O. P. JINDAL SCHOOL, SAVITRI NAGAR

Half Yearly Examination - (2026 – 2027)

Class: IX **MM: 50**

Subject: Mathematics **Time: 2Hrs.**

(Fifteen Minutes Extra will be given for reading the Question Paper.)

General Instructions:

i. *This question paper contains **23** questions. All questions are compulsory.*
ii. *This question paper is divided into **5 sections** – **Sections A,B,C,D and E.***
iii. ***Section A** comprises **10** questions (Q. no.1to 10) of **1** mark each.*
iv. ***Sections B** comprises **5** questions (Q. no.11to 15) of **2** marks each.*
v. ***Section C** comprises **4** questions (Q. no.16 to 19) of **3** marks each.*
vi. ***Section D** comprises **2** questions (Q. no.20 to 21) of **5** marks each.*
vii. ***Section E** comprises **2** questions (Q. no.22to 23) of case study based carrying 4 marks each.*
viii. *There is no overall choice. However an internal choice has been provided. You have to attempt only one of the alternatives in all such questions.*
ix. *Use of calculator is not allowed.*

Section A

Choose the correct option:

Q1. What are the coordinates of the point where both axes intersect?

a) (1, 0) b) (0, 1) c) (0, 0) d) none of these

Q2. Find the probability of getting prime number by rolling a 6–sided die.

a) 1/6 b) 1/3 c) 3/4 d) 1/2

Q3. Reema picked a letter from the word 'PIECE'. What is the probability of picking the letter P?

a) 20% b) 40% c)33.3% d) 10%

Q4. A mobile phone is bought for ₹10,000. Its value decreases by ₹800 every year. Find the value of the phone after 3 years.

a) ₹10,800 b) ₹10,000 c) ₹12,400 d) none of these

Q5. Find the value of the linear polynomial $8x - 5$ at $x = -1$.

a) - 13 b) 13 c) - 3 d) 3

Q6. A rational number between 1/5 and 2/5 is:

a) 0.15 b) 0.8 c) 0. 3 d) 1.5

Q7. Which one is not an irrational number?

a) $\sqrt{23}$ b) $\sqrt{7}$ c) 0.0505 d) 7.10110010001....

Q8. Value of $(2x + 5y)^2$ on expanding is:

a) $4x^2 + 20xy - 25y^2$ b) $4y^2 + 20xy + 25x^2$ c) $4x^2 + 20xy + 25y^2$ d) $4x^2 - 20xy + 25y^2$

Q9. What are factors of $6x^2 + 7x + 2$?

a) $(3x + 1)(2x + 1)$ b) $(3x + 2)(2x + 1)$ c) $(3x - 1)(2x - 1)$ d) $(2x + 3)(3x + 1)$

Q10. **Assertion(A):** The coordinates of a point on x- axis are (-5, 0).
Reason(R): Every point on the x- axis has y-coordinate equal to zero.

a) Both assertion (A) and reason(R) are true and reason (R) is correct explanation of assertion (A).
b) Both assertion (A) and reason(R) are true and reason (R) is not the correct explanation of assertion (A).
c) Assertion (A) is true but reason (R) is false.
d) Assertion (A) is false but reason (R) is true.

Section B

Answer the following questions:

Q11. Use the suitable identity to find: $(-3x + 4)^2$

OR

Factorise: $50p^2 + 60pq + 18q^2$

Q12. Find 5 rational numbers between $\frac{1}{6}$ and $\frac{2}{5}$.

Q13. Find degree and constant term of the polynomial $x^4 - 3x^2 + 6x^3 - 2x + 7$. Also find the coefficients of x^2 and x^3.

Q14. Find the coordinate of point M, which is the mid- point of line A (0, -5) and B (-4, 3).

OR

Find coordinates of the points where line $2y = x - 3$ intersect the axes.

Q15. In a survey of 50 students, 15 students like football and rest like other game. What is the probability of students who do not like football?

Section C

Q16. Given that points A(1, - 8), B(- 4, 7) and C(- 7, - 4), show that they lie on a circle K whose centre is the origin(0, 0). What is the radius of the circle K.

Q17. Draw the graph of the equation $y = - 3x + 4$.

OR

Draw the graphs of the following sets of lines on one graph paper: $y = 6x$, $y = - x$

Q18. Simplify the rational expressions assuming that the expression in the denominator is not equal to zero.

$$\frac{3p^2+3pq-18q^2}{p^2+3pq-10q^2}$$

Q19. There are two fruit baskets A and B. Basket A has one apple and two oranges. Basket B has one banana and one mango. Raja randomly pick one fruit from each basket.

(i) Draw a tree diagram showing all possible pairs of fruits.
(ii) List the sample space.
(iii) What is the probability of picking one apple and one banana?

Section D

Q20. Prove that $\sqrt{5}$ is an irrational number.

OR

Convert $3.0\overline{52}$ in the form of p/q, where p & q are integers and $q \neq 0$.

Q21. (i) A positive number is 5 times another number. If 21 is added to both the numbers, then one of the new numbers becomes twice the other number. What are the numbers?

(ii) Sarita is reading a book of 500 pages. She reads 20 pages everyday. How many pages will be left after 15 days? Express this as a linear pattern.

Section E
(Case – Based Questions)

Q22. A merchant in the port city of Lothal is exchanging bags of spices for copper ingots. He receives 15 ingots for every 2 bags of spices. Another traveler offers foreign coins where the value of 1 spice bag equates to a non-terminating, non-repeating decimal value of standard silver weights.

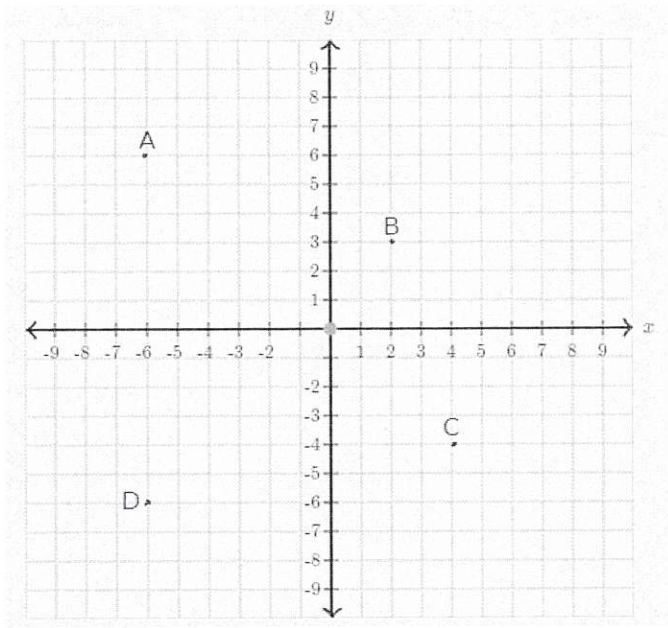
(i) If a merchant defines the ratio of copper ingots to spice bags as $\frac{15}{2}$ what kind of number is this, Rational or Irrational? (1)

(ii) The foreign traveler's silver weight value is represented by a non-terminating, non-repeating decimal. What type of number system does this value represent? (1)

(iii) If a modern museum recreation requires the merchant to supply 8 bags of spices, how many copper ingots must they receive in return? (1)

(iv) If the merchant receives 105 copper ingots, how many bags of spices he brings to the market? (1)

Q23. Read the graph and answer the following questions:



(i) What are the coordinates of point A and D?

(ii) What is the distance between B and C?

(iii) Taking y –axis as mirror, what are coordinates of reflection of point C?

(iv) Find the length of AB.

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