6040

BOARD DIPLOMA EXAMINATION, (C-16)

MARCH/APRIL-2019

DEEE - FIRST YEAR EXAMINATION

BASIC ELECTRICAL ENGINEERING

Time: 3 Hours Max.Marks:80

PART-A

10x3=30M

Instructions: 1) Answer **all** questions. Each question carries **3** marks.
2) Answer should be brief and straight to the point and shall exceed **five** simple sentences.

1) Classify the Different sources of energy.

2) Define temperature co-efficient of resistance and give its units.

3) Define work, power and Energy and give their SI units.

4) State joule's law of heat.

5) Define (i) Magnetic field (ii) Magnetic flux density (iii) Magnetic flux.

6) State Right hand thumb rule.

7) State Faraday's laws of electromagnetic induction.

8) State Fleming's Right hand rule.

9) State coulomb's law of electrostatics.

10) State uses of capacitors.

PART-B

5x10=50M

Instructions: 1) Answer any Five questions and each question carries Ten marks.
2) The answer should be comprehensive and the criteria for valuation is the content but not the length of the answer.

11) a) Derive expression for resistance at any temperature as $R_t = R_0 (1+\alpha_0 t)$.
b) The resistance of a conductor at 10°C is 5Ω and at 100°C is 12Ω. Find the resistance at 0°C and also find temperature co-efficient at 40°C.

12) a) Derive an expression for equivalent resistance when three resistances are connected in series.
b) Compare series and parallel circuits in any five aspects.

13) Two lamps of rating 150W, 230V and 250W, 250V are connected in parallel across 200V Supply. Calculate (i) the resistance of each lamp (ii) total current (iii) the power drawn from the supply (iv) the electrical energy taken from the supply in 8 hours.

14) An electric kettle is rated 1.5kW; 230V takes 5 minutes to bring 1kg of water to boiling point from 15°C. Find the efficiency of kettle.

15) a) Derive an expression for magnitude of the force on a conductor in a magnetic field.
b) A coil has 400 turns. Find the induced e.m.f in it if the flux changes from 0.2mwb to 1mwb in 0.2 second.

16) Derive expressions for (i) self inductance (ii) mutual inductance.

17) Derive an expression for total inductance when two inductances are connected in (i) Series aiding and (ii) series opposing.

18) a) Derive an expression for equivalent capacitance when three capacitors are connected in series.
b) A 20μF air insulated parallel plate capacitor is charged to 300V. Calculate the energy stored in a capacitor.

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