**20EC205**

**Hall Ticket Number:**

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| **I/IV B.Tech (Regular) DEGREE EXAMINATION** | | | |
| **October, 2021** | **Electronics and Communication Engineering** | | |
| **Second Semester** | **Circuit Theory** | | |
| **Time:** Three Hours | | **Maximum:7**0 Marks | |
| *Answer Question* ***No. 1*** *Compulsorily.* | | | (14X1 = 14 Marks) |
| *Answer* ***ONE*** *question from each Unit.* | | | (4X14=56Marks) |

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| 1. | a) | Explain voltage division rule. | | CO1 |  |
|  | b) | State Kirchhoff’s voltage law | | CO1 |  |
|  | c) | What is reference node in nodal analysis? | | CO1 |  |
|  | d) | Define Thevenin’s theorem | | CO3 |  |
|  | e) | What is meant by super node | | CO2 |  |
|  | f) | Write the equivalent circuit to convert delta-wye conversion. | | CO3 |  |
|  | g) | What is the condition for maximum power transfer for DC Circuit | | CO3 |  |
|  | h) | An RC circuit has R=2 ohms and C=4F. What is the time constant RC circuit | | CO4 |  |
|  | i) | Differentiate Circuit and Network | | CO2 |  |
|  | j) | What is the source free response | | CO4 |  |
|  | k) | Define Ohm’s law. | | CO1 |  |
|  | l) | When two resistors R1=20 Ohm and R2=3Ohm are in parallel. Find equivalent resistance. | | CO1 |  |
|  | m) | Describe super position principle. | | CO3 |  |
|  | n) | Write the time constant equation for RL circuit. | | CO4 |  |
| **U nit - I** | | | | | |
| 2. | a) |  | | CO1 | 7M |
|  | b) | Find the Rab for a given circuit |  | CO1 | 7M |
|  |  | **(OR)** | |  |  |
| 3. | a) | Find the current i1 to i5 |  | CO1 | 7M |
|  |  |  |  |  |  |
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|  | b) | Determine the voltage and current for the given circuit | | CO1 | 7M |
|  |  | **U nit - II** | |  |  |
| 4. | a) | Find the V1 and V2 using nodal analysis | | CO2 | 7M |
|  | b) | Find the current I1 and I2 using mesh analysis | | CO2 | 7M |
|  |  | **(OR)** | |  |  |
| 5. | a) | Determine the Power dissipated in 5 ohms resistor using nodal analysis  C:\Users\exam\Desktop\Untitled.png | | CO2 | 7M |
| . | b) | Compare nodal analysis and mesh analysis. | | CO2 | 7M |
| **U nit - III** | | | | | |
| 6. | a) |  | | CO3 | 7M |
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|  | b) | Find current through 15 ohms resistor using Norton’s theorem | | CO3 | 7M |
|  |  | **(OR)** | |  |  |
| 7. | a) | Find the Maximum power for a given network shown in below | | CO3 | 7M |
|  | b) | Use source transformation find vo | | CO3 | 7M |
|  |  | **U nit - IV** | |  |  |
| 8. | a) | The Switch has been in position a for long time at t=0 it moves to position b. Calculate i(t) for t>0 | | CO4 | 7M |
|  | | | | | |
|  | b) | The switch is closed for longer time. At t equal to 0 it is opened. Obtain the expression for iL(t) and v(t) | | CO4 | 7M |
|  |  | **(OR)** | |  |  |
| 9. | a) | Derive the expression for source free RC circuit. | | CO4 | 7M |
|  | b) | Derive the expression for source free RL circuit. | | CO4 | 7M |

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