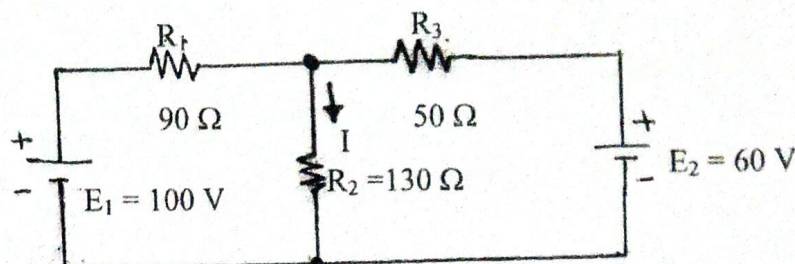


Exam.	New Back (2066 & Later Batch)		
Level	BE	Full Marks	80
Programme	All (Except B. Arch)	Pass Marks	32
Year / Part	I / II	Time	3 hrs.

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. Describe the principle of Thevenins theorem by solving the following problem. [4]



Find the current through R_2 .

2. Draw the circuit diagram of RC high pass filter and explain its operation with the help of frequency dependent response at the output. [1+3]
3. Draw and explain the operation of the full-wave rectifier circuit using center tapped transformer. [4]
4. Explain the piece wise linear models of PN junction diode. [4]
5. What is a clamper circuit? Draw the clamper circuit that adds +5volts DC level on AC voltage. [1+3]
6. Draw collector feedback type dc biasing circuit. If $V_{CC} = 10V$, $R_B = 950 K\Omega$, $R_C = 2.2 K\Omega$ and $\beta = 150$, Calculate dc operating collector current (I_{CQ}) [4]
7. Describe the construction and working principle of n-channel Enhancement type MOSFET. [6]
8. Draw the circuit diagram of differential amplifier using BJT and sketch the waveform at the collector terminals for sinusoidal differential input. [4]
9. State four important properties of ideal operational amplifier and determine the voltage gain of non-inverting operational amplifier circuit. [2+4]
10. Draw circuit diagram of triangular wave generator with square wave a input signal. Explain the working principle of square wave generator circuit using operational amplifier. [2+4]
11. Define communication system. Draw and explain the block diagram of communication system. [2+4]
12. Subtract $(1111)_2$ from $(1100)_2$ using 2's complement method. [2]
13. State De Morgan's theorem and Duality theorem with two examples for each. [4]
14. Simplify the following expression: [3+3]
 - i) $F(x,y,z) = xyz + x'y'z + xy'z' + x'y'z' + x'yz$
 - ii) $F(x,y,z) = \sum (0,2,5,6)$
15. Write short notes on: [4×4]
 - a) Oscilloscope
 - b) Digital voltmeter
 - c) Positive and negative feedbacks
 - d) Varactor diode