# Class- B.Sc III Sem
# Examination- 2022

## Paper Name : Electrical circuit and Network Skills

## Paper Code : BPH- S301

Time: 3 hours Max. Marks: 70

**Note: Question paper is divided into two section A & B. Attempt all section as per instruction**

### SECTION – A

**(Short type Questions)**

**Note: Answer any five questions about 150 words each. Each question carries six marks.**

Q1**.** Describe the real, imaginary and complex power component of ac source.

Q2. What is the principle of Ammeter? Write the types of Ammeter. How can you convert an ammeter in voltmeter?

Q3. Write the rules to analyse the AC sourced electrical circuits with a suitable example.

Q4. How do the capacitor and inductor behave in the DC circuits?

Q5. Define the conductivity of semiconductor material with the suitable diagram. How can we moderate the conductivity of intrinsic semiconductor by adding tri and pentavalent impurities?

**Q6.** Write the rules to analyse the DC sourced electrical circuits with a suitable example.

Q7. What is the principle of Voltmeter? Write the types of voltmeter. How can you convert a voltmeter in ammeter?

Q8. Discuss about the Single phase and three phase current source.

Q9. Determine the secondary voltage if the secondary circuit is open and the primary voltage is 120V.

Q10. Explain the semiconductor material with the help of band theory. How can you increase the conductivity of intrinsic semiconductor materials?

### SECTION – B

(Long type Questions)

**Note: Answer all questions in detail. Each question carries ten marks.**

Q1. Describe the interfacing DC and AC sources to control the heaters and motors. Discuss about the voltage drop and losses across cables and conductors.

OR

Explain these terms in any electrical circuit- (i) Overload (ii) Surge protection (iii) Grounding and isolating (iv) Phase reversal devices

Q2. Draw the graph and explain the effect of temperature on semiconductor materials. Derive an expression for the efficiency for center tap full wave rectifier and also write the benefits of bridge rectifier over center tab rectifier.

OR

Describe the working and the design of the three phase electric motor with a suitable diagram.Write the application and the limitation of the single phase motor.

Q3. What is the use of multimeter? Explain the working and construction of multimeter with the help of block diagram.

OR

What is the use of capacitor in an electrical circuit? A series RLC circuit containing a resistance of 12Ω, an inductance of 0.15H and a capacitor of 100uF are connected in series across a 100V, 50Hz supply. Calculate the total circuit impedance, the circuits current, power factor.

Q4. What is the DC power sources? Discuss in brief about the working and construction of a DC generator. How is it different from AC generator?

OR

Discuss the effect of temperature on semiconductor. Derive an expression for the efficiency for a full wave rectifier and define also the term of peak inverse voltage.