KERALA AGRICULTURAL UNIVERSITY
B.Tech.(Food Technology)
I Semester Final Re - Examination – February 2025
2023 & Previous admission

Fmpe.1101 **Electrical Engineering (2+1)** **Marks: 50**
Time: 2 hours

I **Fill in the blanks** **(10x1=10)**

1. The time period of power frequency in India is .....
2. Reluctance is measured in .....
3. The efficiency of a transformer is defined as .....

State True or False

4. In delta connected system, the line voltage is equal to square root of three times the phase voltage.
5. The phase sequence RYB indicates that phase Y is lagging behind the phase R.

Answer the following

6. Which type of resistance is chosen for earthing?
7. Write the EMF equation for a transformer.
8. Name the protection device that prevents excessive current flow in an electrical circuit.
9. Mention one application of a Multimeter.
10. Write the mathematical equation of Ohm's law for AC circuits.

II **Write short notes on ANY FIVE of the following** **(5x2=10)**

1. Write two differences between ground and neutral.
2. Explain the armature reaction in a DC generator.
3. Define magneto motive force (MMF).
4. Why transformer is never connected to DC source? Give two reasons.
5. Explain the term electrical wiring and support your answer with domestic electrical wiring diagram.
6. Define RMS and average value of an ac source.
7. Write four significance of earthing in a domestic wiring installation.

III **Answer ANY FIVE of the following** **(5x4=20)**

1. Differentiate between circuit breaker and fuse.
2. For the circuit shown in Fig. 1, determine the equivalent resistance between points A and B.

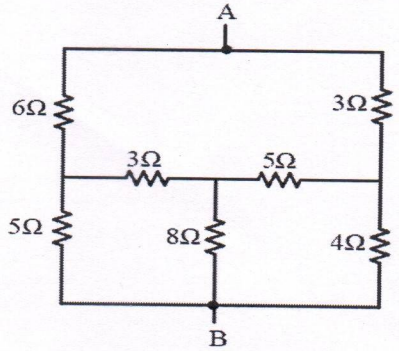

Fig. 1

3. A 160kW, 400V, separately excited dc motor runs at 600 rpm. It has 900 lap-connected conductors. The full load armature copper loss is 6kW. Calculate the useful flux/pole.
4. What is the effect of rotor resistance in a three phase induction motor? Explain with relevant equations and characteristics diagram.

5. Derive the emf equation of a single phase transformer.
6. A shunt DC generator is connected to 200 V. It delivers 450A current. Its armature and field winding resistances are 0.03 Ω and 50 Ω respectively, Determine the generated emf.
7. In the circuit shown in Fig. 2, determine the power factor and values of R and X. Also, indicate if X is inductive or capacitive.

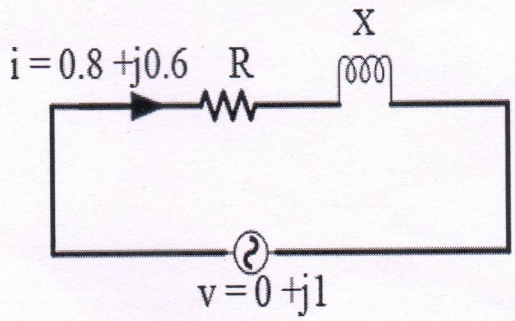

Fig. 2

IV **Write an essay on ANY ONE of the following** **(1x10=10)**

1. Explain the construction and working principle of a DC machine. Also explain the working principle of a DC machine as DC motor?
2. Describe the various parts of the transformer. Also explain the working principle of a single phase transformer on no load. Draw the phasor diagram.

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