



II B.Tech II Sem Regular End Examination, July 2021

Basic Electrical & Electronics Engineering
(CIVIL & MECH)
Time: 3 Hours.**Max. Marks: 70**

Note: 1. Answer any FIVE questions.

2. Each question carries 14 marks and may have a, b as sub questions.

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|---|----|---|----|----|----|
| 1 | a) | State and explain Kirchhoff's laws. | 7M | CO | BL |
| | | Two batteries, each of 100 V and internal resistance of 5Ω are | | | |
| | b) | connected in parallel across a load resistance of 50Ω . Find the current flowing through the load resistance. | 7M | CO | BL |
| 2 | a) | Derive the r.m.s value, average value and form factor of a sinusoidal quantity. | 7M | CO | BL |
| | | A resistance of 12Ω and an inductance of $0.15H$ are connected in series across 100 V, 50 Hz supply. Calculate | | | |
| | b) | (i) the current | 7M | CO | BL |
| | | (ii) the phase angle difference between current and the supply voltage | | | |
| | | (iii) power consumed by the circuit. | | | |
| 3 | a) | Explain different types of wire used in electrical installations. | 7M | CO | BL |
| | b) | Explain the need for improving the power factor of a system? | 7M | CO | BL |
| 4 | a) | Explain the working of MCB with a neat sketch. | 7M | CO | BL |
| | b) | Explain the working principle of single phase Transformer. | 7M | CO | BL |
| 5 | a) | Derive the torque equation of a D.C motor. | 7M | CO | BL |
| | b) | Explain the constructional details of synchronous generator. | 7M | CO | BL |
| 6 | a) | Draw the circuit diagram of a Half-wave bridge rectifier circuit. Explain its working. | 7M | CO | BL |
| | b) | Draw the V-I characteristics of PN junction diode. | 7M | CO | BL |
| 7 | a) | In a bridge rectifier circuit the peak value of secondary voltage is $240\sqrt{2}$ V and frequency is 50Hz. Find the (i) no-load output dc voltage (ii) PIV and (iii) output frequency. | 7M | CO | BL |
| | b) | Explain the operation of a transistor as an amplifier. | 7M | CO | BL |
| 8 | a) | Explain the constructional details of FET. | 7M | CO | BL |
| | b) | Give the comparison of CB, CE and CC Transistor configurations | 7M | CO | BL |