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Test / Exam Name: Maths - Polynomials | **Standard: 9th** | **Subject: Mathematics**

Student Name: ..... **Section:** ..... **Roll No.:** .....

Questions: 24 | **Time: 01:10 hh:mm** | **Marks: 40**

Instructions

1. 1. Keep the timer and then start the exam. 2. Keep your work tidy. 3. Make sure to write new section on the new page and all the questions number properly. 4. For Maths - make sure to do all the rough work on the right hand side only. 5. Recheck your paper before submitting. Check your paper like you are checking your enemy's paper - find the maximum mistakes and then correct it.

SECTION-A

Q1. If f(x) = x^2 - 5x + 1, that the value of f(2) + f(-1) is: **1 Mark**

A 2 **B** 1 **C** -2 **D** -1

Q2. (104 × 96) = ? **1 Mark**

A 9684 **B** 9884 **C** 9984 **D** 9894

Q3. (x + 1) is a factor of the polynomial: **1 Mark**

A $x^3 + x^2 - x + 1$ **B** $x^3 + 2x^2 - x - 2$

C $x^3 + 2x^2 - x + 2$ **D** $x^4 + x^3 + x^2 + 1$

Q4. The value of $\frac{0.75\times0.75\times0.75+0.25\times0.25\times0.25}{0.75\times0.75-0.75\times0.25+0.25\times0.25}$ is: **1 Mark**

A -1 **B** 2 **C** 1 **D** 0

Q5. If $3x + \frac{2}{x} = 7$, than $\left(9x^2 - \frac{4}{x^2}\right) =$ **1 Mark**

A 25 **B** 35 **C** 30 **D** 49

Q6. If $(m^2 - 3)x^2 + 3mx + 3m + 1 = 0$ has roots which are reciprocal of each other, then the value of m equals **1 Mark**

A 4 **B** 1 **C** 2 **D** None of these.

Q7. If x + y + z = 9 and xy + zx = 23, then the value of $x^3 + y^3 + z^3 - 3xyz$ is: **1 Mark**

A 144 **B** 108 **C** 209 **D** 180

Q8. Factorise: **1 Mark**
$abx^2 + a^2x + b^2x + ab$

Q9. Determine the degree of the following polynomials. **1 Mark**
$y^2(y - y^3)$

Q10. Which of the following expressions are polynomials in one variable and which are not? State reasons for your answer: **1 Mark**
$y^2 + \sqrt{2}$

Q11. Classify the following polynomials as polynomials in one variables, two - variables etc: **1 Mark**
xy + yz + zx

Q12. **Directions:** In the following questions, the Assertions (A) and Reason(s) (R) have been put forward. Read both the statements carefully and choose the correct alternative from the following: **1 Mark**
Assertion: If (x - 1) is the factor of $4x^3 + 3x^2 - 4x + k$ then k = -3.
Reason: $(x + y)^2 = x^2 + y^2 + 2xy$.

A Both Assertion and Reason are correct and Reason is the correct explanation for Assertion.
B Both Assertion and Reason are correct and Reason is not the correct explanation for Assertion.
C Assertion is true but the reason is false.
D Both assertion and reason are false.

Q13. Write whether the following statement are True or False. **1 Mark**
A binomial may have degree 5.

Q14. Write the correct answer in the following: **1 Mark**
If $49x^2 - b = \left(7x + \frac{1}{2}\right)\left(7x - \frac{1}{2}\right)$, the value of b is.

A 0 **B** $\frac{1}{\sqrt{2}}$ **C** $\frac{1}{4}$ **D** $\frac{1}{2}$

SECTION-B

Q15. Factorise: **2 Marks**
$x^2 - 26x + 133$

Q16. Factorise: **2 Marks**
$8x^3 - \frac{1}{27y^3}$

Q17. Find the following: **2 Marks**
$(x^2 - 1)(x^4 + x^2 + 1)$

Q18. Simplify the following: **2 Marks**
175 × 175 + 2 × 175 × 25 + 25 × 25

Q19. Verify whether the following are zeroes of the polynomial, indicated against them. **2 Marks**
$p(x) = 5x - \pi \; x = \frac{4}{5}$

SECTION-C

Q20. If x = -2 and y = 1, by using an identity find the value of the following: **3 Marks**
$\left(\frac{2}{x} - \frac{x}{2}\right)\left(\frac{4}{x^2} + \frac{x^2}{4} + 1\right)$

Q21. Using the remainder theorem, find the remainder, when p(x) is divided by g(x), where, **3 Marks**
$p(x) = 2x^3 + 3x^2 - 11x - 3$, $g(x) = \left(x + \frac{1}{2}\right)$.

Q22. If a + b + c = 5 and ab + bc + ca = 10, then prove that $a^3 + b^3 + c^3 - 3abc = -25$. **3 Marks**

Q23. Factorise: **3 Marks**
$2x^2 + y^2 + 8z^2 - 2\sqrt{2}xy + 4\sqrt{2}yz - 8zx$

Q24. Find the value of a, if x + 2 is a factor of $4x^4 + 2x^3 - 3x^2 + 8x + 5a$. **4 Marks**