## POKHARA UNIVERSITY

Level: Bachelor Semester:Fall Year : 2020
Programme:BE Full Marks: 100
Course: Electronic Devices and Circuits Pass Marks: 45
Time : 3hrs.

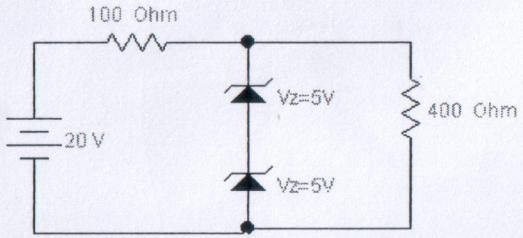
*Candidates are required to give their answers in their own words as far as practicable.*

*The figures in the margin indicate full marks.*

***Attempt all the questions.***

1. a) What happens when a forward biased diode is suddenly reverse biased? Explain with necessary diagrams. If reverse saturation current of diode is 5nA at 35°C, find reverse saturation current at 235°C. 8

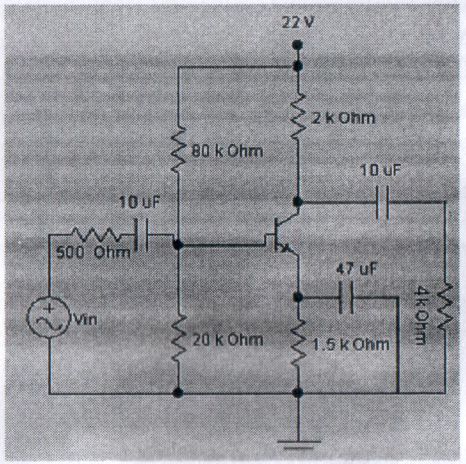
   b) For the circuit given below, find the output voltage, current flowing through a zener diode, and voltage drop across a series resistance, and power dissipated across the zener diode. 7



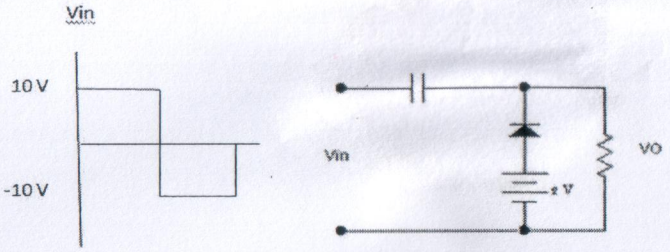

2. a) Explain thermal instability and thermal runaway. Define stability factor and find stability Factor for any one configuration of a transistor. 7

   b) For the BJT common emitter circuit shown below, determine the operating point and locate it in the load line. Assume $\beta = 100$. 8






3. a) Sketch output waveform for given circuit assuming silicon diode. 8




   b) What is pinch-off voltage? Design a self bias NJFET circuit operating at 15mA and 10V. Given $I_{DSS}$=25mA, Vp=-4V and $V_{DD}$=25V. Also find the transconductance. 7

4. a) A CE amplifier transistor having $h_{ie}$=8kΩ, $h_{re}$=3.6x10$^4$, $h_{fe}$=25μA/V. Determine $A_i$, $A_v$, $Z_{in}$ and $Z_0$ of the amplifier while $Z_L$=15KΩ and $R_S$=500Ω 8

   b) Why cascading is necessary? Find the gain of n-stage cascaded amplifiers. 7

5. a) What do you mean by power amplifier? Show that the maximum possible efficiency of transformer coupled load class A power amplifier is 50%. 7

   b) What are positive and negative feedback? Negative feedback extends the bandwidth. Explain it, with necessary derivations. 8