5th All India RPS OLYMPIAD 2023-24

Phase – II	Question Paper	Class - IX

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. ¼ 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

●

Wrong Method

⊗ ✓ ◐ ◓

Student's Signature

Invigilator's Signature

SPACE FOR ROUGH WORK

English (10 Marks)

Q1. **Fill in the blank with the correct verb.**

Belinda, and not all her pets, Ink, Blink and Mustard _____ the ability to face the pirate.

(a) has   (b) have   (c) are   (d) were

Q2. <u>How much percent students who are</u> under anxiety due to peer pressure, become ignorant? **Improve the underlined part of the sentence, if no error select the option (d).**

(a) How many percent students who are   (b) How much percent students which are

(c) How much percent students who is   (d) The given sentence is correct

Q3. **Find out the error part of the sentence** –

(a) The prevalence of usage of mobile phones/   (b) amongst teenagers are /   (c) increasing by the day due to/   (d) its ubiquitous nature.

Q4. **Find out the error part of the sentence** –

(a) I asked two persons/   (b) the way to the station/   (c) but none of them/ (d) knew it.

Q5. **Select the indirect speech of the given sentence** –

Mme Loisel will say to her husband, "Mme Forestier can lend us the necklace."

(a) Mme Loisel will tell her husband that Mme Forestier can lend them the necklace.

(b) Mme Loisel will tell her husband that Mme Forestier could lend them the necklace.

(c) Mme Loisel will ask her husband that Mme Forestier can lend them the necklace.

(d) Mme Loisel will tell her husband that Mme Forestier can lend us the necklace.

Q6. **Select the indirect speech of the given sentence** –

"How Amanda does this?" her mother said.

(a) Her mother asked how Amanda does that.

(b) Her mother said how Amanda did that.

(c) Her mother asked how Amanda did that.

(d) Her mother asked that how Amanda did that.

Q7. **Fill in the blank with correct modal** –

Kartik _____ be rewarded if he stands first in the olympiad.

(a) shall   (b) would   (c) could   (d) need

Q8. **Fill in the blank with correct option** –

_____ anybody object, do not come for further round.

(a) If   (b) Ought to   (c) Should   (d) Need

Q9. **'Sum and substance'** means –
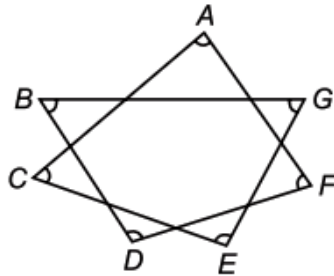
(a) In conclusion   (b) To decieve   (c) High price   (d) In perfect order

Q10. **'Lump sum'** means –

(a) To begin   (b) A very good achievement   (c) To make peace   (d) To pay at once

Mathematics (20 Marks)

Q11. In the figure, find the value of ∠A + ∠B + ∠C + ∠D + ∠E + ∠F + ∠G
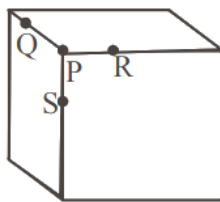

 (a) 120^0 (b) 720^0 (c) 360^0 (d) 540^0

Q12. If $x = 1 + \sqrt{2} + \sqrt{3}$, then the value of $x^4 - 4x^3 - 4x^2 + 16x$ is –

 (a) 4 (b) –8 (c) 8 (d) –4

Q13. P is vertex of cuboid and Q, R and S are three points on the adjacent edges passing through P as shown, PQ = PR = 2 cm and PS = 1 cm. Then the area of ΔQRS (in cm^2) is

 (a) $\dfrac{\sqrt{15}}{4}$ (b) $\dfrac{5}{2}$ (c) $\sqrt{6}$ (d) $2\sqrt{2}$

Q14. $2^{48} - 1$ is divisible by two numbers between 60 and 70 the sum of two numbers is :

 (a) 125 (b) 126 (c) 127 (d) 128

Q15. $x = 5 - 2\sqrt{6}$, then find the value of $\dfrac{x^2+1}{2x} = ?$

 (a) 3 (b) 4 (c) 5 (d) 6

Q16. If $x^{\frac{1}{3}} + y^{\frac{1}{3}} + z^{\frac{1}{3}} = 0$ then find $(x + y + z)^3 - 27xyz$?

