B.E. Third Semester (Power Engineering) (New) (C.B.S.)

Electronic Devices & Circuits

P. Pages : 2 **NKT/KS/17/7257**

Time : Three Hours * 0 2 9 7 * Max. Marks : 80

Notes :
1. All questions carry marks as indicated.
2. Solve Question 1 OR Questions No. 2.
3. Solve Question 3 OR Questions No. 4.
4. Solve Question 5 OR Questions No. 6.
5. Solve Question 7 OR Questions No. 8.
6. Solve Question 9 OR Questions No. 10.
7. Solve Question 11 OR Questions No. 12.
8. Due credit will be given to neatness and adequate dimensions.
9. Assume suitable data whenever necessary.

1. a) Explain the working of P-N junction diode and explain its V-1 characteristics. **8**

b) Given si diode with forward voltage of V=0.4V. Calculate the factor by which the current will be multiplied when the temperature is increased from 25°C and 150°C. **6**

OR

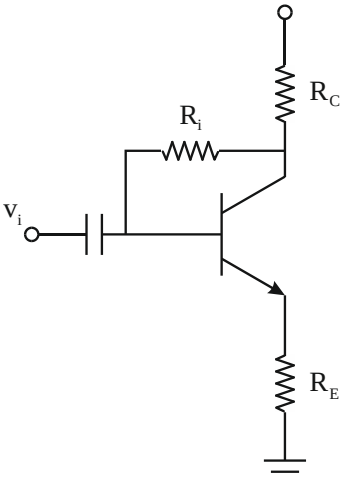
2. a) Draw the circuit diagram of full wave rectifier and explain its operation. **8**

b) Explain Zener diode along with V-I characteristics. **6**

3. a) Draw and explain input and output characteristics for CE configuration. **5**

b) Explain the fixed biasing technique. **4**

c) In the given circuit, **4**



$V_{CC} = 24V$,
$R_C = 10K\Omega$, $R_E = 270\ \Omega$
$V_{CE} = 5V$ find R
with $\beta = 45$

OR

4. a) Explain the working of transistor as a switch. **6**

b) Compare CE, CB and CC configuration of BJT. **7**

5. a) Draw the circuit and explain the working of class-A push pull amplifier. **7**

b) What is cross over distortion in amplifier ? How it can be eliminated. **6**

OR

6. a) Explain the concept of positive and negative feedback. **5**

b) Explain voltage shunt, voltage series current shunt and current series feedback system. **8**

7. a) Explain Barkhausen's criteria for oscillation. **5**

b) Explain the crystal oscillator with neat diagram. What is figure of merit of a crystal oscillator. **8**

OR

8. a) Explain the operation of n-channel FET. **5**

b) Write short note on transfer characteristics of JFET. **4**

c) Explain the enhancement effect in a MOSFET. **4**

9. a) Derive the equation for differential mode gain of DIBO differential amplifier. **8**

b) Explain the necessity of constant current source in differential amplifier. **5**

OR

10. a) Write short note on CMRR of differential amplifier ? **5**

b) What are the different configurations of differential amplifier ? Draw and explain DIBO differential amplifier. **8**

11. a) Convert the following : **10**

i) $(45 \cdot 1B)_{16} = (\quad)_8$

ii) $(1010110 \cdot 010101)_2 = (\quad)_{16}$

iii) $(35)_{10} = (\quad)_B$

iv) $(375)_8 = (\quad)_B$

v) $(251 \cdot 76)_{10} = (\quad)_{16}$

b) Draw symbol and truth table of NAND and NOR gates. **4**

OR

12. a) State and prove DeMorgan theorem. **6**

b) Write down the SOP form of following function **8**

$F(A, B, C) = (\overline{A} + B)(B + \overline{C})(\overline{A} + \overline{C})(A + B + C)$

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