

NRT/KS/19/2063

Bachelor of Science (B.Sc.) Semester–II Examination
ELECTRONICS (Semiconductor Devices)
Optional Paper–1

Time : Three Hours]

[Maximum Marks : 50

Note :—(1) All questions are compulsory and carry equal marks.

(2) Draw neat diagrams wherever necessary.

EITHER

1. (A) What is FET ? Give its classification. Explain the construction and working of p-channel JFET. 2+8

OR

- (B) What is MOSFET ? Explain the construction and working of E-MOSFET. List the advantages of MOSFET over the JFET. 1+7+2

EITHER

2. (A) What is UJT ? Explain the construction and working of UJT. Draw and explain V-I characteristics of UJT. 1+6+3

OR

- (B) Explain the construction and working of SCR. State its applications. Draw and explain V-I characteristics of TRIAC. 8+2

EITHER

3. (A) What is an amplifier ? Explain the following parameters of amplifier :

- (i) Input Impedance.
- (ii) Output Impedance.
- (iii) Gain

Draw h-parameter equivalent circuit of CE-amplifier and obtain the expression for :

- (i) voltage gain and (ii) current gain
of CE-amplifier using h-parameters. 4+6

OR

- (B) Describe the various notations used for representing DC and AC quantities in amplifier. Explain the black box model to construct hybrid equivalent circuit for CE amplifier and derive the unitless performance parameters. 3+7

EITHER

4. (A) What is power amplifier ? Differentiate between voltage amplifier and power amplifier. Explain the construction and working of complementary symmetry class B push pull amplifier. 4+6

OR

- (B) Define the following parameters of power amplifier :

- (i) Collector efficiency
- (ii) Distortion
- (iii) Power dissipation capability.

Explain the construction and working transformer coupled class A power amplifier. State its advantages and disadvantages. 3+5+2

5. Solve any **ten** :

- (a) State any two advantages of JFET.
- (b) Draw the symbol of N-channel JFET.
- (c) Why E-MOSFET is called as "Normally OFF" device ?
- (d) What is SCR ?
- (e) State any two applications of DIAC.
- (f) Define Intrinsic stand off ratio of UJT.
- (g) What is crossover distortion ?
- (h) Give graphical representation of class A operation.
- (i) What is efficiency of transformer coupled class A amplifier ?
- (j) What is h-parameter ?
- (k) What is output admittance ?
- (l) Name the hybrid parameters calculated by using open circuit test.

1×10=10