**Regulations:**

**A18**



**H.T No**

**Sreenidhi Institute of Science and Technology**

(An Autonomous Institution)

**Code No: 7HC08 Date: 21-Jan-2020 (FN)**

**B.Tech I-Year II-Semester External Examination, Jan/Feb-2020 (Supplementary)**

**ENGINEERING MATHEMATICS - II (CIVIL, EEE, ME and ECE)**

**Time: 3 Hours Max.Marks:70**

***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:20**

**Answer all QUESTIONS.**

|  |  |  |
| --- | --- | --- |
| 1. | Evaluate | [2M] |
| 2. | Solv**e** | [2M] |
| 3. | Find complementary function of | [2M] |
| 4. | Write generating functions for Bessel functions and Legendre polynomials | [2M] |
| 5. | Prove that is a harmonic function. | [2M] |
| 6. | Define singular point and give an example. | [2M] |
| 7. | Find gradient of | [2M] |
| 8. | Write Bessel differential equation and Legendre differential equation | [2M] |
| 9. | Write C-R equations in Cartesian Co-ordinate system and polar form | [2M] |
| 10. | State Taylor series expansion of a function. | [2M] |

**Part – B Max.Marks:50**

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

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| --- | --- | --- | --- |
| 11. |  | Verify Gauss divergence theorem for taken over the surface of the cube bounded by the planes and coordinate planes. | [10M] |
|  |  |  |  |
| 12. | a) | Solve x2y dx – (x3 + y3) dy = 0. | [5M] |
|  | b) | The temperature of the body drops from 1000C to 750C in ten minutes. The surrounding air is maintained at 200C temperature. What will be its temperature after half an hour? | [5M] |
|  |  |  |  |
| 13. | a) | Solve (D2 – 2D + 1)y = 3 – sin2x + x2e3x | [10M] |
|  |  |  |  |
| 14. | a) | Express in terms of Legendre polynomials. | [5M] |
|  | b) | Prove that | [5M] |
|  |  |  |  |
| 15. | a) | Check whether the function is analytic or not. | [5M] |
|  | b) | Under the transformation find the image of the circle . | [5M] |
|  |  |  |  |
| 16. | a) | Evaluate , where C is the circle . | [5M] |
|  | b) | Obtain Laurent series expansion of the function in the region . | [5M] |
|  |  |  |  |
| 17. | a) | Find the area lying between the parabola and the line . | [5M] |
|  | b) | Solve | [5M] |
|  |  |  |  |
| 18. | a) | Obtain the bilinear transformation that maps the points 1,i,-1 into the points i,0,-i respectively. | [5M] |
|  | b) | Evaluate where C is the circle  by using residue theorem. | [5M] |

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