

Indian Institute of Information Technology Nagpur
Department of Electronics and Communication Engineering
Applied Electronics (ECL-103)

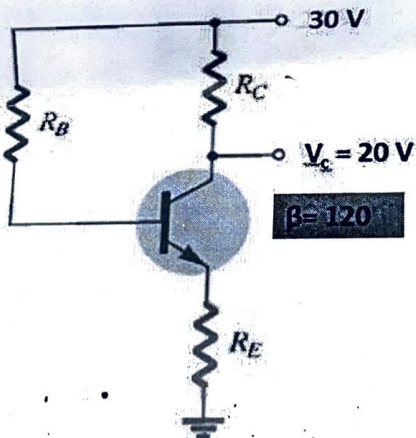
Time: 1 hour

Sessional Examination

Maximum marks: 15

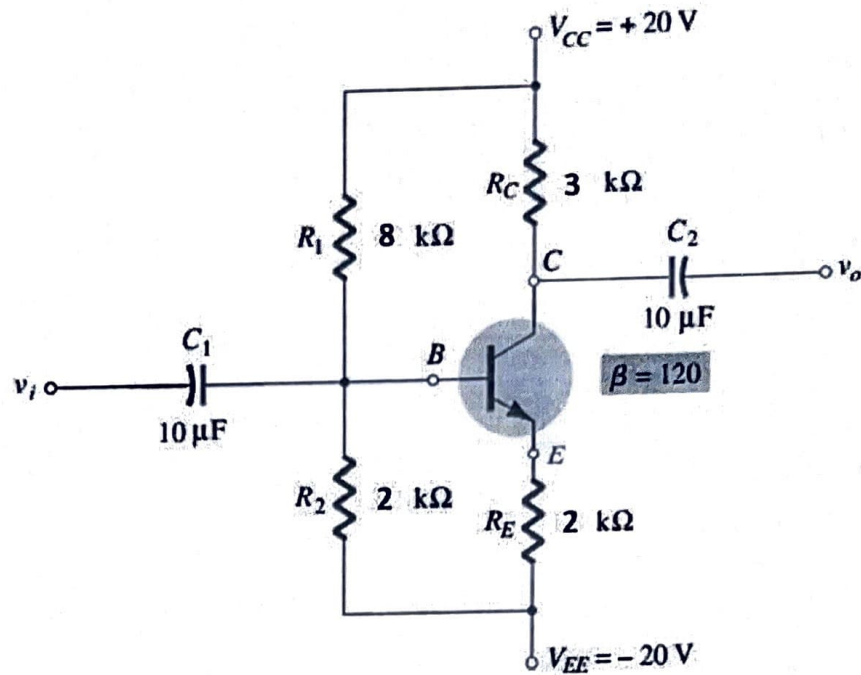
Important instructions:

1. All questions are compulsory.
2. Indicate the important steps of reasoning/calculations.
3. Maximum marks for each question are indicated on the right-hand side.

Q.1 (a)	What is the difference between Zener breakdown and Avalanche breakdown? What will be the effect of temperature on Zener breakdown voltage and Avalanche breakdown voltage?	CO 1 (2)
(b)	What is Base-width modulation in the BJT? Explain the Early effect.	CO 2 (2)
(c)	Explain the phenomena of thermal-runaway in the BJT.	CO 3 (1)
Q. 2 (a)	<p>The emitter-bias configuration of the given Figure has the following specifications: $I_{CQ} = 0.5 I_{sat}$, $I_{Csat} = 8 \text{ mA}$, $V_C = 20 \text{ V}$, and $\beta = 120$. Determine R_C, R_E, and R_B.</p> 	CO 2, 3 (3)

Determine the V_C , V_B , V_{CEQ} and I_{CQ} of the given Figure.

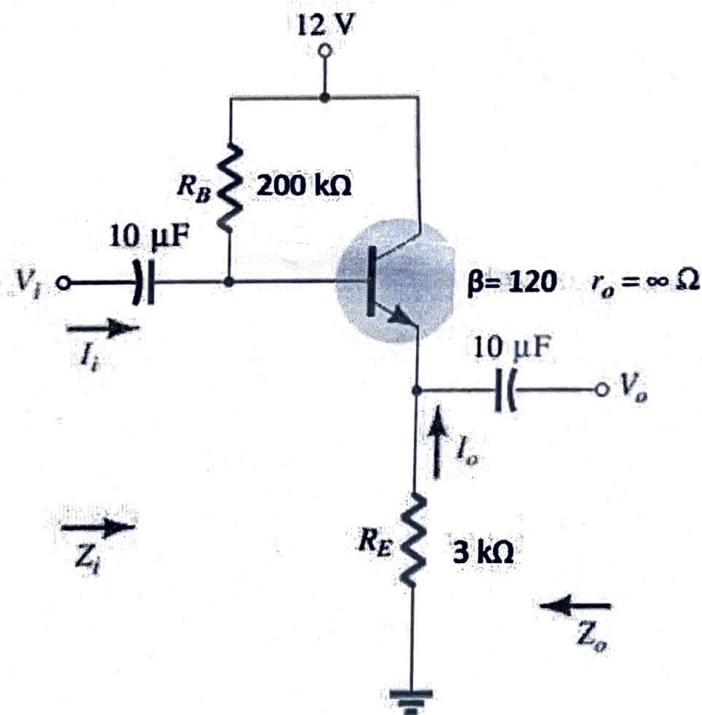
(b)

CO 2,
3

(3)

Determine, (a) r_e (b) Z_i (c) Z_o (d) A_v of the given Figure.

Q. 3

CO 2,
3

(4)