**JNV**

**MODEL QUESTION**

**MATHEMATICS:2 POLYNOMIALS**

**Class : X**

|  |  |
| --- | --- |
|  |  |
|  |  |

|  |  |  |
| --- | --- | --- |
| 1 | Graph of x = f(y) is given, find the zeroes and number of zeroes of f(y). C:\fake\image1.png |  |
|  |  |  |
|  | ANS:     The graph of x = f(y) intersects y-axis at A(0, 4), B(0, 1), O(0, 0) and C(0, – 2) ∴ zeroes are y = 4, 1, 0 and – 2 and number of zeroes is four. |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| 2 | Sum and product of zeroes of quadratic polynomial are 5 and 17 respectively. Find the polynomial. |  |
|  |  |  |
|  | ANS:     Quadratic Polynomial = x2 – (sum of zeroes) x + product of zeroes = x2 – 5x + 17 |  |
|  |  |  |
| 3 | Using division show that 3y2 + 5 is a factor of 6y5 + 15y4 + 16y3 + 4y2 + 10y – 35. |  |
|  |  |  |
|  | ANS:     C:\fake\image2.png C:\fake\image3.png  Remainder = 0 Hence, 3y2 + 5 is a factor of 6y5 + 15y4 + 16y3 + 4y2 + 10y – 35 |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| 4 | Divide p(x) by q(x) and check your answer using division algorithm. (Dividend = Divisor × Quotient + Remainder) (i) p(x) = 3x5 – 2x4 + x2 – 2, q(x) = x2 + x + 1 (ii) p(x) = 6x5 + 4x4 – 27x3 –7x2 – 27x – 6, q(x) = 2x2 – 3 |  |
|  |  |  |
|  | ANS:     C:\fake\image4.png Checking p(x) = q(x) × g(x) + r(x) = (x2 + x + 1)(3x3 – 5x2 + 2x + 4) + (– 6x – 6) = x2(3x3 – 5x2 + 2x + 4) + x(3x3 – 5x2 + 2x + 4) + 1(3x3 – 5x2 + 2x + 4) – 6x – 6 = 3x5 – 5x4 + 2x3 + 4x2 + 3x4 – 5x3 + 2x2 + 4x + 3x3 – 5x2 + 2x + 4 – 6x – 6 = 3x5 – 2x4 + x2 – 2 Hence verified. C:\fake\image5.pngp(x) = 6x5 + 4x4 – 27x3 – 7x2 – 27x – 6 q(x) = 2x2 – 3, g(x) = 3x3 + 2x2 – 9x – C:\fake\image6.png r(x) = – 54x – C:\fake\image7.png Now p(x) = q(x).g(x) + r(x) = (2x2 – 3)(3x3 + 2x2 – 9x – C:\fake\image8.png) + (– 54x – C:\fake\image9.png) = 6x5 + 4x4 – 18x3 – x2 – 9x3 – 6x2 + 27x + C:\fake\image10.png– 54x – C:\fake\image11.png= 6x5 + 4x4 – 27x3 – 7x2 – 27x – 6 Hence verified. |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| 5 | What must be subtracted or added to p(x) = 8x4 + 14x3 – 2x2 + 8x – 12 so that 4x2 + 3x – 2 is a factor of p(x)?  C:\fake\image12.png |  |
|  |  |  |
|  | ANS:       Remainder = 15x – 14 ∴ If we subtract 15x – 14 or add – 15x + 14 then remainder will be 0. Then 4x2 + 3x – 2 will be a factor of given polynomial. |  |
|  |  |  |