need to produce more quantities of pollen grains.

Statement 2: Seeds from cross pollinated flowers produce weaker and less healthy plants.

- (a) Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1.
- (b) Both statements 1 and 2 are true but statement 2 is not the correct explanation of statement 1.
- (c) Statement 1 is true but statement 2 is false.
- (d) Both statements 1 and 2 are false.

Q45. Seminiferous tubules are composed of:

- (a) spermatogonia
- (b) glandular epithelium
- (c) sensory epithelium
- (d) germinal epithelium

**Reasoning (15 Marks)**

Q46. Which option will replace the question mark (?).

11, 10, ?, 100, 1001, 1000, 10001

- (a) 101
- (b) 110
- (c) 111
- (d) None of these

Q47. Which option will replace the question mark (?).

B2CD, ...?..., BCD4, B5CD, BC6D

- (a) B2C2D                      (b) BC3D                      (c) B2C3D                      (d) BCD7

Q48. If SUNDAY = 18, MONSOON = 21, YEAR = 12, then THURSDAY=?

- (a) 26                      (b) 42                      (c) 28                      (d) 24

Q49. Direction: In the following question find out the alternative which will replace the question mark.

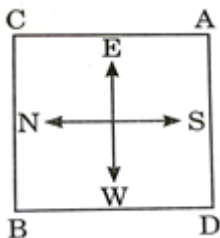
Grain : Warehouse :: Water : ?

- (a) Drink                      (b) Dam                      (c) Canal                      (d) River

Q50. In the question, certain pairs of words are given, out of which the words in all pairs except one, bear a certain common relationship. Choose the pair in which the words are differently related.

- (a) Fish : Pisciculture                      (b) Birds : Horticulture  
(c) Bees : Apiculture                      (d) Silkworm : Sericulture

**Directions : (Q51 – 52)The following question are based on the diagram given below showing four persons stationed at the four corners of a square piece of plot as shown in figure:**



Q51. A starts crossing the field diagonally. After walking half the distance, he turns right, walks some distance and turns left. Which direction is A facing now?

- (a) North-east                      (b) North-west  
(c) North                      (d) South-east

Q52. From the original position given in the above figure. A and B move one arm length clockwise and then cross over to the corner diagonally opposite, C and D move one arm length anticlockwise and cross over the corner diagonally opposite. The original configuration ADBC has now changed to

(a) CBDA

(b) BDAC

(c) DACB

(d) ACBD

Q53. If D is the brother of B, how B is related to C? To answer this question which of the statements is/are necessary ?

1. The son of D is the grandson of C

2. B is the sister of D

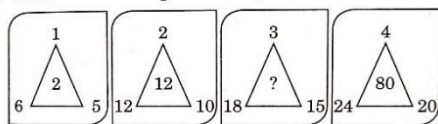
(a) Only 1

(b) Only 2

(c) Either 1 or 2

(d) 1 and 2 both are required

Q54. Which one will replace the question mark?



(a) 18

(b) 24

(c) 36

(d) 45

Q55. If P denotes '+', Q denotes '-', R denotes 'X' and S denotes '÷', then which of the following statement is correct?

(a)  $16 R 12 P 49 S 7 Q 9 = 200$

(b)  $32 S 8 R 9 = 160 Q 12 R 12$

(c)  $8 R 8 P 8 S 8 Q 8 = 57$

(d)  $36 R 4 S 8 Q 7 P 4 = 10$

Q56. At 6 O'clock a clock ticks 6 times. The time between first and last tick is 30 seconds. How long it ticks at 12 O'clock.

(a) 55

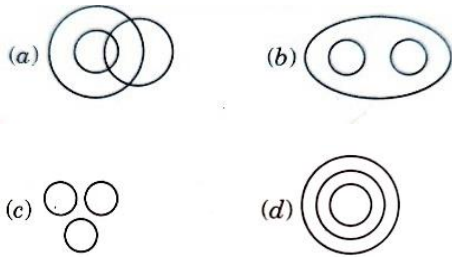
(b) 33

(c) 59

(d) 66

Q57. Direction: In the question given below contains three elements. These elements may or may not have some inter linkage. Each group of elements may fit into one of these diagrams at (a), (b), (c), (d). You have to indicate the group of element which correctly fits into the diagram.

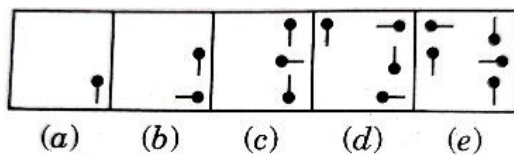
Women, Mother and Engineers ?



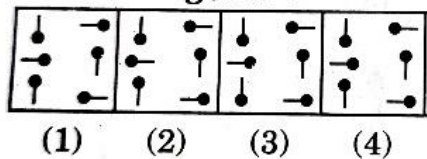
(a) a                      (b) b                      (c) c                      (d) d

**Q58. Direction:** The given question consists of the figures marked (a), (b), (c), (d) and (e) called the Problem Figures followed by four other figures marked 1,2,3 and 4 called the Answer Figures. Select a figure from amongst the Answer Figures which will continue the same series as established by the five Problem Figures.

Problem Figures :



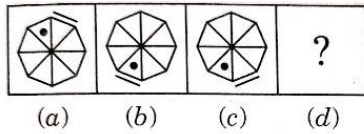
**Answer Figures :**



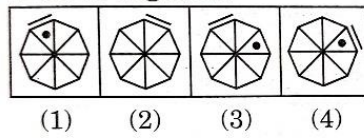
(a) 1                      (b) 2                      (c) 3                      (d) 4

**Q59. Direction:** The given question consists of two sets of figures. Figures (a), (b), (c) and (d) constitute the Problem Set while figures 1,2,3 and 4 constitute the Answer Set. There is a definite relationship between figures (a) and (b). Establish a similar relationship between figures (c) and (d) by selecting a suitable figure from the Answer Set that would replace the question mark (?) in figure.

Problem Figures :



Answer Figures :



(a) 1

(b) 2

(c) 3

(d) 4

Q60. The year next to 1890 will have the same calendar. As what of year 1890

(a) 1901

(b) 1900

(c) 1902

(d) 1900

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4 <sup>TH</sup> TO 30 <sup>TH</sup> PRIZE	SPORTS KIT	SPORTS KIT	SPORTS KIT	BICYCLE
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