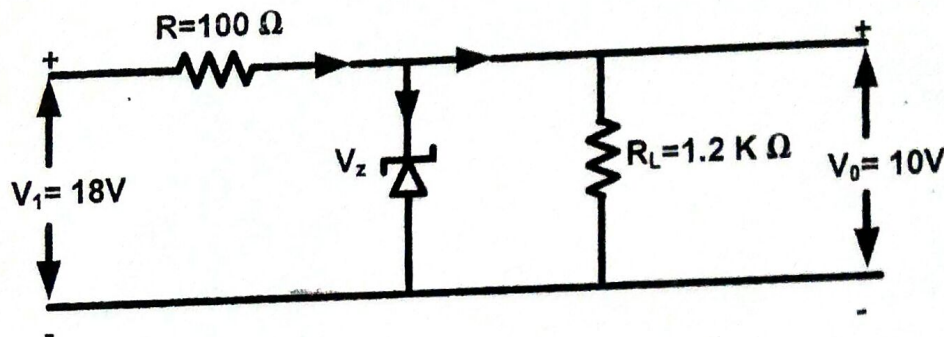


Exam.	Regular		
	BE	Full Marks	80
Level	BE	Pass Marks	32
Programme	All (Except B. Arch)	Time	3 hrs.
Year / Part	1 / II		

Subject: - Basic Electronics Engineering (EX451)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Assume suitable data if necessary.

1. What is Active and Passive Component? Define transconductance and voltage gain with reference to BJT. [2+4]
2. Draw the circuit diagram of RC High pass filter and explain its operation with the help of frequency dependent response at the output. [5]
3. Find the Zener Current in the given circuit when $R_L = 1.2 \text{ K}\Omega$. Assume $V_Z = 10 \text{ V}$. [5]



4. What is clipper and clamper circuit? [2]
5. Draw emitter feedback bias circuit of BJT by labeling all the circuit components. Find I_C and V_{CE} in the circuit if $V_{CC} = +12 \text{ V}$, $R_B = 430 \text{ k}\Omega$, $R_C = 2 \text{ k}\Omega$, $R_E = 1 \text{ k}\Omega$ and $\beta = 50$. [2+4]
6. Draw the circuit diagram of differential amplifier using BJT. [2]
7. Describe the working principle of n-channel enhancement type MOSFET. [6]
8. Mention any four properties of ideal Op-amp. Derive the expression of voltage gain of non-inverting amplifier using Op-amp. [2+4]
9. State Barkhausen criteria. Draw the circuit diagram of square wave generator and explain how it works. [2+4]
10. Draw the circuit diagram of Wien Bridge oscillator. [4]
11. Differentiate between following communication systems. [3+3]
 - i) Wired and wireless communication system
 - ii) Broadcasting and communication
12. What are the advantages and disadvantages of optical communication system? [4]
13. Write short notes on: (any two) [2×3]
 - i) Oscilloscope
 - ii) Data logger
 - iii) Regulated power supply using IC
14. State DeMorgan's theorem. Subtract $(1111)_2$ from $(1110)_2$ using 2's complement method. [3+3]
15. Simplify an expression $F(A,B,C,D) = \sum(1,3,7,9,11,14,15)$ by using K-map. [4]
16. Explain the operation of clocked R-S Flip-Flop with necessary diagram. [6]