

## Assignments BEEE 3300014

### Unit: 1 Fundamentals of Electric and Magnetic Circuits

<b>Sr. No.</b>	<b>Name of Question</b>
1	<i>Define following terms. (I) Current, (II)EMF, (III)Potential difference, (IV)Power, (V)Resistance, (VI)Energy.</i>
2	<i>Define following terms. (I) MMF, (II)Permeability, (III)Reluctance, (IV)Leakage factor, (V)Flux Density.</i>
3	<i>Explain factor affecting Resistance.</i>
4	<i>State and explain ohm's law with its limitations.</i>
5	<i>State and explain Right Hand rule to find out direction of magnetic field in a current carrying conductor.</i>
6	<i>Difference EMF and Potential Difference.</i>
7	<i>Compare between Electric circuit and Magnetic circuit.</i>
8	<i>Explain Hysteresis loop.</i>

## Unit: 2 A.C. Fundamentals and Electromagnetic Inductions

<b>Sr. No.</b>	<b>Name of Question</b>
1	<i>State and explain Faradays law of electromagnetic induction.</i>
2	<i>Explain dynamically induced emf and state conditions for its production.</i>
3	<i>Define mutual inductance and derive equation of it.</i>
4	<i>Explain self inductance and co-efficient of self inductance.</i>
5	<i>Define following terms: (1) Cycle (2) Periodic time (3) Amplitude (4) R.M.S. value (5) Average value (6) Frequency (7) Instantaneous value</i>
6	<i>Derive equation of AC through pure resistor.</i>
7	<i>Explain Fleming's Right Hand rule.</i>
8	<i>An alternating emf is represented by <math>e = 200 \sin 314t</math>. Calculate : (i) Maximum voltage (ii) Frequency (iii) Time period.</i>
9	<i>Define form factor and peak factor.</i>
10	<i>Prove that power consumption in purely inductive circuit is zero with necessary diagrams.</i>

## Unit: 3 Electrical Measuring Instruments and Basic Electronics

<b>Sr. No.</b>	<b>Name of Question</b>
1	<i>Draw connection diagram of Voltmeter, Ammeter and Wattmeter in any electrical circuit.</i>
2	<i>Explain Clip on meter with neat diagram.</i>
3	<i>Write a short note on multimeter.</i>
4	<i>Explain construction and working of Energy Meter.</i>
5	<i>Give application of megger and Lux meter.</i>
6	<i>Explain conductor, insulator and semiconductor with energy band diagram.</i>
7	<i>Explain P type semiconductor.</i>
8	<i>Write applications of P-N junction diode</i>
9	<i>Explain construction, working and application of SCR.</i>
10	<i>Write a short note on LED.</i>
11	<i>Explain Photo voltaic cell.</i>
12	<i>State full form of SCR and LED, LCD, LDR</i>
13	<i>Draw the symbol of following (1) PN Junction Diode, (2) PNP Transistor, (3) NPN Transistor, (4) SCR, (5) Photo Diode (6) Photo voltaic cell (7) LDR (8) LED.</i>
14	<i>Draw pin diagram of IC 741 &amp; IC 555 and labeled its pin.</i>

## Unit: 4 Transformer and Protective devices

<b>Sr. No.</b>	<b>Name of Question</b>
1	<i>Explain construction and working of transformers.</i>
2	<i>Difference between single phase core and shell type transformer.</i>
3	<i>Derive e.m.f. equation of transformer.</i>
4	<i>List out various application of transformer.</i>
5	<i>Explain construction and working of auto-transformers.</i>
6	<i>Write short note on M.C.B. (Miniature Circuit Breaker).</i>
7	<i>Explain construction and working of ELCB.</i>
8	<i>Explain need of earthing in electrical system.</i>
9	<i>Write the full name of: (i) HRC (ii) MCB (iii) ELCB (iv) ICTP.</i>
10	<i>Explain Pipe Earthing and Plate Earthing.</i>
11	<i>Write short note on UPS.</i>

