



**PRESIDENCY UNIVERSITY
BENGALURU**

SET A

**SCHOOL OF ENGINEERING
END TERM EXAMINATION - JAN 2024**

Semester : Semester I - 2023

Course Code : EEE1001

Course Name : Fundamentals of Electrical and Electronics Engineering

Program : B.Tech.

Date : 17-JAN-2024

Time : 9:30AM - 12:30 PM

Max Marks : 100

Weightage : 50%

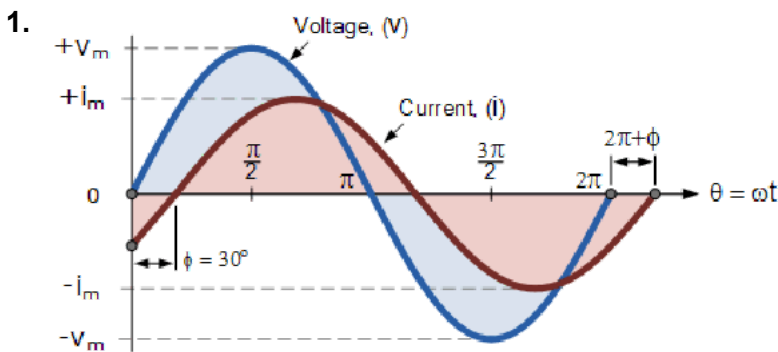
Instructions:

- (i) Read all questions carefully and answer accordingly.
- (ii) Question paper consists of 3 parts.
- (iii) Scientific and non-programmable calculator are permitted.
- (iv) Do not write any information on the question paper other than Roll Number.

PART A

ANSWER ALL THE QUESTIONS

4 X 5M = 20M



Explain briefly the given wave form

(CO1) [Knowledge]

2. What is Synchronous speed of a machine. Write the equation of the same with regard to 3 phase Induction Motor. Also write the equation to find Slip of 3 phase Induction Motor .

(CO2) [Knowledge]

3. What are the advantages of digital instruments

(CO3) [Knowledge]

4. Name the materials that are classified Based on energy gap , and hence draw the energy-gap diagram and compare.

(CO4) [Knowledge]

PART B

ANSWER ALL THE QUESTIONS

5 X 10M = 50M

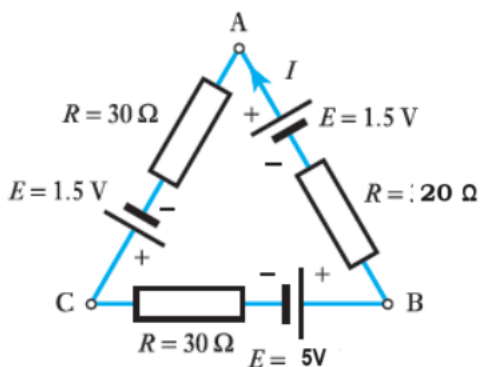
5. The equation for an alternating current is given by $i = 77 \sin 314t$. Find the peak value, frequency, time period
(CO1) [Comprehension]
6. In an industry named Advent Stone Calibration limited located in Rajanukunte, Bengaluru a 3 phase induction motor is used for stone cutting applications. The rating of the machine is mentioned as follows
3 HP, 415 V, 50 Hz, 12 A, 4 pole.
Utilizing the details provided in the question, compute the speed of the magnetic field.
(CO2) [Comprehension]
7. An electromechanical instrument was used for measurement of current. When the instrument is connected to a circuit, we observe that the pointer deflects and stops at a particular position but before stopping at a particular point it experiences oscillations. Identify the torques responsible for deflection, stopping the pointer and reducing the oscillations.
(CO3) [Comprehension]
8. Before we can use the PN junction as a practical device or as a rectifying device we need to firstly bias the junction. What are the different biasing methods? Draw the necessary circuit and explain any one biasing method.
(CO4) [Comprehension]
9. Raj observed that the charge remaining in his phone battery is very low. He immediately plugged his phone via the charger to the socket. His mobile battery required 3000 mAh, 9 volts DC supply for getting charged properly. The supply available from the socket is around 230 Volts AC. Identify the components used inside the charger for conversion of 230 Volts AC to 9V DC.
(CO4) [Comprehension]

PART C

ANSWER ALL THE QUESTIONS

2 X 15M = 30M

10. a) An inductive coil takes a current of 20 amp from a 200 V 50 Hz supply. If the resistance of the coil is 4Ω , calculate any 2 unknown datas of the circuit.
b) Write the KVL equation for the given circuit and find I.



(CO1) [Application]

11. a) A 440 / 200V, 50Hz single phase transformer has a maximum value of flux equal to 10 mwb, find all the possible unknown values of the transformer.
b) What will be the voltage generated in the DC machine with 40 slots and 12 conductors per slot. It is driven at 1400 rpm and the flux per pole is 6 mWb

(CO2) [Application]