
Question No 01

Part A (Provide necessary short answers)

i. What is static electricity?

ii. What are the types of current electricity?

iii. What are the effects of electricity?

iv. What are A.C. and D.C.?

v. How will you connect the cell (a)to increase the e.m.f and (b) to increase the supply of current?

vi. What is the relation between H.P. and kW.?

vii. What do you mean by open circuit?

viii. What do you mean by short circuit?

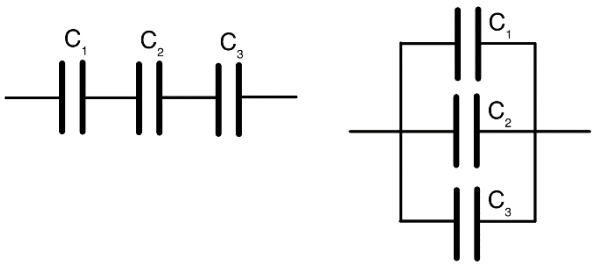
ix. What are the properties of a good conductor?

x. What are the properties of a good insulator?

(01 X 01 = 10 Marks)

Part B

i. Find the capacitors values of series and parallel circuits. C1 -10µf/50V, C1 -100µf/50V, and C1 -1000µf/50V,

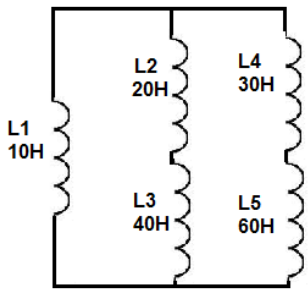


Circuit-A Circuit-B

(02 Marks)

ii. Find the total value of following inductors circuit

L1, L2, L3, L4, and L5?



(02 Marks)

iii. As an example, consider the case of a 100nf capacitor which forms part of a filter connected across a 240V, 50Hz mains supply. The reactance of the capacitor will be: (03 Marks)

iv. As an example, consider the case of a 100mH inductor which forms part of a filter circuit connected in series with a 240V, 50Hz main supply. The reactance of the inductor will be: (03 Marks)

Question No 02

Briefly explained following things with relevant illustrations and applications

i. M.C.C.B
ii. E.F.R
iii. U.V.T
iv. Auto Transfer Switch
v. Instrument Transformer
vi. Insulation Tester
vii. Auto Voltage Regulator
viii. Backup Power Supply
ix. S.M.P.S
x. I.P Standards

(2 X 10 = 20 Marks)

Question No 03

a. A 40µf capacitor is in series with a 40mH inductor, a 30 Ohm resistor, and a 15V AC signal with a frequency of 60Hz.
b. Calculate the capacitive reactance and the inductive reactance in the circuit.
c. Determine the impedance.
d. Calculate the rms current in the circuit.
e. Calculate the voltage across the resistor, the inductor, and the capacitor.
f. How much power is consumed in the circuit?
g. What is the resonant frequency of the circuit?

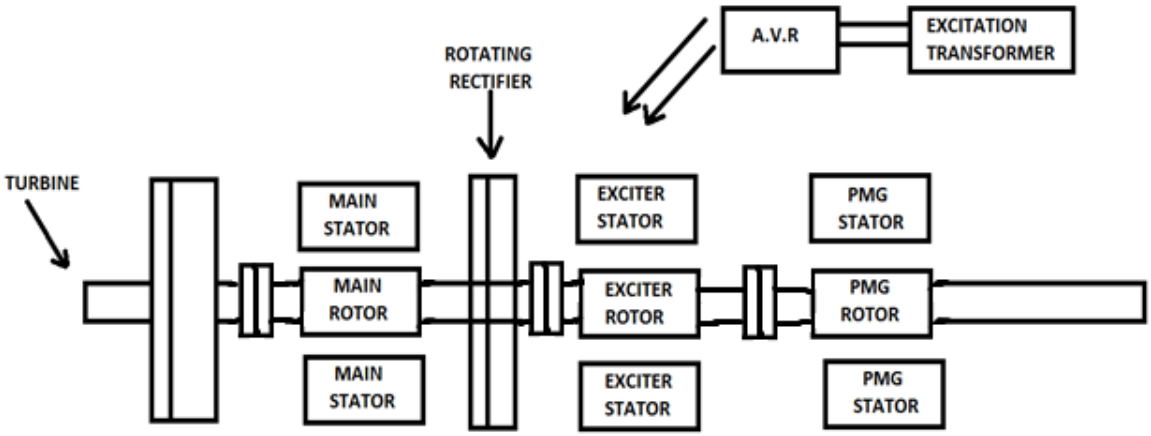
Question No 04

i. What are the types of earthling system and which one mostly used in Sri Lanka?
ii. How can calculate the rotational speed of an induction motor using following figures?
    f: Primary frequency = 60Hz
    P: Number of motor poles = 4
    S: Slip = 3%
iii. Briefly explain following items and draw sketch
    a. Isolator
    b. Motor Stater
    c. Motor Drive
iv. Draw a sketch of three phase full wave rectifier circuit and briefly explain with input and output waveforms.