## Unit: 5 Electrical Machines

<b>Sr. No.</b>	<b>Name of Question</b>
1	<i>Explain working principle of Generator.</i>
2	<i>List various parts of DC Generator and explain any two with diagram.</i>
3	<i>Explain working principle of Alternator.</i>
4	<i>Write comparison between projected pole rotor and cylindrical rotor.</i>
5	<i>Write working principle of 3-phase induction motor and explain squirrel cage induction motor.</i>
6	<i>Write comparison between squirrel cage and slip ring induction motor.</i>

## QUESTION BANK

### Subject: Basics of Electrical & Electronics Engineering

#### UNIT:1 Fundamentals of Electric and Magnetic Circuits

1. Explain Ohm's Law and its limitations.
2. Define following terms.
  1. Emf, 2. Current, 3. Potential difference, 4. Power, 5. Energy.
3. Explain M.M.F with appropriate Example.
4. Define following terms.
  - (I) MMF, (II) Permeability, (III) Reluctance, (IV) Leakage factor, (V) Flux Density.
5. Explain permeability and give its unit.
6. What is reluctance and explain its role in Magnetic circuit,
7. Explain Hysteresis loop.
8. What is leakage factor in magnetic circuit?
9. Compare magnetic circuit and electric circuit.

#### UNIT:2 AC Fundamentals and Electromagnetic Induction

1. Define cycle, frequency, periodic time, amplitude, RMS value, maximum value, instantaneous value, angular velocity or Frequency with reference to alternating emf and current.
2. State Faraday's law of electromagnetic induction.
3. Define Lenz's law.
4. Compare Dynamically induced emf & Statically induced emf.-Self induced emf.
5. Define following terms:
  - Cycle (2) Periodic time (3) Amplitude (4) R.M.S. value (5) Average value (6) Frequency (7) Instantaneous value
6. Explain A.C through pure capacitor with vector diagram.
7. Explain Form Factor and Peak Factor.
8. An alternating emf is represented by  $e = 200 \sin 314t$ . Calculate: (i) Maximum voltage (ii) Frequency (iii) Time period.



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9. Prove that in a purely inductive circuit, current lags behind voltage.
10. State and explain Right Hand rule to find out direction of magnetic field in a current carrying conductor.

## UNIT:3 Electrical Measuring Instruments and Basic Electronics

1. Explain construction and working of Ammeter.
2. Draw connection diagram of Voltmeter, Ammeter and Wattmeter in any electrical circuit.
3. Explain Clip on meter.
4. Explain Lux meter or Multimeter.
5. Explain construction and working of Energy Meter.
6. Compare Conductor, Insulator & Semiconductor.
7. Write Short note on P & N type semi-conductor.
8. Explain construction, working and application of SCR.
9. Draw the symbol of following (1) PN Junction Diode, (2) PNP Transistor, (3) NPN Transistor, (4) SCR, (5) Photo Diode (6) Photo voltaic cell (7) LDR (8) LED.
10. State full form of SCR and LED, LCD, LDR.
11. Write a short note on LED.
12. Explain in detail IC 555 Timer with its function.
13. Give symbol Op Amp and Draw Block Diagram of it and explain in detail each block.

## UNIT:4 Transformer and protective devices

1. Explain working principle of Transformer.
2. Difference between single phase core and shell type transformer.
3. Derive emf equation of transformer.
4. List out various application of transformer.
5. Why transformer rating is in KVA?
6. Explain the working of autotransformer with sketches.
7. Write short note on M.C.B. (Miniature Circuit Breaker).
8. What is Earthing ?
9. Explain the construction and working of ELCB.
10. State the types of fuse. Explain HRC fuse.
11. Write the full name of: (i) HRC (ii) MCB (iii) ELCB (iv) ICTP.
12. Explain pipe earthing and plate earthing with neat diagram.
13. Write short note on UPS.

## UNIT:5 Electrical Machines

1. Explain working principle of DC generator.
2. Explain working principle of Alternator.
3. Give classification of induction motor(IM).
4. Explain working principle of slip ring or wound rotor induction motor.
5. Explain construction of squirrel cage motor.
6. Difference between squirrel cage IM and slip ring IM .