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C16-EC-106

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

BASIC ELECTRICAL ENGINEERING

Time : 3 Hours] [Total Marks: 80

PART-A

2x15=30

Instructions :

1. Answer **any Fifteen** questions.
2. Each question carries **Two**.
3. Answer should be brief and straight to the point and shall not exceed five simple sentences.

1. Define ohm's law.
2. What are the factors affecting the resistance of resistor.
3. Calculate the effective resistance when three resistance of 20Ω, 25Ω and 50Ω are connected in parallel.
4. Define thermal efficiency.
5. Define magnetic flux and magnetic flux density?
6. Define (i) RMS value and (ii) Form factor of an a.c.
7. Draw the vector diagram of two since waves of same frequency and different phase.
8. Define Q-factor of a coil?
9. A coil of 10Ω resistance and .01H inductance is connected in parallel with a capacitor of 100 micro farads capacitance calculate the resonant frequency.
10. Derive the Resonance frequency of R-L-C Series circuit.
11. Convert the following rectangular to polar form & polar to rectangular form
    (i) $100\angle 30^0$ ii) 6-j8.
12. List out the difference types of power plants.
13. Compare series and parallel resonant circuits in any three aspects.
14. What are the merits of poly phase system over single phase system.

15. Draw the block diagram of a thermal power plant.
16. State Fleming's right hand rule.
17. List the applications of universal motor.
18. List any four precautions to be taken prevent accidents while using machines.
19. Wire some general electrical safety rules.
20. List the applications of soda acid fire extinguisher

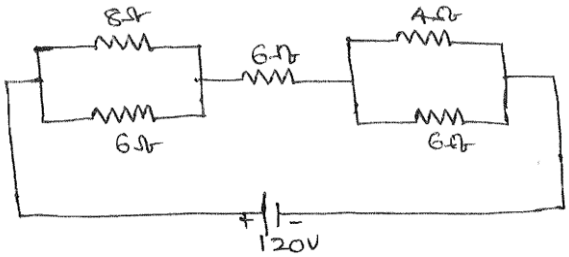
PART-B

10X5=50

Instructions :

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

21. In circuit shown below. Calculate i) the voltage drop across each resistance ii) current flowing through each resistance and iii) total power consumed.



22. (a) Derive an expression for the energy stored in a magnetic field.
    (b) Compare magnetic and electrical circuits in any five aspects.
23. (a) What are the indications of a fully charged cell.
    (b) Define ampere-hour and watt-hour efficiencies of a battery.
24. Explain the chemical reactions that take place during charging and discharging of a lead acid cell.
25. Derive the expressions for impedance current and power in R-C series circuit with neat circuit diagram and phasor diagram.
26. A circuit having a resistance of 6Ω and inductive reactance of 8Ω is connected in parallel with another circuit having a resistance of 8Ω and capacitive of 6Ω. The parallel circuit is connected across a 200V, 50Hz supply. Calculate (i) Supply current ii) power factor of whole circuit and iii) power consumed.
27. Derive the EMF equation of an alternator.
28. Explain the construction and working of a 3-point starter with neat sketch.

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