(5 X 4 = 20 Marks)

Question No 05

i. Mention a relevant name of the following illustration and briefly explain the main function. (10 Marks)

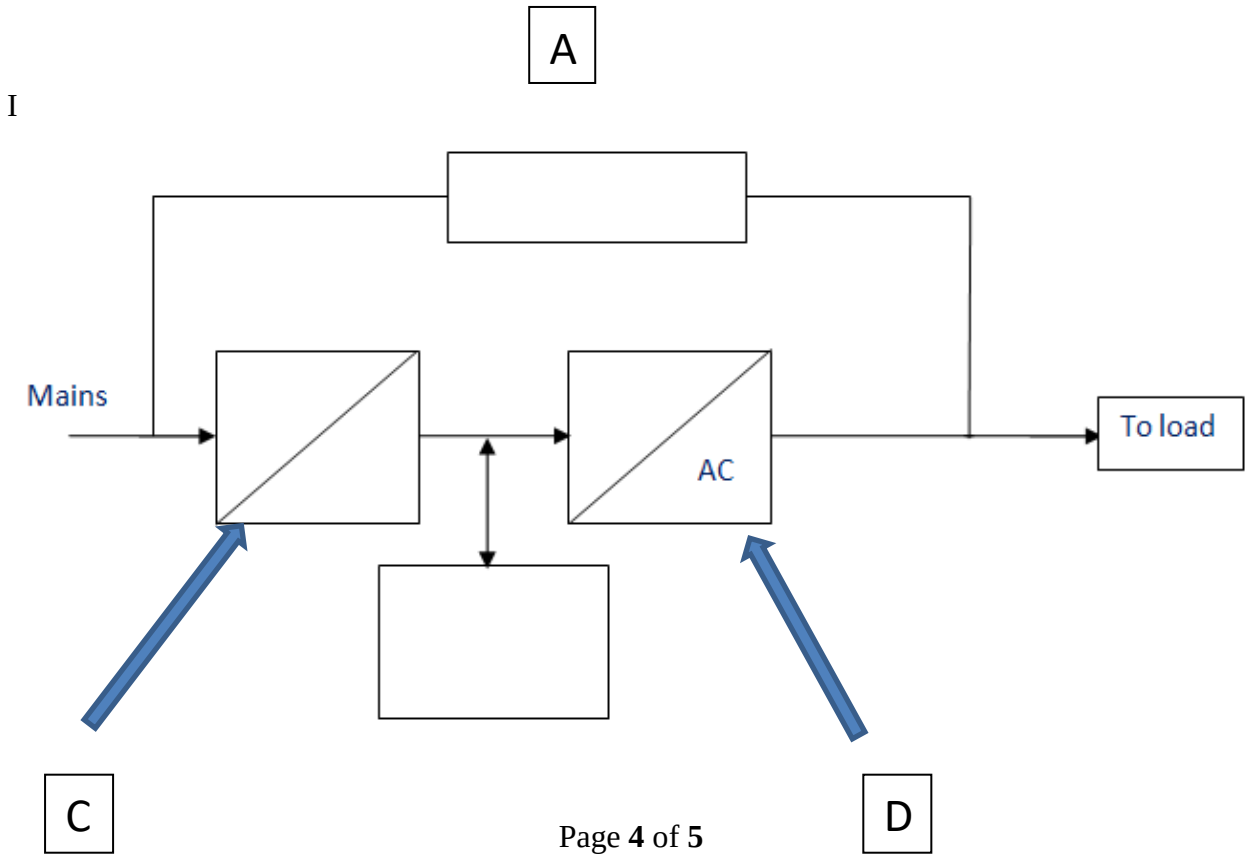


ii. What is the requirement of Rotating Rectifier? (05 Marks)

iii. Describe the open loop and closed loop system through relevant applications (05 Marks)

Question No 06

A block diagram of Uninterruptible Power Supply



i. Above sketch has mentioned about the Uninterruptible Power Supply and name given parts of A, B, C, and D (10 Marks)

ii. Briefly explain following topics with industrial applications and environment.

   a. Installation and commissioning of plant & equipment
   b. Service and preventive maintenance
   c. Standards Operation procedure (S.O.P)
   d. Root Cause Analysis
   e. Reinstate Work Area

(02 X 5 = 10 Marks)