6246

BOARD DIPLOMA EXAMINATION
JUNE - 2019
DIPLOMA IN MECHANICAL ENGINEERING
BASIC ELECTRICAL ENGINEERING & ELECTRONICS
THIRD SEMESTER EXAMINATION

Time: 3 Hours **Total Marks: 80**

PART - A (3m x 10 = 30m)

Note 1:Answer all questions and each question carries 3 marks

2:Answers should be brief and straight to the point and shall not exceed 5 simple sentences

1. Define Capacitance and state the factors on which the capacitance of a capacitor depends
2. Define Ohm's law and calculate the value of resistance of the filament of a bulb of 230V and 5A
3. Write the equations of currents and voltages in a D.C Long Shunt Compound Motor
4. Draw the connection diagram of a welding generator and label the parts.
5. List any six types of Single-Phase Induction Motors
6. Define the following terms
   a) R.M.S Value b) Form Factor
7. Write the equations for Power and Power factor in Pure Resistance
8. List different types of materials based on their conductivity
9. Draw a neat sketch of Repulsion type Moving- Iron instrument and label the parts
10. State the different types of Burns due to electric shock

PART - B (10m x 5 = 50m)

Note 1:Answer any five questions and each question carries 10 marks

2:The answers should be comprehensive and the criteria for valuation is the content but not the length of the answer

11. (a) Derive the expression for energy stored in an inductor

(b) Calculate the energy stored in a magnetic field of an air cored solenoid 1 m long having a cross sectional area of 0.05 m^2 if it is carrying a Current of 3A. The number of turns of solenoid coil are

850

12. (a) Calculate the values of two resistances which when connected in series gives 20 Ω and 4 Ω when connected in parallel

(b) Write the different equations for work done in terms of V,I,t,R

13. Draw the circuit and Write the equations of currents and voltage of the following motors

a) D.C Series Motor b) D.C Shunt Motor

14. a) Explain how an alternating quantities can be represented vectorially

b) Briefly Explain Phase and Phase Difference

15. a) Explain the working principle of an Alternator

b) Explain the constructional features of an Alternator

16A. Explain the working of D.C generator

B. Briefly Explain the working Principle of 1-Phase Induction Motor

17. Explain the working of a P-N junction diode with forward and reverse bias

18. Explain the construction and working principle of moving coil Instrument with the help of a neat sketch

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