 (a) 0 (b) 1 (c) 2 (d) 3

Q17. Given that $a^2 + 6b = -14, b^2 + 8c + 23 = 0$ and $c^2 + 4a - 8 = 0$. Find the value of $ab + bc + ca$

 (a) 25 (b) 26 (c) 27 (d) 28

Q18. Secants AB, AC intersect the circle with centre O at D, E respectively. BE, DC intersect at F. If $\angle BOC = 118^o$ and $\angle A = 30^o$, find $\angle BFC$?

 (a) 66° (b) 77° (c) 88° (d) 99°

Q19. $(x + 2y), (x - 2y)$ and $4\sqrt{xy}$ are dimensions of a cuboid. The longest stick is placed inside the cuboid. Find its length.

 (a) $(x + 2y)$ (b) $(x - 2y)$ (c) $\sqrt{2(x^2 + 4y^2 - 8xy)}$ (d) $\sqrt{2(x^2 + 4y^2 + 8xy)}$

Q20. If $x_1, x_2, \ldots, x_n$ are n observations such that $\sum_{i=1}^{n} (x_i + 3) = 120$ and $\sum_{i=1}^{n} (x_i + 5) = 160$. Find n.

(a) 20   (b) 15   (c) 10   (d) 5

Q21. A rectangle incribed in a triangle has its base coinciding with the base b of the triangle. If the altitude of the triangle is h and altitude x of the rectangle is half the base of the rectangle, then
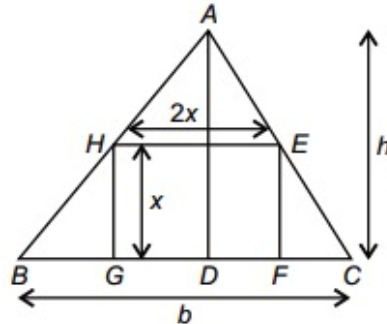

(a) $x = \frac{1}{2} h$ (b) $x = \frac{bh}{b + h}$ (c) $x = \frac{bh}{2h + b}$ (d) $x = \sqrt{\frac{bh}{2}}$

Q22. ABC is a triangle with $\angle BAC = 60^o$. A point P lies on one-third of the way from B to C and AP bisects $\angle BAC$. Find value of $\angle APC$?

(a) 90° (b) 105° (c) 75° (d) 120°

Q23. In the adjoining figure, ABC is an equilateral triangle inscribing a square of maximum possible area. Again in this square there is an equilateral triangle whose side is same as that of the square. Further the smaller equilateral triangle inscribes a square of maximum possible area what is the area of the innermost square if each side of the outermost triangle be 0.01 m ?
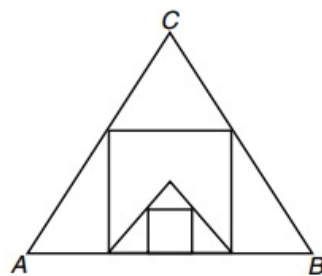
(a) $\left(873 - 504\sqrt{3}\right)$ cm²   (b) $\left(738 - 504\sqrt{3}\right)$ cm²

(c) $\left(873 - 402\sqrt{2}\right)$ cm²   (d) $\left(738 - 405\sqrt{3}\right)$ cm²

Q24. In a sphere of radius 2 cm a cone of height 3 cm is inscribed. What is the ratio of volumes of the cone and sphere ?

(a) 35 : 9   (b) 9 : 32   (c) 3 : 11   (d) 11 : 32

Q25. The sum of radii of two spheres is 10 cm and sum of their volumes is 880 cm³. What will be the product of their radii ?

(a) 21   (b) $26\frac{1}{3}$ (c) $33\frac{1}{3}$ (d) 70

Q26. The length and width of a swimming pool are 50 meters and 15 meters respectively. If the depth of the swimming pool at one end is 10 meters and at the other end is 20 meters, then find the volume of water in the swimming pool ?

(a) 10000 m^3 (b) 11250 m^3 (c) 15000 m^3 (d) 8000 m^3

Q27. Find the remainder when $2^{100} + 3^{100} + 4^{100}$ is divisible by 7 ?

