COLLEGE OF ENGINEERING, PUNE

(An Autonomous Institute of Government of Maharashtra.)

END Semester Examination

Programme: B.Tech | **Semester: II**

Course Code:ETC-19003 | **Course Name: Basic Electronics Engineering**

Branch:All | **Academic Year: 2021-22**

Duration: 3 hours | **Max Marks: 60**

Student PRN No. | 1 1 2 1 1 0 0 5 6

Instructions:

1. Figures to the right indicate the full marks.
2. Mobile phones and programmable calculators are strictly prohibited.
3. Writing anything on question paper is not allowed.
4. Exchange/Sharing of stationery, calculator etc. not allowed.
5. Write your PRN Number on Question Paper.

			Marks	CO
Q 1	a	Explain the zener diode as a voltage regulator.	2	i
	b	State the need for biasing a transistor circuit.	2	i
	c	In the circuit of fig.1 find I_E, I_B, I_C, V_{CE} neglect V_{BE} ,	4	i

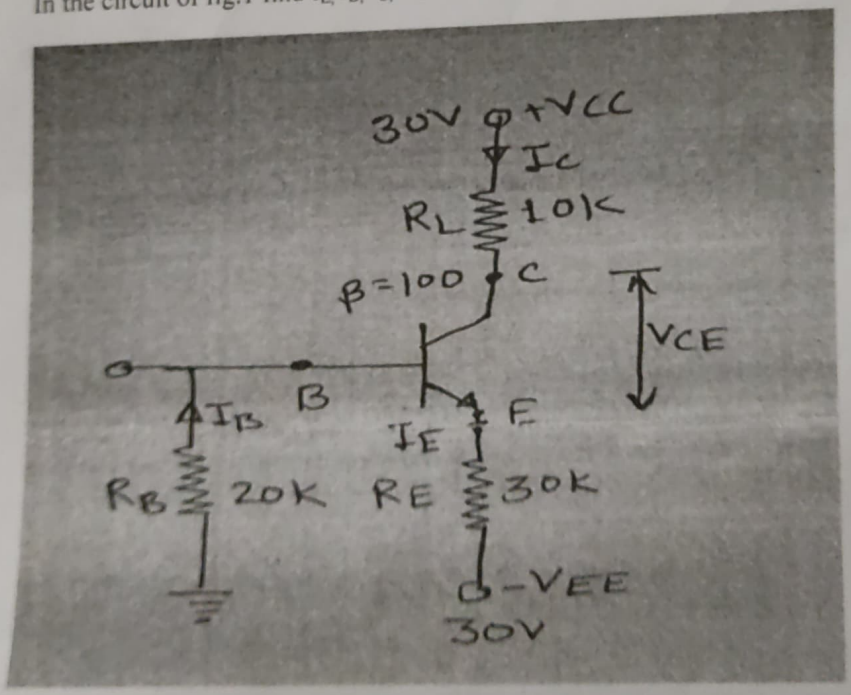

Fig.1

Q 2	a	State the characteristics of ideal op-amp.	2	ii
	b	Explain the op-amp as summing amplifier with diagram and derivation.	4	ii
	c	Define Common Mode Rejection Ratio.	2	ii
	d	Design inverting amplifier using $V_s = 0.5V$ and $V_o = 2V$. Calculate R_f and R_1.	2	ii
Q 3	a	Determine the decimal equivalent of binary number $(1100.1010)_2$	2	iv
	b	Express the decimal to numbers in the binary form $(10.625)_{10}$.	2	iv
	c	Add the binary numbers 01101010, 00001000, 10000001, 11111111	2	iv
	d	Using K-map find the equation for following minterms $\sum m(3, 5, 6, 7)$	2	iv
	e	Minimise the four-variable logic function using K-map. $f(A, B, C, D) = \sum m(0, 1, 2, 3, 5, 7, 8, 9, 11, 14)$	4	iv
	f	Explain R-S flip-flop using diagram.	4	iv
Q.4	a	Draw and explain astable multivibrator using 555.	4	ii
	b	Derive the expression for wien bridge oscillator with diagram.	4	ii
Q.5	a	Compare microprocessor and microcontroller	2	v
	b	Draw and explain block diagram of microcontroller 8051.	4	v
Q.6	a	Explain block diagram of communication System.	4	iii
	b	State the need of Modulation.	4	iii
	c	Define AM. What is modulation index?	4	iii