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C16-EE-106

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**BOARD DIPLOMA EXAMINATION, (C-16)
OCTOBER/NOVEMBER-2018
DEEE- FIRST YEAR EXAMINATION**

BASIC ELECTRICAL ENGINEERING

Time : 3 Hours]

[Total Marks: 80

PART-A

2X15=30

- Instructions :**
1. Answer any **15** questions.
 2. Each question carries **2** marks.
 3. Answer should be brief and straight to the point and shall not exceed five simple sentences.

1. List the limitations of ohms law.
2. State the factors upon which resistance of conductor depends.
3. Define conductivity and mention its units.
4. When three resistances 2Ω , 1Ω and 5Ω are connected in series across 20V supply, find (a) Total resistance (b) Voltage drop across each resistance.
5. Define electrical energy and mention their S.I units.
6. Define (a) Power (b) Work.
7. Define thermal efficiency.
8. List any two applications of space heaters
9. List any four properties of magnetic lines of force.
10. Define (a) Reluctance (b) Permeability
11. State boit-savart law.
12. Define leakage co-efficient
13. State Faradays laws
14. Define self-inductance.*

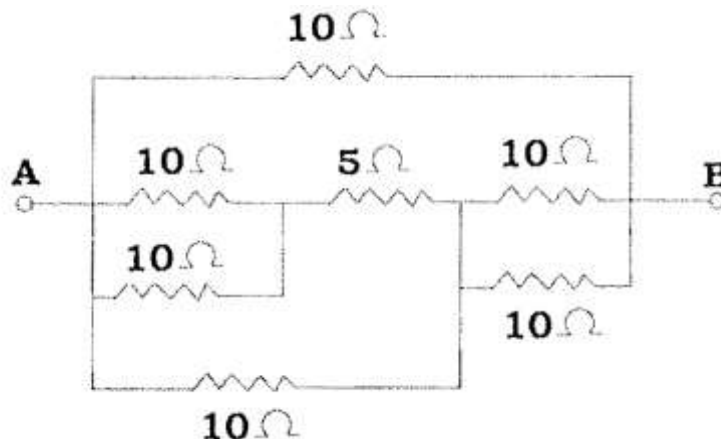
15. State Fleming's right hand rule.
16. State co-efficient of coupling.
17. Define gauss theorem.
18. Define (a) Electric field (b) Electric flux density.
19. Define dielectric strength
20. Write any two uses of capacitors.

PART-B

10X5=50

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

21. (a) Derive an expression for resistance at any temperature ($R_t = R_0(1 + \alpha_0 t)$)
 (b) A coil wound of copper wire has a resistance of 16Ω at 20°C . Calculate its resistance at 60°C . The resistance temperature coefficient of copper is $0.0043/^\circ \text{C}$.
22. (a) Derive the expression for equivalent resistance when connected in series.
 (b) Find the equivalent resistance between points A & B terminals for the following circuit:



23. (a) A house has following load
 - a) 10 lamps of 60W working for 10 hours a day
 - b) 1 electric iron of 450 W working for 1 hour a day
 - c) 8 fans of 80w working for 1 hour a day

- d) 1 heater of 1000W working for 1 hour a day
- e) 1 refrigerator 250w working for 12 hours a day.

Calculate the monthly bill if rate of charge per unit is Rs. 1.20 plus Rs. 20/- as meter rent for the month of June.

- 24. Explain metal filament lamp with a neat sketch.
- 25. Compare the magnetic circuit with electric circuit.
- 26. (a) State Lenz's law
(b) Derive an expression for the equivalent inductance when two coils are connected in series such that their fluxes are aiding.
- 27. (a) Derive the expression for energy stored in a magnetic field.
(b) Find the area required for such an electromagnetic to have a lifting power of 400 kg with a flux density of 0.1 Wb/m^2
- 28. (a) Mention any five properties of electrostatic lines of force.
(b) Calculate the capacitance and energy stored in a parallel plate capacitor which consists of two metal plates each 60cm^2 separated by a dielectric of 1.5mm thickness and $\epsilon_r = 3.5$ if p.d. of 1000V is applied across it.

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