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

Q28. Find the number of divisors of $2^7 \times 3^8 \times 5^9$?

(a) 360   (b) 180   (c) 90   (d) 720

Q29. Find the value of $(x + y)$, if $x^2 + xy + x = 12$ and $y^2 + xy + y = 18$

(a) 5   (b) 6   (c) 7   (d) 8

Q30. In ΔABC, AB = 10 cm, BC = 21 cm, CA = 17 cm. DEFG is a square. Find the area of the shaded region. (In cm^2 approximately)
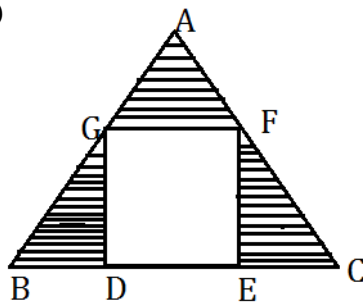
(a) 40.44   (b) 50.44   (c) 60.44   (d) 150.44

Social Science (10 Marks)

Q31. Identify the correct option that describes the leader after the French Revolution, 1789 given below.

(I)   He introduced laws such as protection of private property.

(II)   He was seen as a liberator who would bring freedom for the people.

(III)   He annexed large parts of Europe but was finally defeated at Waterloo in 1815.

(IV)   He introduced Civil Code in 1804.

Options:

(a) Jacques-Pierre Brissot   (b) Marie-Antoinette

(c) Louis XVI   (d) Nepoleon Bonaparte

Q32. Arrange the following in chronological order.

(I)   The Russian Social Democratic Workers Party was founded.

(II)   The Tsar allowed the creation of an elected consultative parliament, or Duma.

(III)   Petrograd had led the February revolution that brought down the monarchy.

(IV)   The Bolsheviks caused industries and banks to nationalise.

Options:

(a) (II), (III), (I) and (IV)   (b) (I), (III), (IV) and (II)

(c) (II), (I), (IV) and (III)   (d) (I), (II), (III) and (IV)

Q33. Which of the following options is primarily concerned with Himalayan drainage rivers system?

  (I)   The major Himalayan rivers are the Indus, the Ganga and the Brahmaputra.

  (II)   These rivers are long and are joined by many large and important tributaries.

  (III) A river along with its tributaries is called a delta.

  (IV)   A large number of the Peninsular rivers are seasonal.

  Options:

  (a) Statements (I) and (II) are correct.   (b) Statements (II) and (IV) are correct.

  (c) Statement (II) is correct   (d) Statements (I), (III) and (IV) are correct.

Q34. Mr. "S" lives on the outskirts of city and is involved in the occupation which falls under the category of primary sector.

  Which one of the following types of work is he involved?

  (a) Trade   (b) Transport   (c) Tourism   (d) Agriculture

Q35. Rohit was discussing with his friends about non-availability of proper food to his maid due to insufficient income.

  Which of the following would be the best option that describe the food security in India?

  (a) Availability at all times of adequate supply of basic food stuffs

  (b) Access to food through entitlements

  (c) Availability and accessibility of food

  (d) Availability, accessibility and affordability of food

Q36. Which of the following statements accurately distinguishes between President of India and Prime Minister of India?

  (a) President appoints top level leaders of the ruling party whereas Prime Minister appoints President of India.

  (b) President is the head of state that is a republic, Prime Minister is the leader of the government of a country with a parliamentary system of government.

  (c) President is usually the title for the head of government of an independent country, while Prime Minister is usualy the head of government of a state.

  (d) President is Union Executive whereas Prime Minister is the constitutional head.

Q37. When was the first meeting of the Indian Constituent Assembly held?

  (a) 5 December 1946   (b) 7 December 1946

  (c) 9 December 1946   (d) 25 December 1946

Q38. Natural vegetation refers to a plant community –

  (a) Which has grown naturally without human aid

  (b) Which has been left undisturbed by humans for a long time

  (c) Which is also known as virgin vegetation

  (d) All of the above

Q39. Monsoon arrives in India approximately in –

(a) Early May   (b) Early June   (c) Early July   (d) Mid July

Q40. Consider the statements given below and choose the correct answer

Statement I: The First World War broke out between the Central powers and the Allied powers.

