Vidyasagar Academy, Akola

XI Electronics First Terminal Exam 2017

Time: 02 Hour | **Question Paper II** | **Max. Marks: 50**

Ques 1: A) Fill in the blanks by choosing the *correct* alternative – **(4)**

a) The diode is a _____ current device.

(a) polydirectional (b) unidirectional (c) bidirectional (d) multidirectional

b) When pentavalent element is mixed with silicon, we get _____ semiconductor.

(a) n-type (b) p-type (c) h-type (d) z-type

c) The minority charge carriers in N-type semiconductor are _____.

(a) electrons (b) holes (c) +ve ions (d) –ve ions

d) The energy required to break the covalent bonds in Germanium is _____.

(a) 1.12eV (b) 0.75eV (c) 5.25eV (d) 3.1eV

B) Attempt any TWO of the following – **(6)**

a) In a bridge rectifier circuit, if the turns ratio of transformer is 10:1, with mains voltage of 100V, 50Hz supply, then calculate the output DC voltage of the circuit and its ripple frequency.

b) Calculate output DC voltage of HWR if the turns ratio of transformer is 100:5, with mains voltage of 200V.

c) Calculate DC voltage and ripple frequency of FWR if its input AC voltage is 10Vrms at 50Hz.

Ques 2: A) Attempt any TWO of the following – **(6)**

a) Draw circuit diagram of full wave rectifier and explain its working in brief.

b) Draw circuit diagram of HWR and explain its working.

c) Calculate the ripple frequency of FWR and HWR, if mains frequency of AC voltage is 55Hz.

B) Attempt any ONE of the following – **(4)**

a) How PN junction diode is forward biased? Explain its working in brief. Also draw the characteristics graph of diode in forward biasing.

b) Draw circuit diagrams of CC, CB and CE configurations of a transistor.

Ques 3: A) Attempt any TWO of the following – **(6)**

a) What is transistor? Why it is named as transistor?

b) What is bipolar transistor? Explain the construction of NPN transistor with diagram.

c) What is hole-electron pair? Explain in brief.

B) Attempt any ONE of the following – **(4)**

a) What is extrinsic semiconductor? Explain in brief.

b) Write down the electronic configuration of Boron (5), Arsenic (33).

Ques 4: A) Attempt any TWO of the following – **(6)**

a) Derive the mathematical expression between α &β.

b) Compare p-type and n-type semiconductors.

c) How p-type semiconductor is formed? Explain in brief with diagram.

Overleaf Please

B) Attempt any ONE of the following – **(4)**

a) Explain the working reverse biasing of a diode with necessary diagram.

b) What are the applications of PN junction diode? Give any 2 applications.

Ques 5: A) Attempt any TWO of the following – **(6)**

a) Write down the working of BR with necessary diagram.

b) Define alpha (α) and (β) of a transistor.

c) What will happen if any one diode in bridge rectifier is faulty? Explain in brief.

B) Attempt any ONE of the following – **(4)**

a) Write any two advantages of Full wave rectifier.

b) Write any two advantages of Bridge rectifier.

OR

Ques 5: A) Attempt any TWO of the following – **(6)**

a) Compare HWR, FWR and BR with any three points.

b) Draw the characteristics graph of PN junction diode and show all the four regions i.e. cut-off region, active region, saturation region and breakdown region in forward biasing condition only.

c) Write electronic configuration of silicon and germanium.

B) Attempt any ONE of the following – **(4)**

a) What is doping? Explain in brief.

b) How PNP transistor is formed? Explain in brief with suitable diagram.