# USELT02 - Electronics Paper-II (Semiconductor Diodes and Analog Electronics)

P. Pages : 2

Time : Three Hours

*6530*

GUG/W/23/11549

Max. Marks : 50

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Notes : 1. All the questions are compulsory and carry equal marks.
2. Draw the neat and labelled diagram wherever necessary.
3. Use of log table/calculator is allowed.

**Either:**

1. a) What is PN junction diode? Explain the formation of PN junction. Draw the V-I characteristic of Forward bias PN junction diode and explain it. **1+4+5**

**OR**

b) What is the breakdown of PN junction? Explain Zener breakdown mechanism? Explain the dc load line analysis of forward bias pn junction diode. **2+4+4**

**Either:**

2. a) What is rectification? Explain half wave rectifier with input and output wave form? Explain the performance parameter $I_{dc}$ and $I_{rms}$ of half wave rectifier. **1+5+4**

**OR**

b) Draw the circuit diagram of Full wave bridge rectifier and explain the working with input and output wave form? Distinguish between half wave full wave and bridge rectifier. **6+4**

**Either:**

3. a) With the help of circuit diagram explain the input and output Characteristic of CE configuration. What is load line? **8+2**

**OR**

b) What are the requirements of biasing the transistor? Explain voltage divider method of biasing the transistor? Define stability factor? **4+4+2**

**Either :**

4. a) What is h-parameter? Determine the $h_{11}$, $h_{12}$, $h_{21}$ and $h_{22}$? **2+8**

**OR**

b) Draw the hybrid equivalent circuit of CE mode and explain current and voltage gain in CE mode Transistor? **4+6**

**5.**    Attempt **any ten** of the followings:    **1x10**

a)   Define cut in voltage?

b)   What is depletion region?

c)   Draw the circuit symbol of Zener and Schottky diode?

d)   State the disadvantages of full wave bridge rectifier?

e)   What is filter?

f)   Define voltage regulation.

g)   If $\alpha = 0.98$ then find $\beta$.

h)   Draw the circuit symbol of PNP and NPN transistor.

i)   What is thermal runway?

j)   What is the meaning of h parameter $h_{re}$ and $h_{fb}$?

k)   What is the Bandwidth of amplifier?

l)   What are the limitation pf h-parameter?

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