

Roll No.

Total Pages : 2

BT-2/M-20

32030

BASICS OF ELECTRONICS ENGG.

Paper-ECE-101N

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt *five* questions in all, selecting at least *one* question from each unit.

UNIT-I

1. (a) Differentiate between active and passive components with examples. 7½
- (b) Differentiate between avalanche breakdown and zener breakdown mechanisms. 7½
2. What is a diode? Discuss the V-I characteristics of a P-N junction diode. Also explain the (i) No applied bias (ii) Forward bias (iii) Reverse bias modes of P-N junction diode. 15

UNIT-II

3. (a) What is Barkhausen criterion? Discuss in detail. 7½
- (b) Discuss transistor as an amplifier. 7½
4. Discuss in detail the input and output characteristics of a common base transistor configuration. 15

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UNIT-III

5. (a) Discuss the concept of virtual short in op-amp. 7½
(b) How an op-amp works as an integrator? Discuss in detail. 7½
6. (a) If the input resistance is $R_i = 1 \text{ K ohm}$ and feedback resistance $R_F = 20 \text{ K ohm}$. Find the voltage gain in case of non-inverting op-amp. 7½
(b) Draw and explain the ideal voltage transfer curve of an op-amp. 7½

UNIT-IV

7. Discuss in detail the working and V-I characteristics of an enhancement and depletion MOSFET. 15
8. Explain the working, characteristics and applications of SCR. 15
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