



C09-EE-105

3037

BOARD DIPLOMA EXAMINATION, (C-09)

OCT/NOV—2015

DEEE—FIRST YEAR EXAMINATION

BASIC ELECTRICAL ENGINEERING

Time : 3 hours]

[Total Marks : 80

PART—A

3×10=30

- Instructions :** (1) Answer **all** questions.
(2) Each question carries **three** marks.
(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. Define the following terms :
 - (a) Resistance
 - (b) Specific resistance
2. A coil wound of copper wire has a resistance of 16 ohm at 20 °C. Calculate its resistance at 60 °C. The resistance temperature coefficient of copper is 0.0043/°C at 20 °C.
3. Expand ACSR and AAC and give two applications of each.
4. Define the following terms and state their units :
 - (a) Magnetic field
 - (b) Magnetic flux
5. Define mutual inductance.
6. Find the area required for such an electromagnet to have a lifting power of 400 kg with a flux density of 0.1 Wb/m².

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7. Define dielectric strength, dielectric constant and dielectric loss.
8. Write the three applications of each (a) cardboard and (b) glass.
9. What is the purpose of impregnation?
10. Define the following terms :
- (a) Breakdown voltage
 - (b) Forward bias
 - (c) Reverse bias

PART—B

10×5=50

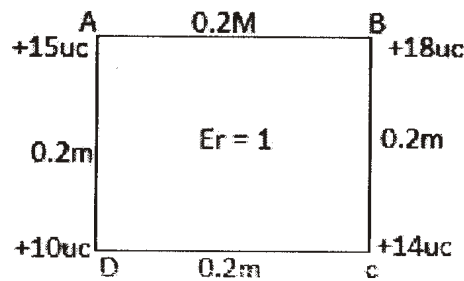
Instructions : (1) Answer *any five* questions.
(2) Each question carries **ten** marks.
(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. Three resistances of values 4 ohm, 6 ohm and 8 ohm are connected in series across a 36 V DC supply. Calculate the (a) total resistance of the circuit, (b) total current in the circuit, (c) voltage drop across each resistance, (d) power dissipated in each resistance and (e) total power dissipated in the circuit.
12. (a) State the function of a space heater with a neat sketch.
(b) An electric kettle is marked 500 W, 230 V and is found to take 15 minutes to raise 1 kg of water from 15 °C to boiling point. Calculate the efficiency of kettle.
13. A cast steel iron ring has an air gap of 2 mm and iron path of 50 cm. Find the number of ampere turns required to produce a flux density of 1.0 Wb/m^2 in the gap. Assume permeability of steel as 800 and neglect leakage.

14. (a) State and explain Fleming's right-hand rule and mention its applications. 4+2

(b) Calculate the e.m.f. generated in the axle of a car travelling at 100 km/hour assuming the length of the axle to be 1.5 m and the vertical component of earth field to be 320 Wb per m². 6

15. Find the magnitude and direction of force on charge at C of the figure shown below :



16. Explain thermoplastics and thermosetting resins with examples.

17. (a) Explain CE configuration of N-P-N transistor and sketch input and output characteristics of it. 5

(b) Explain the construction of intrinsic SC. 5

18. (a) Explain the effect of annealing and hardening on copper regarding mechanical properties.

(b) What is meant by thermocouple? List at least three alloys which are used in thermocouple.
