

INDIAN MARITIME UNIVERSITY
(A central University, Government of India)

May/June 2018-END SEMESTER EXAMINATION

B. Tech (Marine Engineering)

Semester: I

Basic Electrical and Electronics Engineering (UG11T3104)

Date: 10-07-2018

Time: 3 hrs

Maximum Marks: 100

Pass Marks : 50

Part- A {Compulsory Question No. 1} (3 x 10 = 30 Marks)

1)

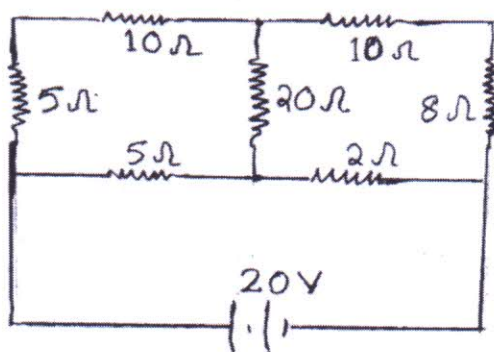
- a) Give an example of any one type of lumped Circuit Element.
- b) Explain the Maximum Power Transfer theorem?
- c) Draw the charging & discharging Characteristics of a Capacitor.
- d) A Capacitor is used to reduce current drawn from an Inductive AC circuits, how?
- e) Write the advantages of a Kelvin Double bridge.
- f) Describe briefly the Leakage flux & Fringing in Magnetic circuits.
- g) Discuss the difference between Energy meter & a Wattmeter.
- h) What is a Thermistor and where are they used.
- i) Draw the V/I Characteristics of a Tunnel Diode.
- j) List applications of a Diode & a BJT.

Part B (5 x 14 = 70 Marks) Answer Any Five of the Following

2) (a) State & Explain the 'Super Position Theorem' (7 Marks)

(b) Solve using Maxwell's Loop Method to find out the Current in Resistor. (7 Marks)

20Ω



3)

- a) Derive the expression for equivalent Inductance when two Inductors are in series aiding in a magnetic circuit. (6Marks)
- b) What is the phenomenon 'Hysteresis' of a Magnet? How will we find the Hysteresis Loss of the magnet? (8 Marks)

4)

- a) Explain the relation between Phase and Line Voltages in STAR connected 3-phase A.C circuits. (6 Marks)
- b) A 230V 50Hz 1-phase supply feeds an inductive coil of $(3+j4) \Omega$ connected in series to a $30\mu\text{F}$ capacitor. Calculate the **(i)** Impedance **(ii)** Current **(iii)** Power factor and **(iv)** Power drawn by the circuit. (8 Marks)

5)

- a) Derive the expression for Energy stored in a Capacitor. (4Marks)
- b) Explain with a neat sketch the working of a Lead-Acid cell. (7Marks)
- c) Name the methods used to control static Electricity hazards. (3Marks)

6)

- a) Explain with a neat sketch the working of a Moving Coil Ammeter. (7 Marks)
- b) A Moving coil instrument has a Resistance of 1.0Ω and gives a full scale deflection of 100 divisions with a p.d. of 0.15V. Calculate the extra resistance required to enable the instrument for reading up to 30V, along with the connection diagram. (7 Marks)

7)

- a) Discuss with a neat diagram a Diode Clamper circuit. (6Marks)
- b) Write notes on
 (i) LED
 (ii) Non-Linear Resistor (8Marks)

8)

- a) What is Zener Diode? Draw the characteristics curve for a Zener diode and label it (6 Marks)
- b) Explain the working of a CE Transistor Amplifier with a neat sketch. (8 Marks)