

F.Y.B.Sc. (CBCS)-Regular-Semester 2017 Sem I  
**USELT01 - Electronics Paper-II**  
**(Semiconductor Diodes and Analog Electronics)**

P. Pages : 2

Time : Three Hours



**GUG/W/17/10086**

Max. Marks : 50

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- Notes : 1. All question are compulsory and carry equal marks.  
2. Draw neat diagram wherever necessary.  
3. Use of log table/calculator is permissible.

**Either**

1. a) Explain the formation of depletion layer in p-n junction diode with suitable diagram. 5+5  
Explain forward characteristic of p-n junction diode.

**OR**

- b) Explain the construction and working of Schottky diode. 6+4  
Write the diode current equation with their notation.

**Either**

2. a) Draw the circuit diagram of half wave rectifier. Explain its working with its input and output waveforms. 6+4  
Compare the halfwave rectifier, full wave center tapped and bridge rectifier.

**OR**

- b) What is filter ? Explain the role of filter in power supply. 3+7  
Explain the working of shunt capacitor filter with input and output waveforms.

**Either**

3. a) Draw the circuit diagram of BJT in CE configuration and explain its working. 5+5  
Explain the output characteristics of CE configuration.

**OR**

- b) Explain the voltage divider bias method of transistor. Give its advantages. 5+5  
What is thermal runaway ? How does it avoided ?

**Either**

4. a) Draw the h-parameter equivalent circuit for CE, CB and CC configuration with proper notations. 6+4  
Derive the expression for voltage gain of CE configuration using h-parameters.

**OR**

- b) Explain the frequency response of RC coupled amplifier. 5+5  
Derive the expression for voltage gain in low frequency range using h-parameter.

5. Attempt **any ten** of the following.

**10x1**

- a) How p-n junction diode is formed ?
- b) What is potential Barrier in p-n junction diode ?
- c) What is dynamic resistance of diode ?
- d) State the disadvantages of halfwave rectifier.
- e) Define ripple factor.
- f) Define load regulation.
- g) Define  $\alpha$  and  $\beta$  of transistor.
- h) Draw the circuit diagram of CE configuration using fixed bias.
- i) What is stability factor ?
- j) What is the use of h-parameters ?
- k) Write the input and output impedance formula using h-parameters.
- l) Draw labelled circuit diagram of RC coupled amplifier.

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