

Roll No.

Total No. of Pages : 02

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B.Tech. (AI & DS)/(AI & ML)/ (Block Chain) / (CE)/(CSE)/ (CSE) (AI&ML) / (CSE) (Cyber Security) / (Computer Science and Design)/(EE)/(ECE)/(EEE)/(ETE)/(FT)/(IT)/(ME)/(Robotics & Artificial Intelligence)/CSE (Internet of Things and Cyber Security including Block Chain Technology) (Sem.-1,2)

BASIC ELECTRICAL ENGINEERING

Subject Code : BTEE-101-18

M.Code : 93797

Date of Examination : 11-05-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B & C have FOUR questions each.
3. Attempt any FIVE questions from SECTION B & C carrying EIGHT marks each.
4. Select atleast TWO questions from SECTION - B & C Each.

SECTION-A

1. Write briefly:

- a) Explain the types of cables.
- b) What is the difference between active and passive elements?
- c) Draw a construction schematic for a salient-pole type of synchronous machine.
- d) Draw Norton's equivalent circuit.
- e) Why do we perform earthing in electric systems? Enlist its types.
- f) What are polyphase systems?
- g) Write voltage and current relations in star and delta connections.
- h) Draw a sine voltage waveform, hence indicate peak, rms and instantaneous values on it.
- i) What is the relation between rotor copper loss, slip and rotor input?
- j) Enlist various types of magnetic materials.

SECTION-B

2. Draw and explain the electric schematic of a miniature circuit breaker.
3. A resistance of 15 ohms and capacitor of 150 μF capacitance are connected in series across a 230 V, 50 Hz supply. Estimate
 - a) Impedance of the circuit
 - b) Current
 - c) Power factor and phase angle
 - d) Power consumed in the circuit.
4. Power to an induction motor is supplied by a 12-pole, 3-phase, 500 rpm alternator. The full load speed of the motor is 1440 rpm. Find the percentage slip, and number of poles in the motor.
5. State and prove the Thevenin's theorem. Give an example.

SECTION-C

6. Derive the voltage and current equations in time domain for a first order RL circuit.
7. What is parallel resonance? Derive the voltage and current equations at resonance. Draw its waveforms.
8. In a 25 kVA, 2000/200 V power transformer the iron and full load copper losses are 350W and 400 W respectively. Calculate the efficiency at unity power factor at full load.
9. Write a short note on :
 - a) Important characteristics of batteries
 - b) Power factor improvement.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.