

MAHARASHTRA ANIMAL AND FISHERY SCIENCES UNIVERSITY, NAGPUR
SEMESTER END THEORY EXAMINATION, B. TECH. (D.T.) DEGREE COURSE

Semester	: II (V Dean)	Academic Year	: 2021-2022
Course No.	: DE-207	Course Title	: Basic Electrical Engineering
Credits	: (2+1=3)	Total Marks	: 50
Day & Date	: Wednesday, 16/11/2022	Time	: 02.30 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)

- i) Lap winding is suitable for current, low voltage DC generator.
 - a) Low
 - b) High
 - c) Very low
 - d) Very high
- ii) The steel laminations used in transformer is of high silicon content to reduce losses.
 - a) Eddy current
 - b) Stray current
 - c) Hysteresis
 - d) None of these
- iii) Device that is used to store charge is named as
 - a) Capacitor
 - b) Inductor
 - c) Resistor
 - d) Thermistor
- iv) The two primary parts of a 3-phase induction motor are rotor and
 - a) Commutator
 - b) Armature
 - c) Slip-ring
 - d) Stator
- v) A voltage that changes its polarity and magnitude at regular intervals of time is called
 - a) Direct voltage
 - b) Alternating voltage
 - c) Phase voltage
 - d) Line voltage

B) Answer the following. (05)

- i) What is form factor of an ac sinusoidal voltage?
- ii) What is slip of an ac induction motor?
- iii) What is the unit of magnetic flux density?
- iv) How can the power factor can be improved in AC line?
- v) What is the frequency of AC voltage in India?

Q. 2 A) Give the formulae of the following. (05)

- i) Peak factor of AC voltage.
- ii) EMF generated in dc generator.
- iii) Relation between supply frequency and rotor frequency.
- iv) Impedance (Z) of an AC series circuit.
- v) For a single phase transformer, transformation ratio.

(P.T.O.)

- B) State whether True or False, If False, rewrite the statement after making necessary corrections. (05)
- i) Transformer core is laminated to avoid hysteresis losses.
 - ii) In an AC circuit the ratio of kW/kVA represents power factor.
 - iii) The power consumption of 10 electric bulbs each of 100 W, operating for 10 h will be 1 kWh.
 - iv) Ratio of maximum demand to connected load is termed as load factor.
 - v) Electric energy meter is an integrating type of instrument.

SECTION – 'B'

- Q. 3 Explain the working principle of a single phase transformer with suitable diagram. (10)
- Q. 4 Develop the relationship between r. m. s. and maximum current of an alternating quantity. (10)
- Q. 5 A) Explain : Power factor of an AC circuit. (03)
B) What are the constant and variable losses in DC generator? (03)
C) State the relation between line current and phase current in star connection of AC 3-phase supply. (04)
- Q. 6 A) Why do we wish to have as large a power factor as possible in ac circuit? (05)
B) Can you achieve series resonance without changing supply frequency? (05)
- Q. 7 A) What is armature reaction in DC generator? (05)
B) Calculate the r. m. s. value of a sinusoidal AC voltage of amplitude 200V. State the voltage equation if the frequency is 50Hz. (05)
