



**KERALA AGRICULTURAL UNIVERSITY**  
**B.Tech.(Food Technology)**  
**I Semester Final Re - Examination – February 2026**  
**2023 & Previous admission**

Fmpe.1101

**Electrical Engineering (2+1)**

**Marks: 50**  
**Time: 2 hours**

- I**                    **Fill in the blanks** **(10x1=10)**
1. The value of the voltage generated depends, in each case upon the number .....
  2. The time taken by an alternating quantity to complete one cycle is called.....
  3.  $F = PN/120$  where  $N$  = revolutions in r.p.m. and  $P$  = .....
  4. The maximum value, positive or negative, of an alternating quantity is known as its .....
  5. R.M.S. value of current = .....  $\times$  max. value of current
- State True or False**
6. Sine wave of different frequencies cannot be represented on the same vector diagram in a still picture.
  7. The sum of the two sine waves of the same frequency is another sine wave of the same frequency but of a different maximum value and phase.
  8. The knowledge of crest factor is also necessary when measuring iron losses, because the iron loss depends on the value of maximum flux.
  9. If difference of two vectors is required, then one of the vectors is reversed and this reversed vector is then compounded with the other vector as usual.
  10. Whenever an alternating voltage is applied to a purely inductive coil, a back e.m.f. is produced due to the self-inductance of the coil.
- II**                    **Write short notes on ANY FIVE of the following** **(5x2=10)**
1. Determine the power factor of a RLC series circuit with  $R=5\text{ohm}$ ,  $X_L=8\text{ohm}$  and  $X_C=12\text{ohm}$
  2. Write down the EMF equation of a single phase transformer.
  3. Explain Self Excited DC Generator.
  4. What type of wire is used in a domestic wiring?
  5. An alternating voltage is given by  $V=230\sin 314t$ . Calculate
    - (i) frequency
    - (ii) maximum value
    - (iii) average value
    - (iv) RMS value
  6. Define voltage regulation of transformer.
  7. Give some application of D.C motor
- III**                    **Answer ANY FIVE of the following** **(5x4=20)**
1. An alternating current of frequency 60 Hz has a maximum value of 120 A. Write down the equation for its instantaneous value. Reckoning time from the instant the current is zero and is becoming positive, find
    - (a) the instantaneous value after  $1/360$  second and
    - (b) the time taken to reach 96 A for the first time.
  2. A  $50\text{-}\mu\text{F}$  capacitor is connected across a 230-V, 50-Hz supply. Calculate
    - (a) the reactance offered by the capacitor
    - (b) the maximum current and
    - (c) the r.m.s. value of the current drawn by the capacitor.

3. What is meant by industrial wiring?
4. Why a single phase induction motor does not self-start?
5. Write shorts notes on the types of DC machines.
6. Explain the construction and principle of operation of DC Generator.
7. Write the advantages of Three Phase System.

**IV**

**Write an essay on ANY ONE of the following**

**(1x10=10)**

1. Explain the construction, working principle of single-phase Induction motor.
2. Describe the construction details of single-phase transformer.

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