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**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_\_

**End Semester Examination – Nov/Dec - 2016**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **11MA203/12MA203** | **Duration :** | **3 hrs** |
| **Sub. Name :** | **ALGEBRA, ANALYTICAL GEOMETRY AND CALCULUS I** | **Max. marks :** | **100** |

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| **Q. No.** | **Questions** | | **Marks** |
| **PART-A(10X1=10 MARKS)** | | | |
| 1. | Convert 150⁰ into radians. | | (1) |
| 2. | Simplify | | (1) |
| 3. | Find | | (1) |
| 4. | If  find | | (1) |
| 5. | If f(x) is an odd function of x then | | (1) |
| 6. |  | | (1) |
| 7. | Find the value of p if the lines *x–2y+7 = 0* and *3x–py–6 = 0* are perpendicular. | | (1) |
| 8. | Write down the equation of the circle whose centre is at the origin and whose radius is 3 units. | | (1) |
| 9. | If the roots of the equation are in G.P then find one of its roots. | | (1) |
| 10. | In a polynomial equation with real co-efficient imaginary roots occurs in \_\_\_\_\_\_\_\_. | | (1) |
| **PART B(5 X 3= 15 MARKS)** | | | |
| 11. | Prove that | | (3) |
| 12. | If  find | | (3) |
| 13. | Evaluate | | (3) |
| 14. | Find the angle between the lines | | (3) |
| 15. | Diminish the roots of the equation by 2. | | (3) |
| **PART C(5 X 15= 75 MARKS)** | | | |
| 16. | a. | If n is a positive integer, prove that. | (8) |
| b. | Prove that . | (7) |
| (OR) | | | |
| 17. | a. | If *A+B+C = 180⁰,* show that *sin2A+sin2B+sin2C = 4sinAsinBsinC*. | (8) |
| b. | Find all the values of . | (7) |
| 18. | a. | Find | (8) |
| b. | Differentiate  with respect to *x*. | (7) |
| (OR) | | | |
| 19. | a. | Differentiate | (8) |
| b. | Find , if  and . | (7) |
| 20. | a. | Evaluate | (8) |
| b. | Evaluate. | (7) |
| (OR) | | | |
| 21. | a. | Find | (8) |
| b. | Evaluate. | (7) |
| 22. | a. | Find the equation of the circle passing through the points (1, 2), (2, 1) and (8, 9). Also find its centre and radius. | (8) |
| b. | Find the axis, vertex, focus, directrix, equation of the latus rectum and length of the latus re rectum for the parabola | (7) |
| (OR) | | | |
| 23. | a. | Show that the lines *3x + y + 4 = 0, 3x + 4y*  *15 = 0* and *24x*  *7y*  *3 = 0* form an isosceles triangle. | (8) |
| b. | Find the equation of the ellipse whose foci are (1, 0), (-1, 0) and eccentricity is | (7) |
| 24. | a. | Solve  given that the roots are in A.P. | (7) |
| b. | Solve . | (8) |
| (OR) | | | |
| 25. | a. | Solve the equation given that one root is double of another. | (7) |
| b. | Solve | (8) |

ALL THE BEST