INDIAN SCHOOL AL WADI AL KABIR

Pre-Mid Term Examination (2025-26)

Class: X | Sub: MATHEMATICS (041) | Max Marks: 30

Date: 18 - 05 - 2025 | Set- I | Time: 1 hour

General Instructions:

1. This Question paper contains - **four sections** A, B, C and D. Each section is compulsory. However, there are internal choices in some questions.
2. **Section A** has 06 **MCQ's** and 01 Assertion-Reason based questions of 1 mark each.
3. **Section B** has 3 Very Short Answer (**VSA**)-type questions of 2 marks each.
4. **Section C** has 3 Short Answer (**SA**)-type questions of 3 marks each.
5. **Section D** has 2 source based/case based/passage based/integrated units of assessment (4 marks each) with sub parts.

Section A (1 mark each)

Q.1. If x = 1 and y = 2 is a solution of the pair of linear equations 2x – 3y + a = 0 and 2x + 3y – b = 0, then: (1m)

A a = 2b **B** 2a = b **C** a+ 2b = 0 **D** 2a + b = 0

Q.2. The LCM of 28, 44, 132 is: (1m)

A 258 **B** 231 **C** 462 **D** 924

Q.3. If the graph of a pair of lines x – 2y + 3 = 0 and 2x – 4y = 5 be drawn, then the type of lines drawn are: (1m)

A parallel **B** intersecting **C** coincident **D** intersecting at 2 distinct points

Q.4. If a, b are the zeroes of the polynomial $x^2 – 5x – 14$, then the value of ab – a – b is: (1m)

A -9 **B** 19 **C** 9 **D** -19

Q.5. The prime factorisation of a natural number k is $(3 \times 5 \times p)$ where $p \neq 2$.The prime factorisation of $10\times k^2$ is (1m)

A $2 \times 3^2 \times 5^3 \times p^2$ **B** $3^2 \times 5^3 \times (p \times 2)^2$ **C** $2 \times 3^3 \times 5^2 \times p$ **D** $2 \times 3^2 \times 5^3 \times p$

Q.6. If 2 and $\frac{1}{2}$ are the zeroes of $px^2 + 5x + r$, then: (1m)

A p = r = 2 **B** p = r = -2 **C** p =2, r = -2 **D** p = -2, r = 2

Q.7. **DIRECTION:** In the following question, a statement of **Assertion (A)** is followed by a statement of **Reason (R).** (1m)

Choose the correct option

(a) Both Assertion (A) and Reason (R) are true and Reason (R) is the 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.

Assertion(A): $\sqrt{2}(5 - \sqrt{2})$ is an irrational number.

Reason(R)*:* Product of two irrational numbers is always irrational.

Section B (2 marks each)

Q.8. Find the quadratic polynomial whose zeroes are $(\sqrt{5} - 4)$ and $(\sqrt{5} + 4)$. (2m)

OR

If the sum of the zeroes of the quadratic polynomial $ky^2 + 2y - 3k$ is equal to twice their product, find the value of k. (2m)

Q.9. If $2x + y = 13$ and $4x - y = 17$, find the value of $(x - y)$. (2m)

Q.10. Explain why $7 \times 11 \times 13 + 2 \times 11$ is not a prime number. (2m)

Section C (3 marks each)

Q.11. Find the zeroes of the polynomial $3x^2 - 5x - 2$ and verify the relationship between the zeroes and the coefficients of the polynomial. (3m)

Q.12. Prove that $\sqrt{3}$ is an irrational number. (3m)

Q.13. 5 pencils and 7 pens together cost ₹ 250 whereas 7 pencils and 5 pens together cost ₹302.Find the cost of one pencil and that of a pen. (3m)

OR

The ratio of incomes of two persons is 9 : 7 and the ratio of their expenditures is 4 : 3. If each of them manages to save ₹ 2000 per month, find their monthly incomes. (3m)

Section D (Case Study based Questions-4 marks each)

Q.14. A part of monthly hostel charges in a college is fixed and the remaining depends on the number of days one has taken food in the mess. When a student Anu takes food for 25 days, she has to pay ₹4500 as hostel charges, whereas another student Bindu who takes food for 30 days has to pay ₹5200 as hostel charges. Considering the fixed charges per month by ₹x and the cost of food per day by ₹ y, answer the following questions.

(i) Represent the above situation algebraically. (1m)

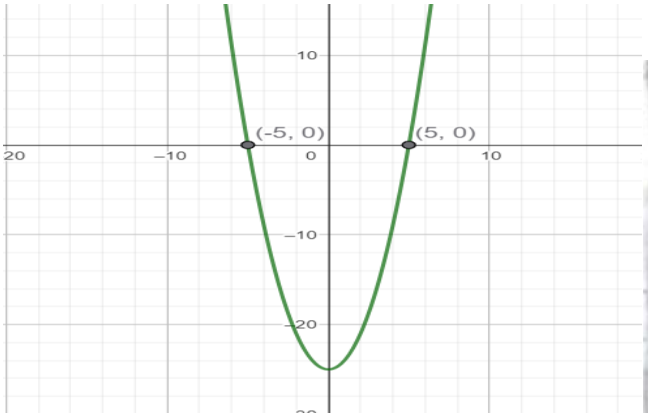
(ii) The linear equations representing the above situations graphically represents what type of lines? Justify your answer. (1m)

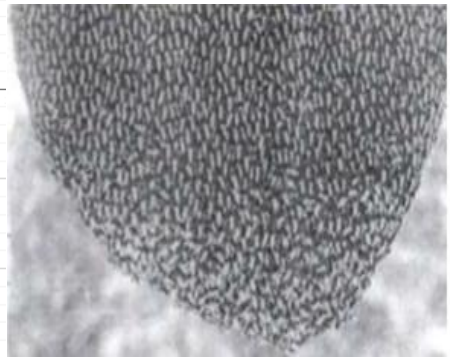
(iii) (a) What is the fixed charge per month for the hostel? (2m)

OR

(b)What is the cost of food the hostel charges, per day? (2m)

Q.15. While playing in a garden. Samaira saw a honeycomb and asked her mother what is that.Her mother replied that it is a honeycomb made by honey bees to store honey. Also, she told her that the shape of the honeycomb formed is a mathematical structure. The mathematical representation of the honey comb is shown in the graph.





Based on the bove information, answer the following questions.

(i) Write the zeroes of the polynomial. (1m)

(ii) Write the expression for the polynomial represented by the above graph. (1m)

(iii)(a) If the square of difference of zeroes of the polynomial $x^2 + px + 45$ is 144, then find the value of p. (2m)

OR

(b) If α, β are zeroes of quadratic polynomial $5x^2 + 5x + 1$, find the value of $\alpha^2 + \beta^2$. (2m)

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