**H.T No**

**Regulations:**

**A17**



**Sreenidhi Institute of Science and Technology**

(An Autonomous Institution)

**Code No: 6H112 Date: 17-June-2019 (AN)**

**B.Tech I Year I-Semester External Examination, June-2019 (Supplementary)**

**FUNDAMENTALS OF MATHEMATICS (BT)**

**Time: 3 Hours Max.Marks:75**

***Note: a****) No additional answer sheets will be provided.*

*b) All sub-parts of a question must be answered at one place only, otherwise it will not be valued.*

*c) Missing data can be assumed suitably.*

**Part - A Max.Marks:25**

**Answer all QUESTIONS.**

|  |  |  |
| --- | --- | --- |
| 1. | Express as the algebraic sum of two trigonometric functions. | [3M] |
| 2. | If find . | [3M] |
| 3. | Find the equation of straight line passing through (5,4) and parallel to the line | [3M] |
| 4. | Prove that minimum value of is zero. | [3M] |
| 5. | Evaluate | [3M] |
| 6. | Write order and degree of the differential equation . | [2M] |
| 7. | Prove that | [2M] |
| 8. | Define limit of the function. | [2M] |
| 9. | Compute | [2M] |
| 10. | Find the angle between the vectors | [2M] |

**Part – B Max.Marks:50**

**ANSWER ANY FIVE QUESTIONS. EACH QUESTION CARRIES 10 MARKS.**

|  |  |  |  |
| --- | --- | --- | --- |
| 11. | a) | Show that | [5M] |
|  | b) | Expand as partial fractions. | [5M] |
|  |  |  |  |
| 12. | a) | Find the Determinant and Adjoint of the matrix | [5M] |
|  | b) | Solve the system of equations  by using matrix inversion method. | [5M] |
|  |  |  |  |
| 13. | a) | Determine the equation of the circle passing through the points (1,1), (-2,2), (-6,0). | [5M] |
|  | b) | Obtain the equation of the parabola given that its focus is (2,-1) an vertex is (2,1). | [5M] |
|  |  |  |  |
| 14. | a) | If then prove that | [5M] |
|  | b) | Determine the lengths of the tangent and normal to the ellipse at (-2,3). | [5M] |
|  |  |  |  |
| 15. | a) | Evaluate | [5M] |
|  | b) | Evaluate | [5M] |
|  |  |  |  |
| 16. | a) | Form the differential equation of family of curves given by where *a* and *b* are parameters. | [5M] |
|  | b) | Solve . | [5M] |
|  |  |  |  |
| 17. | a) | In any triangle ABC, prove that . | [4M] |
|  | b) | Define scalar, vector and unit vector. | [3M] |
|  | c) | Find eccentricity, foci and equation of the directrices of | [3M] |
|  |  |  |  |
| 18. | a) | Evaluate | [4M] |
|  | b) | Derive a reduction formula for | [3M] |
|  | c) | Solve | [3M] |

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