Statement II: The First World War was fought in Europe as well as outside Europe.

(a) Statement (I) is correct and (II) is incorrect.   (b) Statement (I) is incorrect and (II) is correct.

(c) Both (I) and (II) are correct.   (d) Both (I) and (II) are incorrect.

Science (20 Marks) Phy. + Chem. + Bio. (7+7+6=20)

Physics (7)

Q41. A constant power is delivered to a body moving along a straight line. The distance travelled by the body in time t is proportional to

(a) $t^{1/2}$ (b) $t^{3/2}$ (c) $t^{5/2}$ (d) $t^{7/2}$

Q42. A bag of sand of mass M is suspended by a rope. A bullet of mass m travelling with speed v gets embedded in it. The loss of kinetic energy is

(a) $Mmv/(M+m)$ (b) $(M+m)/Mmv$ (c) $\frac{Mmv^2}{2(M+m)}$ (d) $\frac{2(M+m)}{mv^2}$

Q43. If the distance between the earth and the sun were half its present value, the number of days in a year would have been

(a) 64.5   (b) 129   (c) 182.5   (d) 730

Q44. A ball dropped from the top of a building passes past a window of height h in time t. If its speed at the top and the bottom edges of the window are denoted by v_1 and v_2 respectively, which of the following set of equations are correct?

(a) $v_2 - v_1 = gt$ and $(v_2 - v_1)t = h$

(b) $v_2 - v_1 = gt$ and $(v_2 + v_1)t = 2h$

(c) $v_2 + v_1 = gt$ and $(v_2 - v_1)t = h$

(d) None of these
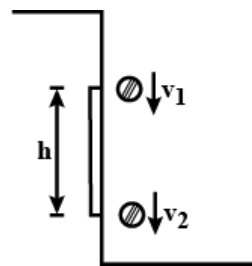
Q45. All the graphs below are intended to represent the same motion. One of them does it incorrectly. Pick it up.

Q46. A vehicle of mass 2 kg starts moving such that its speed v varies with distance travelled 's' according to the law $v = k\sqrt{s}$, k = positive constant. The force delivered by the engine is :

(a) k^2 (b) $\frac{k}{2}$ (c) $k\sqrt{s}$ (d) $\frac{k}{2\sqrt{s}}$

Q47. A car is moving in a circular horizontal track of radius 10m with a constant speed of 10m/s. A plumb bob is suspended from the roof of the car by a light rigid rod. The angle made by the rod with the track is (g = 10 m/s^2)

(a) zero   (b) 30^0 (c) 45^0 (d) 60^0

Chemistry (7)

Q48. Chemical formula for calcium pyrophosphate is $Ca_2P_2O_7$. The formula for ferric pyrophosphate will be

(a) $Fe_3(P_2O_7)_3$ (b) $Fe_4P_4O_{14}$ (c) $Fe_4(P_2O_7)_3$ (d) Fe_3PO_4

Q49. In the ground state, an element has 14 electrons in its M-shell. The element is

(a) Manganese   (b) Chromium   (c) Nickel   (d) Iron

Q50. Two oxides of a metal contain 50% and 40% metal (M) respectively. If formula of first oxide is MO_2, the formula of second oxide will be

(a) M_2O_3 (b) MO_3 (c) M_2O (d) M_2O_5

Q51. Two gaseous samples were analysed. One contained 1.2 g of carbon and 3.2 g of oxygen. The other contained 27.3% carbon and 72.7% oxygen. The experimental data are in accordance with

(a) Law of conservation of mass   (b) Law of definite proportions

(c) Law of reciprocal proportions   (d) Law of multiple proportions

Q52. Fog is an example of colloidal system

(a) Liquid dispersed in gas   (b) Gas dispersed in gas

(c) Solid dispersed in gas   (d) Gas dispersed in liquid

Q53. 40% by weight solution will contain how much mass of the solute in one litre solution, density of the solution is 1.2 g/mL.

