|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **20EI205**  **Hall Ticket Number:**   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |      |  |  |  | | --- | --- | --- | | **I/IV B.Tech( Regular/Supplementary) DEGREE EXAMINATION** | | | | **September,2022** | **Electronics and Instrumentation Engineering** | | | **Second Semester** | **Basic Electrical Engineering** | | | **Time: Three Hours** | | **Maximum:70 Marks** | |  |
| |  |  | | --- | --- | | ***Answer question 1 compulsory.*** | **(14X1 = 14 Marks)** | | ***Answer one question from each unit.*** | **(4X14=56 Marks)** | |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1. | a) | |  | | --- | | State thevenin’s theorem. | | CO1 |  |
|  | b) | Define voltage and current. | CO1 |  |
|  | c) | State KCL. | CO1 |  |
|  | d) | Write voltage current relationships in capacitor. | CO1 |  |
|  | e) | Draw power triangle. | CO2 |  |
|  | f) | Define RMS value. | CO2 |  |
|  | g) | What is relation between line and phase currents & line and phase voltages in a three phase star connected systems? | CO2 |  |
|  | h) | Write short notes on phasor representation. | CO2 |  |
|  | i) | Write the principle of single phase transformer. | CO3 |  |
|  | j) | What are the different types of single phase induction motors. | CO3 |  |
|  | k) | Define regulation of a transformer | CO3 |  |
|  | l) | What is meant by earthing? | CO4 |  |
|  | m) | Write the full forms of SFU & MCCB | CO4 |  |
|  | n) | What are different types of batteries? | CO4 |  |
| **Unit –I** | | | | |
| 2. | a) | Apply superposition theorem to find Vo in the circuit of Fig. | CO1 | 7M |
|  | b) | State and explain Norton’s theorem with a suitable example. | CO1 | 7M |
| **(OR)** | | | | |
| 3. | a) | Explain time domain analysis of first order RC circuit. | CO1 | 7M |
|  | b) | Find current through all the resistors  D:\PVPSIT\2020-21\Untitled.jpg | CO1 | 7M |
| **P.T.O**  **20EI205**  **Unit –II** | | | | |
| 4. | a) | Define the terms i) Apparent power ii) Active power iii) Reactive power iv) power factor | CO2 | 7M |
|  | b) | Derive the relationship between phase current and line current in a balanced phase delta connected system. | CO2 | 7M |
| **(OR)** | | | | |
| 5. | a) | A 10V rms, 500 Hz signal is applied to a series RC circuit consisting of a 2 kΩ resistor connected in series with a 0.1 µF capacitor. Find impedance Z, current I, phase angle θ. | CO2 | 7M |
|  | b) | Find rms values of a half- wave rectified waveform shown in figure.  C:\Users\saibabu\Desktop\GMRIT\circuits\IMG_20181003_121210.jpg | CO2 | 7M |
| **Unit –III** | | | | |
| 6. | a) | Explain the principle of operation of a synchronous generator. | CO3 | 7M |
|  | b) | Discuss about the rotating magnetic field in a three-phase induction machine. | CO3 | 7M |
| **(OR)** | | | | |
| 7. | a) | Explain the working principle of a DC generator with neat sketch. | CO3 | 7M |
|  | b) | What is meant by a transformer? Explain various losses that are present in a single-phase transformer. | CO3 | 7M |
| **Unit –IV** | | | | |
| 8. | a) | Describe different characteristics of batteries. | CO4 | 7M |
|  | b) | Explain in detail about i) ELCB ii) MCB | CO4 | 7M |
| **(OR)** | | | | |
| 9. | a) | Explain in detail about different types of wires and cables. | CO4 | 7M |
|  | b) | Interpret various power factor improvement methods. | CO4 | 7M |

****