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| **FT/MA/1119A 13/06/2019** | | | | |
| **FIRST TERM EXAMINATION (2019-20)** | | | | |
| **SUBJECT: MATHEMATICS**  **GRADE: XI** | | MAX. MARKS: 80TIME: 3 Hrs | | |
| **Name:** | | | **Section:** | **Roll No:** |
| ***General Instructions:***   * *This question paper consists of 4 printed pages.* * *Section A carries 1 mark each.* * *Section B carries 2 marks each.* * *Section C carries 4 marks each.* * *Section D carries 6 marks each.* * *All answers to be written in the answer sheet provided.* | | | | |
|  | **SECTION A** | | | |
|  | Describe the set {- 1, 1} in set builder form. | | | |
|  | Write T = in roster form. | | | |
|  | What is conjugate of | | | |
|  | Find multiplicative inverse of + 3i | | | |
|  | If (x + 3, 5) = (6, 2 x +y) then find x and y. | | | |
|  | If n (A) = 3, n (B) = 4 then how many subsets will A x B have? | | | |
|  | Find the value of cosec (-17100) | | | |
|  | The minute hand of a watch is 1.5cm long. How far does its tip move in 40 minutes? (π = 3.14) | | | |
|  | If one end of a diameter of the circle x 2 + y 2 - 4x – 6y + 11 = 0 is (8,4). Find the coordinates of the other end. | | | |
|  | For the parabola y 2 = -12x, Find the equation of directrix and focus. | | | |
| 11. | Represent the Venn Diagram in symbolic form | | | |
| 12 | Write subsets of {4, {5,6}, 7} | | | |
| 13 | Find modules of (1 + 2i) (2 + 3i) | | | |
| 14 | Find x and y if (1 + i) y2 + (6 + i) = (2 + i) x | | | |
| 15 | Find domain and range of the following relation  R = {(x+1, x+5) : x W 5} | | | |
| 16 | Define Signum function | | | |
| 17 | Find the value of | | | |
| 18 | Convert 6 radians into degree measure | | | |
| 19 | Find the value of sin (n + 1) x sin (n+2) x + cos (n+1) x cos (n+2) x | | | |
| 20 | Find the length of transverse axis and conjugate axis of hyperbola  9x2 – 16y2 = 144 | | | |
|  | **SECTION B** | | | |
| 21 | Find the eccentricity of the ellipse with foci on x axis if its latus rectum be one half of its major axis. | | | |
| 22 | Two finite sets have m and n elements. The total number of subsets of the first set is 112 more than the total number of subsets of the second set. Find values of m and n. | | | |
| 23 | For complex values of z Find imaginary z : | z | + z = 2 + i | | | |
| 24 | Let f = {(1,1), (2,3), (0, -1), (-1,-3)} be a linear function from z into z find f(x) | | | |
| 25 | Prove that = 1 | | | |
| 26 | Find the value of tan 750 | | | |
|  | **SECTION C** | | | |
| 27 | Find equation of a circle passing through (3,-2) and (-2, 0) and concentric with circle  2x2 + 2y2 + 4x + 8y + 5 = 0 | | | |
| 28 | Represent the following sets using Venn Diagram   1. (P Q)’ (P Q) 2. A’ (C – B) | | | |
| 29 | If (u + iv)3 = x + iy then Prove that = 4(u2 – v2) | | | |
| 30 | Find domain and range of the following functions | | | |
| 31 | Prove that tan4x = | | | |
| 32 | An arch of a monument is in the form of semi ellipse. It is 8 m wide and 2 m high at the centre. Find the height of the arch at a point 1.5 m from one end. | | | |
|  | **SECTION D** | | | |
| 33 | Find the equation of the circle passing through two points on the x axis which is at a distance 4 units from the origin and whose radius is 5 units. | | | |
| 34 | Solve the equation  x2 - (2 + i) x – 1 + 7i = 0 For x complex numbers | | | |
| 35 | Prove that   1. cos22x – cos26x = sin4x sin8x | | | |
| 36 | In a survey of 25 students, it was found that 15 had taken Maths, 12 had taken Physics and 11 had taken Chemistry, 5 had taken Maths and Chemistry, 9 had taken Maths and Physics, 4 had taken Physics and Chemistry and 3 had taken all the 3 subjects. Find the number of students that had   1. Only Chemistry 2. Physics and Chemistry and not Mathematics 3. Only one of the subjects 4. At least one of the 3 subjects 5. None of the subjects 6. Maths or Physics but not Chemistry | | | |
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