

Mid-West University
Examinations Management Office
 Birendranagar, Surkhet
End Semester (Alternative/Physical) Examinations -2078

Bachelor level/ B.Sc /6th Semester
 Time: 3hrs
Subject : Electronics (PHY461)

Full Marks : 60
 Pass Marks : 30

Candidates are required to give their answer in their own words as far as practicable. The figures in the margin indicate full marks.

Attempt all the questions

[6×10=60]

1. What is Colpitt oscillator? Derive the expressions of its conditions of oscillation [10]
2. State and derive the expressions of principle and total output voltage of differential amplifier. Write its advantages. [10]
3. a) State and explain the “Norton’s Theorem”. [5]
 b) What is the importance of NAND gate ? [5]

OR

State and derive the expressions of principle, voltage amplification and gain stability of feedback amplifier [10]

4. a) Draw the circuit diagram of common base n-p-n junction transistor. Explain its output characteristics. [5]
 b) What are encoder and decoder ? Explain. [5]

5. a) A silicon diode has a forward voltage drop of 1.2 V for a forward dc current of 100 mA. It has a reverse current of 1 μ A for a reverse voltage of 10 V. Calculate Bulk and reverse resistance of the diode, and ac resistance at forward dc current of 2.5 mA and 25 mA . [5]

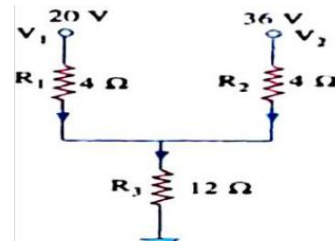


Fig. 1

- b) The circuit of Fig. 1 is excited by 2V sources of zero internal resistances. Use superposition principle to find current following through the common resistance R_1 and voltage drop across it. [5]

OR

- a) Calculate the three transistor currents I_B , I_C and I_E in the circuit of Fig. 2. [5]
- b) (i) add +1101 and -1011 using 1’s complement method [5]
 (ii) Subtract -78 from 43 2’s complement

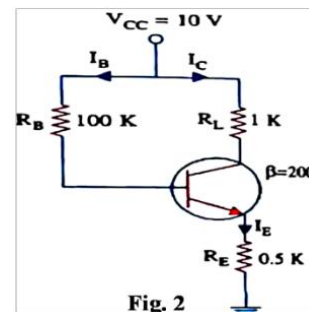


Fig. 2

6. a) Differentiate between half-adder and full-adder with diagrams. [5]
 b) Differentiate between p-n junction diode and zener diode. Why is an ordinary transistor called BJT? [5]

THE END