

B.SC. PART-III (SEMESTER-VI)

ELECTRONICS AND SOLID STATE DEVICES - II

Time : Three Hours]

Note : Attempt two questions each from Section C consisting of 8 short answer type questions

[Maximum Marks : 35
Questions carrying 1 mark each.

- Section - A
1. What do you understand by feedback in an amplifier with series voltage feedback. State its advantages and disadvantages of negative feedback in amplifier. 8
 2. Draw the low frequency h-parameters equivalent circuit of CE transistor amplifier. Derive an expression for current gain, voltage gain, and input impedance. 8
 3. (a) What are h-parameters? Describe the methods of determining h-parameter from input and output characteristics of a CE transistor. 6
(b) An amplifier with negative feedback has a voltage gain of 120. To produce the given output signal, an input signal of 60 mV is required, whereas a signal of 0.3 V produces the same output with negative feedback. Calculate the value of A and B. 2
 4. (a) Draw an expression for voltage gain in the case of common source FET amplifier. 4
(b) Derive an expression for the voltage gain of an emitter follower from the concept of feedback. 4
- Section - B
5. Describe the operation of a tuned collector oscillator with the help of circuit diagram. Derive the condition for the sustained oscillations. 8
 6. Discuss Barkhausen's criteria for sustained oscillations. Describe Hartley oscillator circuit and give an example of its actions. 8

7. What is Modulation ? At what stage this operation is required ? Derive an expression for total power in an amplitude modulated wave. 8
8. (a) Draw the block diagram of AM radio receiver. Explain the function of each component or block. 5
(b) Explain the action of diode detector used for demodulation of AM wave. 3

Section - C

9. Attempt all parts :
- (a) What is Skip zone ?
(b) What is Tank circuit ?
(c) Why microwaves are known as communication waves ?
(d) What do you understand by Active and Passive elements ?
(e) "FET is voltage controlled device". Comment on it. .
(f) What are RC oscillations ?
(g) What is frequency modulation ?
(h) Give the advantages of using h-parameters.

(1×8=8)