

Semester	: II(V Dean)	Academic Year	: 2024-2025
Course No.	: BE-207	Course Title	: Basic Electrical Engineering
Credits	: 2+1=3	Total Marks	: 50
Day & Date	: Monday, 18/08/2025	Time	: 2.00 hrs.

- Note :
- 1) All questions from **Section 'A'** are compulsory.
 - 2) Solve **Any Three** questions from **Section 'B'**.
 - 3) Draw neat and well labelled diagram wherever necessary.

SECTION - 'A'

Q. 1 A) Choose the most appropriate answer from the options given below. (05)

- Two alternating quantities having same frequency but having different zero points are said to have
 - a) current difference
 - b) zero difference
 - c) phase difference
 - d) voltage difference
- Transformer core is laminated
 - a) because it is difficult to fabricate solid core
 - b) to avoid hysteresis losses
 - c) because laminated core provides high flux density
 - d) to avoid eddy current losses
- Ratio of maximum demand to connected load is termed as
 - a) load factor
 - b) demand factor
 - c) form factor
 - d) power factor
- The D.C. generator is a machine which converts energy into electrical energy
 - a) potential
 - b) kinetic
 - c) mechanical
 - d) both a) and b)
- Energy meter is
 - a) an indicating instrument
 - b) an integrating instrument
 - c) an absolute instrument
 - d) a recording instrument

B) Define the following. (05)

- Time period
- Voltage transformation ratio
- Form factor
- Frequency
- Slip

Q. 2 A) Match the following. (05)

Column - A

- Current
- Wattmeter
- Frequency
- Stator
- Rotor

Column - B

- Hertz
- Ampere
- Rotating part of the motor
- Power measurement
- Stationary part of the motor

(P.T.O.)

- B) State whether True or False. If false, rewrite the statement after making necessary corrections in the underlined word. (05)
- i) The function of commutator in d.c. motor is reversing the direction of flow of current.
 - ii) In an R-L-C series circuit, the maximum impedance is produced under resonant conditions.
 - iii) The average value of the alternating quantity is less than the r.m.s. value.
 - iv) In a.c. circuit the magnitude and direction of the current changes continuously.
 - v) Transformer can only reduce the voltage in a circuit.

SECTION –‘B’

- Q. 3 A) Derive the e.m.f. equation of a.c. generation. (05)
B) A 200 kVA, 3300/240 volts, 50 Hz single-phase transformer has 80 turns on the secondary winding. Assuming an ideal transformer, calculate (i) primary and secondary current on full load; (ii) maximum value of flux; (iii) the number of primary turns. (05)
- Q. 4 A) Discuss the construction and working principle of A.C. motor. (05)
B) Develop the relationship between r.m.s. and maximum value of alternating quantity. (05)
- Q. 5 A) Power to an induction motor is supplied by a 12 pole, 3-phase, 500 r.p.m. alternator. The full load speed of the motor is 1440 r.p.m. Find the percentage slip and number of poles in the motor. (03)
B) Differentiate between Star connection and Delta connection. (03)
C) Discuss about losses in transformer. (05)
- Q. 6 A) State Fleming's right hand rule. (03)
B) Discuss Faraday's law of electromagnetic induction. (03)
C) Derive e.m.f. equation of a d.c. generator. (04)
- Q. 7 Discuss the construction and working principle of a transformer with its advantages and disadvantages. (10)