(a) 48 g   (b) 480 g   (c) 4.8 g   (d) 380 g

Q54. The ratio of rates of diffusion of SO_2, O_2 and CH_4 is

(a) $1 : \sqrt{2} : 2$ (b) $1 : 2 : 4$ (c) $2 : \sqrt{2} : 1$ (d) $1 : 2 : \sqrt{2}$

Biology (6)

Q55. An organelle which varies greatly in appearance in different cells and always forms a large network of membrane bounded tube and sheets.

(a) Endoplasmic reticulum   (b) Golgi apparatus   (c) Lysosome   (d) Mitochondria

Q56. Many substances of importance in the life of plant cell like organic acid, protein, etc stored in

(a) RER   (b) SER   (c) Lysosome   (d) Vacuoles

Q57. In the following diagram, identify A, B, C and D

(a) A– Sieve plate, B – Sieve tube, C – phloem parenchyma, D – companion cell

(b) A– Sieve plate, B – companion cell, C – phloem parenchyma, D – Sieve tube

(c) A– Sieve tube, B – Sieve plate, C – phloem parenchyma, D – companion cell

(d) A– phloem parenchyma, B – Sieve tube, C – Sieve plate, D – companion cell
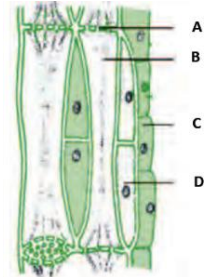
Q58. Name the tissue which are highly metabolic active, found at specific locations and have dense cytoplasm

(a) Meristematic   (b) Cork   (c) Parenchyma   (d) Sclerenchyma

Q59. Deficiency of micro and macronutrients affects physiological processes in plants including

(a) Reproduction and Growth

(b) Growth and susceptibility to diseases

(c) Reproduction and susceptibility to diseases

(d) Reproduction, Growth and Susceptibility to diseases

Q60. Marine fishes of high economic value, farmed in seawater are

(1) mullets   (2) bhetki   (3) prawns   (4) mussels   (5) mrigal

(a) (1), (2), (5)   (b) (3), (4), (5)   (c) (1), (2), (3), (4)   (d) (1), (2), (3), (5)

SPACE FOR ROUGH WORK

After massive success
for Four Consecutive years

RPS GROUP OF SCHOOLS
Under the aegis of RPS Education Society, M/Garh

Announces

5th All India RPS OLYMPIAD 2023-24
— Online & Offline Mega Event —

Golden Opportunity To Win
400 Prizes

CLASS	IX-X	VIII	IV-VII	I-III
1ST PRIZE	SCOOTY	SCOOTY	TABLET	TABLET
2ND PRIZE	SCOOTY	SCOOTY	TABLET	KINDLE
3RD PRIZE	SCOOTY	TABLET	TABLET	KINDLE
4TH TO 30TH PRIZE	SPORTS KIT	SPORTS KIT	SPORTS KIT	BICYCLE
31ST TO 40TH PRIZE	SPORTS KIT	SPORTS KIT	SPORTS KIT	SPORTS KIT

Our Campuses:
Mahendergarh Ph.: 01285-222645, 9416150201 | **Rewari** Ph.: 8222000359 | **Rewari City** Ph.: 9053555526 | **Dharuhera** Ph.: 9467064534 | **Kosli** Ph.: 9255148141 | **Behror** Ph.: 9529678004 | **Hansi** Ph.: 9813196969, 9896100407 | **Narnaul** Ph.: 8198976666 | **Hisar** Ph.: 8307760465 | **Gurugram Sec- 50** Ph.: 8409989898, 7827466258 | **Gurugram Sec- 89** Ph.: 8222999182 | **Karnal** Ph.: 8398000304/06 | **Dharuhera Campus -2** Ph.: 01274-295 925/824, 09257133925 | **Rohtak** Ph.: 7419998800 | **Dadri** Ph.: 8222048283, 84 | **Kanina** Ph.9350693853, 9671720807| **Gurugram Sec-50 Campus 2** Ph.: 70424 96986

Top-Notch Hostel Accommodation for Boys and Girls
at M/GARH, KANINA, BEHROR, KOSLI & HANSI CAMPUSES

ADMISSION OPEN for 2024-25