Roll No											

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING
END TERM EXAMINATION - FEB 2023

Semester : Semester I - 2022

Course Code : EEE1001

Course Name : Sem I - EEE1001 - Fundamentals of Electrical and Electronics Engineering

Program : B.Tech - (All Programs)

Date : 20-FEB-2023

Time : 1.00PM - 4.00PM

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 **(10 X 2 = 20M)**

1. Capacitor falls in the category of what kind of element? (CO1) [Knowledge]
   a) Active
   b) Passive
   c) Unilateral
   d) Both b and c

2. The relationship between rms value & average value of a sinusoidal AC signal is (CO1) [Knowledge]
   a) Rms value =1.15 *average value
   b) Rms value = 1.17 * average value
   c) Rms value = 1.11 *average value
   d) Rms value = 1.12 * average value

3. In a 4 pole Lap wound generator, the number of parallel paths is equal to _____ (CO2) [Knowledge]
   a) 2
   b) 3
   c) 4
   d) 5

4. In a D C Generator which of the following are the rotating and which are stationary parts

a) Yoke (CO2) [Knowledge]

b) Armature core

c) brushes

d) field poles

5. Generated voltage of a DC g is directly proportional to (The letters used is as per the convention in the related equation)

a) P,A (CO2) [Knowledge]

b) φ, N

c) Z,P

d) 1/N, P

6. What is the indication of short circuit?

a) Current becomes zero (CO1) [Knowledge]

b) Voltage becomes zero

c) Rated voltage

d) Both b and c

7. The torque responsible for reducing the oscillations in an electromechnical instrument is _____

a) Deflection torque (CO3) [Knowledge]

b) Control torque

c) Damping Torque

d) None of these

8. The digital instrument indicates the value of the quantity to be measured in the form of a _____

a) Waveform (CO3) [Knowledge]

b) Digital Number

c)
Discrete value

d) None of these

9. The difference between the measured value and the true value is called as _____.

a) Sensitivity (CO4) [Knowledge]

b) Hysterisis

c) Error

d) Adjustment

10. In a half wave rectifier the output voltage observed at the load side is _____ if the applied input is a sinusoidal signal

a) Discrete (CO5) [Knowledge]

b) Straight line

c) Jumbled

d) Continuous

PART B

ANSWER ALL THE QUESTIONS **(4 X 10 = 40M)**

11. Three resistors of 4 Ω, 8 Ω and 6 Ω are connected in parallel to a 12 V supply. Calculate the supply current and the total effective resistance of the network. What other parameters can be obtained from this data.

(CO1) [Comprehension]

12. An electrical machine is used in an industry for a particular application. It is having both static and rotating part. The stator is the field circuit and the rotor is the armature. Identify the electrical machine and explain the operating principle in brief. .

(CO2) [Comprehension]

13. 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]

14. An Electronics engineer constructed a diode by sandwitching two extrinsic seminconductor materials. It was observed that when he connected the diode to the voltage source the width of the depletion region increased. Referring to the above statements, comment on the operation of diode.

(CO4) [Comprehension]

PART C

ANSWER ALL THE QUESTIONS **(4 X 10 = 40M)**

15. To a purely resistive load an AC signal is applied whose peak value is 10 volts and frequency is 50 Hz. A Digital multi-meter was used to measure the magnitude of AC current and the meter showed 3.53 A. The reactive power consumed by the Load will be

(CO1) [Application]

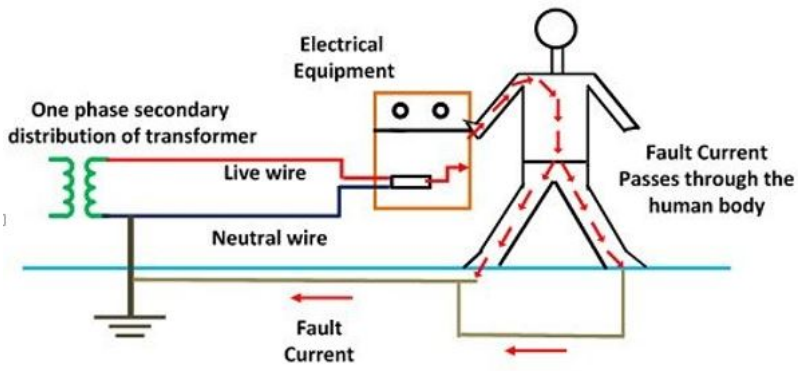
16. A four pole DC generator having wave-wound armature winding has 51 slots, each slot containing 20 conductors. Identify the unknown parameters that can be computed when machine is driven at 1500 rpm assuming the flux per pole to be 7.0 mWb.

(CO2) [Application]

17. An R-L circuit, excited by an AC source, was connected in series on the breadboard by a lab technician and he intended to measure the phase difference between source voltage waveform and current waveform of that circuit by connecting probes across the source and the resistance and feeding the signals to the digital storage oscilloscope (DSO). Comment on the phase difference of the source voltage waveform and current waveform.

(CO2) [Application]

18. By referring to the figure given below Summarize your observations by providing proper explanations in brief.



(CO3) [Application]