
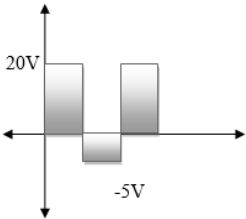


Name: Enrolment No:	
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UPES End Semester Examination, May 2023	
Course: BASIC ELECTRICAL & ELECTRONICS ENGG Program: B.Tech APE, FSE, CHEMICAL Course Code: ECEG1004	Semester: II Time : 03 hrs. Max. Marks: 100
Instructions:	

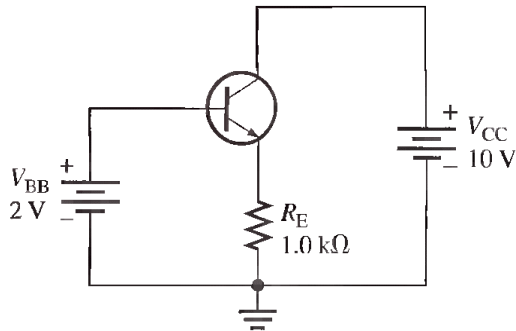
SECTION A (5Qx4M=20Marks)
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S. No.	Question	Marks	CO
Q1.	Define (i) KVL (ii) KCL (iii) Apparent (iv) Reactive power	5	CO1
Q2.	Explain Voltage regulation and clipping of the waveforms in linear wave shaping.	5	CO2
Q3.	Plot the output voltage. 	5	CO3
Q4.	Convert $(653)_{10} = ()_2 = ()_8 = ()_{16} = ()_{BCD}$	5	CO4
Q5.	An alternating current i is given by ; $i = 141.4 \sin 314 t$ Find (i) the maximum value (ii) frequency (iii) time period and (iv) the instantaneous value when t is 3 ms.	5	CO4

SECTION B (4Qx10M= 40 Marks)

Q6.	Explain the working of a $P-N$ Junction diode with a neat sketch in both the regions of operation (forward and reverse). Also from the $V- I$ characteristic curve explain the significance of knee voltage and breakdown voltage . Write the applications of a junction diode in detail.	10	CO1
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Q7.	<p>Explain differences between CE and CB configuration with neat diagrams Find I_E, I_B and I_C in the circuit given below; given $\alpha_{DC} = 0.98$</p>	10	CO2
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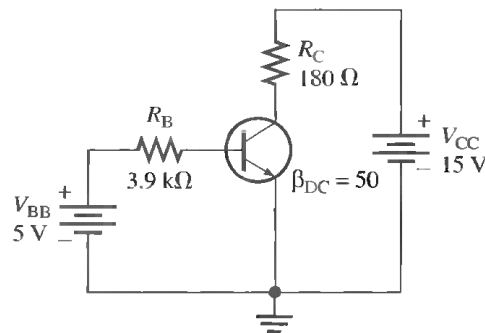


Q8.	<p>(a) Solve the Boolean expression using De- Morgan Theorem: (i) $f = (A'B' + C + D)'$ (ii) $[AB' + (C + D)'] + AC'$ (b) Design the half adder circuit.</p>	4+6	CO3
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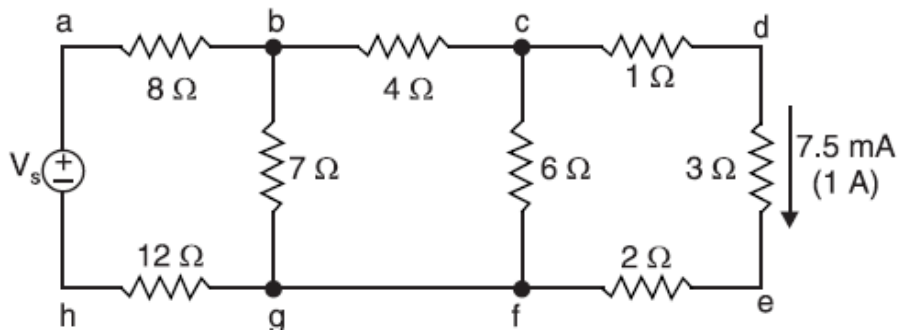
Q9.	<p>A series RLC circuit has $R = 5 \Omega$, $L = 0.2 \text{ H}$ and $C = 50 \mu\text{F}$. The applied voltage is 200 V. Find (i) resonant frequency (ii) Q-factor (iii) bandwidth (iv) current at resonance.</p>	10	CO4
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SECTION-C
(2Qx20M=40 Marks)

Q10	<p>(i) Explain input and output characteristics of transistor in which the base is connected in common to the emitter and collector terminals. And draw its behavior for an npn type of transistor with neat graphs. (ii) Determine V_{CE}, V_{BE} and V_{CC} for the transistor circuits given below. Also find whether the transistors are saturated.</p>	10+10	CO3
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Q11.	<p>Attempt both the parts (a) Write the definition of Superposition theorem using example. (b) For the ladder network shown in Fig. below, find the source voltage V_s which results in a current of 7.5 mA in the 3 Ω resistor.</p>		
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OR

Attempt both the parts

(a) Write about the Classification of AC and DC motors and working principle of DC motor with help of neat diagram.

(b) A 100 KVA, 6000/400V, 50 Hz single phase transformer has 100 turns in the the secondary. Find

- (i) Number of turns in the primary coil
- (ii) Maximum flux in the core

6+14

CO4