

**Q2 (a) What is the effect of temperature on electrical conductivity of metals?
Explain in brief.**

Answer Article 2.3 of Text book I

Q2 (b) Explain the following:

- (i) Thomson effect**
- (ii) Properties and application of copper**

Answer

- (i) Article 3.14 (i) of Text book I
- (ii) Article (3.9) (i) of Text book I

Q3 (a) Explain the following:

- (i) Dipolar Polarisation**
- (ii) Polarisability catastrophe**

Answer

- (a) Article 4.5 (ii) of Text book I
- (b) Article 4.7 of Text book I

Q4 (a) Discuss the following:

- (i) Frequency dependence of permittivity**
- (ii) Frequency dependence of ionic polarisability**

Answer

- (i) Article 5.3 of Text book I
- (ii) Article 5.4 of Text book I

Q4 (b) Explain breakdown in solid dielectrics.

Answer Article 5.11.1 (c) of Text book I

Q5 (a) What is the origin of permanent magnetic dipoles? Discuss diamagnetism and Paramagnetism.

Answer Article 6.3 to 6.5 of Text book I

Q5 (b) Discuss various factors which affects the permeability and hysteresis loss.

Answer Article 6.12 of Text book I

Q6 (a) Explain Einstein's relation between diffusion constant and mobility.

Answer Article 7.8 of Text book I

Q6 (b) Discuss Hall effect. Derive relation for Hall voltage and Hall coefficient.

Answer Article 7.10 of Text book I

Q7 What are the different types of junction diodes? Explain characteristics, properties and applications of any two.

Answer Article 8.1 (i) & (iii) of Text book I

Q8 (a) Write applications of the following:

- (i) Ferreed relay
- (ii) Mica dielectric capacitors
- (iii) Ferrite core inductors
- (iv) Carbon composition resistors

Answer

- (i) Article 12.5 (xviii) of text book I
- (ii) Article 12.3 (iv) of Text book I
- (iii) Article 12.4 (iii) of text book I
- (iv) Article 12.2 (i) of Text book I

Q8 (b) Explain the working of the following:

- (i) Variable resistors
- (ii) Ceramic dielectric capacitors

Answer

- (i) Article 12.2 (vii) of Text book I
- (ii) Article 12.3 (v) of Text book I

Q9 (a) Compare general properties of BJT and JFET.

Answer Article 14.7 of text book I

Q9 (b) What is Epitaxial diffused junction diode? Explain in brief.

Answer Article 14.9.1 of Text book I

Text Book

Introduction to electrical engineering Materials by C.S. Indulkar & S. Thiruvengadam, 4th edition, reprint 2006 edition, S. Chand & company, New Delhi.