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Subject: Basic Electrical Engineering **Class/ Sem: I-I/I**

Subject code: ES301EE

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BEE Unit Wise Important Questions

UNIT-I

1. State and Explain Ohm's Law.
2. State and Explain Kirchoff's Laws.
3. Write the expressions for stored energy in Inductor and Capacitor.
4. Explain Nodal analysis with an example.
5. Explain Mesh analysis with suitable example.
6. State and explain Thevenin's Theorem with help of neat circuit diagrams and their related Expressions & Problems
7. State and explain Norton's Theorem with help of neat circuit diagrams and their related Expressions & Problems
8. State and explain Super position Theorem with help of neat circuit diagrams and their related expressions & Problems

UNIT-II- AC Circuits

1. Derive the expression for RMS and Average value of Sine wave.
2. Define i) form factor ii) Peak factor iii) phase iv) phase difference v) Line voltage vi) phase voltage vii) line current viii) phase current.
3. Draw the phasor diagram for AC through pure resistor, pure inductor and pure capacitor.
4. Derive the expression for Current , power factor and power in Series R-L circuit
5. Derive the expression for Current , power factor and power in Series R-C circuit.
6. Derive the expression for Current , power factor and power in Series R-L-C circuit
7. Explain the operation of a series RLC circuit, when excited by AC supply with neat diagram
8. Derive the voltage and current relations in star and delta connected systems.
9. Explain the two wattmeter method with neat diagram? And draw the phasor diagram.
10. Define Active, Reactive and Apparent power in AC circuits . What do you understand by Balanced loads.

Unit-III

1. What is dynamically induced emf and statistically induced emf?. Write the relation between turns ratio, voltage ratio and current ratios in transformer.

2. Explain Faraday's laws and Lenz's law. What is magnetic hysteresis explain with the help of B-H curve.
3. Write short notes on Auto transformer.
4. Write short notes on Open circuit and Short circuit tests on Transformer. Derive the expression for Efficiency and Voltage regulation of Transformer.
5. Define slip. Mention various applications of three phase induction motor.
6. Explain the construction of three phase Induction motor. Compare squirrel cage and slip ring induction motor.
7. Explain the construction of 1-phase transformer. Explain principle of operation of transformer on no load and ON load.
8. Explain in detail about the ideal transformer and draw its phasor diagram. Draw the exact equivalent circuit of transformer referred to primary.
9. a) Explain how rotating magnetic field is produced in three phase induction motor.
   b) Explain working principle of 3-phase Induction motor.
10. a) Why starter required for 3-phase induction motor and explain any one starting method for 3-phase induction motor with a neat diagram.
    b)Draw and explain Torque- Speed curve for 3-phase Induction motor.

Unit-IV

1. Explain the construction and features and principle of operation of single phase induction motor.
2. Explain the principle of operation of capacitor start induction motor.
3. Explain briefly about capacitor start and capacitor run 1 phase induction motor.
4. What is the principle operation of DC generator? Derive the e.m.f equation of a D.C generator.
5. Describe the construction of a D.C generator and write the functions of each part with neat sketch.
6. Classify the generators based on excitation. Draw the figure and write the current, voltage equation for each configuration.
7. Draw the internal and external characteristics of different types of DC generators and explain them.
8. Classify and Draw different types of DC motors .Give the power, voltage and current equations for different types of D.C motors. State their application
9. What is the principle operation of DC motor? Explain the significance of back E.M.F. Derive torque equation of DC motor. Mention the losses in DC machine.
10. Explain briefly about capacitor start and capacitor run 1 phase induction motor.

UNIT-V

1. Differentiate between primary and secondary cells.
2. What is a fuse? Mention the desirable properties of fuse element.
3. What is meant by earthing? Explain about pipe earthing and plate earthing.
4. What is the significance of Circuit breaker?.Explain construction and working of MCB,ELCB and MCCB.
5. With a block diagram, explain the working of online UPS. Classify the different UPS.
6. What are batteries? How are they classified?. State some important characteristics of Batteries.

7. What is earthing? What are the types of earthing? Explain about strip or wire earthing and rod earthing.
8. What is the importance of power factor?.Explain the disadvantages of low power factor. Explain the different methods to improves the power factor of the system.
9. Explain different components of LT switch gear.
10. Write the uses of standard wire gauge. Explain what specifications for wires for domestic wiring are normally required. Describe different types of cables used for domestic wiring.