

BHARATI VIDYAPEETH INSTITUTE OF TECHNOLOGY

Question Bank (K Scheme-BEE)

Course Name: Computer Engineering

Semester: II

Course Title: Basic Electrical and Electronics

Course Code: 312302

UNIT - I : Basic Electrical Fundamentals (C01 - 14 Marks)

2 Marks

1. Define Faraday's law of electromagnetic induction.
2. Explain Lenz law with two applications.
3. State Fleming's right hand rule.
4. Differentiate between A.C. and D.C. quantities. And write advantages of A.C. over D.C.
5. Define
 - i. R.M.S. value
 - ii. Average value of alternating current.
6. Define and state the values of
 - i. form factor
 - ii. peak factor

4 Marks

7. Define
 - i. Magnetic flux
 - ii. Flux density
 - iii. Field strength
 - iv. Permeability
 - v. Reluctance
8. Explain with a neat diagram series and parallel magnetic circuit.
9. Explain Dynamically, statically and mutually induced e.m.f with neat diagram.
10. Alternating voltage is represented by $v = 50.5 \sin (314 + 90^\circ)$ Calculate frequency, amplitude, r.m.s value, avg value, form factor, peak factor.
11. An alternating current is given by the equation $i = 142.14 \sin 628t$. Find
 - i. Maximum value
 - ii. Time period

- iii. R.M.S value
- iv. Average value
- v. form factor
- vi. peak factor

12. State the advantages of three phase supply over single phase supply.

13. a) Draw star connected load. State relationship between

- i. Line voltage and phase voltage
- ii. Line current and phase current

b) Draw delta connected load and state relationship between

- i. Line voltage and phase voltage
- ii. Line current and phase current

UNIT - II :Electrical Machines (C0 2- 12 Marks)

2 Marks

1. Write any two applications of each of the following:
 - i. D.C.Shunt motors
 - ii. D.C.series motors.
2. Define voltage ratio and current ratio.
3. Draw schematic representation of :
 - iii. D.C.Shunt motors
 - iv. D.C.series motors.
4. State two application of DC motor , universal motor , stepper motor , transformer
5. Define transformation ratio of a transformer.

4 Marks

6. State and explain working principle of a transformer.
7. State emf equation for a transformer.
8. Enumerate various losses in a transformer and state the steps taken to minimize these losses.
9. Explain the principle of operation for a D.C.motor.
10. Draw and label constructional diagram of a D.C. motor.
11. State the function of poles and brushes in D.C. motors. State material for each.
12. Explain the principle of operation of universal motor with a neat diagram.
13. Explain how the direction of rotation of universal motor is reversed.
14. Explain the working principle of a stepper motor and State its types with a neat sketch.

UNIT - III: Electrical Safety and Protective Devices (C03 - 10 Marks)

2 Marks

1. List the types of fuses.
2. State the function of MCB, ELCB
3. Define Earthing and give Its types
4. Write any four factors affecting earth resistances.
5. State any 2 methods of reducing earth resistance.

4 Marks

6. Write any 4 IE rules relevant to Earthing.
7. Explain SFU AND FSU
8. Describe the operation of fuse
9. Give the working of MCCB.
10. State the use Multimeter in measurement of electrical parameters

UNIT – IV : Special Purpose Diodes And Their Applications (C04 - 12 Marks)

2 Marks

1. Sketch V-I characteristics of Zener diode.
2. State LED operating principle.
3. State need of filter give its types.
4. Draw the symbol of Zener diode and LED

4 Marks

5. Draw the construction of LED. List any two applications.
6. Draw and explain the working of CLC filter.
7. Draw and explain different types of UPS
8. Sketch block diagram of regulated power supply. Also sketch waveform after each block.

UNIT-5 :Transistors [CO 5 - 12 Marks]

2 Marks

1. Draw the symbol BJT and FET.
2. List specifications of BJT.
3. Draw the characteristics of transistor in CE Configuration
4. Give the types of BJT AND FET

4 Marks

5. Compare CB, CE, CC configurations of transistor.
6. Derive the relationship between α and β of transistor.
7. Describe the working Principle of NPN Transistor with neat labelled diagram.
8. Explain Transistor as Switch
9. Explain the working of N -channel JFET.
10. Draw and Explain drain characteristics of N -channel JFET.

UNIT-6: Sensors and Transducers [CO6 - 10 Marks]

2 Marks

1. Define Transducer and Sensor.
2. Give the classification of Sensor
3. Give the classification of Transducer
4. Compare between Active and Passive transducer.
5. Define Analog transducer and Digital transducer.

4 Marks

6. State selection criteria of transducer.
7. Define
 - a. Active Transducer
 - b. Passive Transducers
 - c. Primary Transducer
 - d. Secondary Transducer
8. Define and Give example of
 - a. Thermal Sensor
 - b. Optical Sensor
 - c. Electrical Sensor