

MAHARASHTRA ANIMAL AND FISHERY SCIENCES UNIVERSITY, NAGPUR
SEMEISTER END THEORY EXAMINATION, B.TECH. (D.T.) Degree Course 2017- 18

Semester	: II (New Syllabus)	Academic Year	: 2017-2018
Course No.	: DE-206	Course Title	: Electrical Engineering
Credits	: 2+1=3	Total Marks	: 50
Day & Date	: Friday, 15.06.2018	Time	: 11.00 to 13.00 Hrs.

- Note :** 1) Section "A" is Compulsory.
2) Solve Any Five questions from Section "B"
3) The use of scientific tables, charts and calculator is allowed in case of engineering courses.

SECTION - 'A'

- Q.1 A) Choose the most appropriate answer from the options given below. (05)
- i) An ammeter is an electrical instrument used to measure
 - a) Voltage
 - b) Wattage
 - c) Current
 - d) Resistance
 - ii) The short circuit test in the transformer is performed to determine
 - a) The eddy current loss
 - b) The iron loss at any load
 - c) The hysteresis loss
 - d) The copper loss at any load or full load
 - iii) The power factor at resonance in R-L-C series circuit is
 - a) Zero
 - b) 0.5 lagging
 - c) Unity
 - d) 0.5 leading
 - iv) The power consumption of 10 electric bulbs each 100W operating for 10 hrs will be
 - a) 10 kWh
 - b) 100 kWh
 - c) 500 kWh
 - d) 1000 kWh
 - v) The component of direct online starter that protects the motor under load condition is known as
 - a) Transducer
 - b) Relay
 - c) Soft starter
 - d) None of these
- B) State whether True or False. If false, rewrite the statement after making necessary corrections. (05)
- i) At resonance in a R-L-C series circuit, the current will be minimum.
 - ii) The r.m.s. value of the alternating quantity is more than the average value.
 - iii) In star connections Line current is equal to $\sqrt{3}$ x Phase current.
 - iv) In a step up transformer number of turns in primary winding is less than the number of turns in secondary winding.
 - v) In a d.c. shunt machine, the shunt field copper losses are practically constant.
- Q.2 A) Replace the underlined word to make the statement technically correct. (05)
- i) The brushes of d.c. machines are made of iron.
 - ii) The instruments which give the value of the quantity to be measured in terms of the constants of the instrument are called secondary instruments.
 - iii) The speed of a d.c. motor is directly proportional to field flux.

(P.T.O.)

DE-206 (2+1=3)

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- iv) In a balanced 3-phase, star connected system, the phase difference between phase voltages and their respective line voltages are 45°
 - v) The main field poles of a d.c. machine are on the rotating part.
- B) For a sinusoidally varying electrical quantities, define: (05)
- i) Form factor
 - ii) Frequency
 - iii) Amplitude
 - iv) Peak factor
 - v) Cycle

SECTION – 'B'

- Q.3 Discuss voltage regulation and efficiency of transformer. (06)
- Q.4 Describe the construction and working of DC Motors (06)
- Q.5 With the help of neat and well labeled diagram explain 'star' and 'delta' connection. (06)
- Q.6 a) Transformer are rated in kVA not in kW, explain it. (02)
- b) A 25-kVA transformer has 50W core losses and 60W copper losses at full load. It operates at rated kVA and 0.85 power factor lagging for 8 hrs. One half rated kVA and 0.65 power factor lagging for 12 hrs and no-load for 4 hrs. What is its all day efficiency? (02)
- c) Enlist the types of transformers. (02)
- Q.7 a) Write the characteristics of the magnetic lines of force. (03)
- b) Find the relationship between r.m.s. value and maximum value of current. (03)
- Q.8 a) Explain Ohm's Law in brief (02)
- b) State the Faraday's Laws of electromagnetic induction. (02)
- c) Write short note on emf (02)
- Q.9 a) What do you understand by the term *Slip of motor*? (02)
- b) Explain principle of induction motor. (04)
