

**K. J. Somaiya Institute of Technology, Sion, Mumbai-22**  
(Autonomous College Affiliated to University of Mumbai)

*Supplementary Exam Feb / Mar 2024*

B.Tech Program: Electronics and Telecommunication

Examination: SY Semester: III - *Scheme II-B*

Course Code: **EXC303** and Course Name: **Electronic Devices and Circuits**

Duration: 2.5 Hours

*Date: 01/03/2024*

Max. Marks: 60

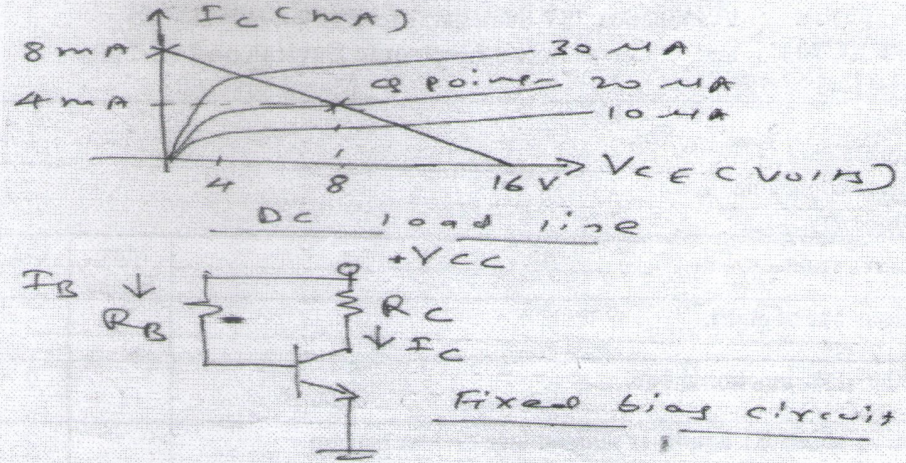
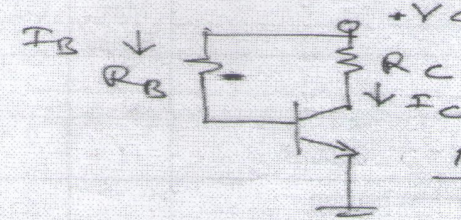
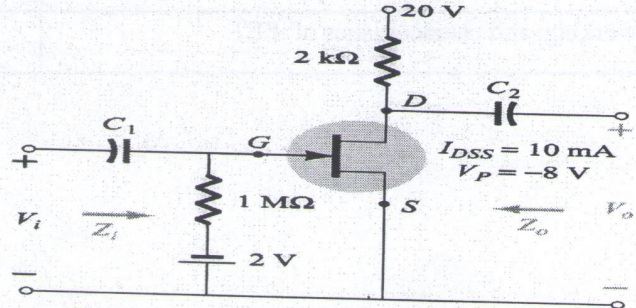
**Instructions:**

- (1) All questions are compulsory.
- (2) Draw neat diagrams wherever applicable.
- (3) Assume suitable data, if necessary.

		Max. Marks	CO	BT level
<b>Q 1</b>	<b>Solve any six questions out of eight.</b>	<b>12</b>		
i)	Explain working of the P-N junction diode.		2	U
ii)	Draw circuit diagram of MOSFET amplifier with voltage divider biasing.		2	U
iii)	Draw the circuit diagram of dual input balanced output Differential amplifier.		4	U
iv)	Sketch frequency response of CS amplifier and indicate low cut off frequency, high cut off frequency and bandwidth.		4	U
v)	Explain classification of power amplifier.		4	U
vi)	Define differential mode gain and common mode gain for a differential amplifier.		2	U
vii)	Explain miller effect?		4	U
viii)	What is crossover Distortion?		6	U
<b>Q.2</b>	<b>Solve any four questions out of six.</b>	<b>16</b>		
i)	Explain differences between BJT and FET diode?		1	U
ii)	Draw circuit diagram of CE amplifier .Explain function of each component.		2	U
iii)	Explain the differences between P type and N type semiconductor.		6	U
iv)	Draw the circuit diagram of class AB power amplifier and Explain its operation .		3	U
v)	Draw and explain construction ,working and characteristics of FET.		4	U

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vi)	<p>The DC load line of fixed bias circuit is as shown below .Determine the required values of VCC,RC,RB.VBE = 0.7 Volts</p>  <p>DC load line</p>  <p>Fixed bias circuit</p>	3	U
Q.3	Solve any two questions out of three.	16	
i)	Compare class A and class B and power amplifiers.	4	U
ii)	Explain zener as a voltage regulator and explain Avalanche and zener breakdown.	6	U
iii)	Compare various types of coupling methods used in multistage amplifiers.	5	U
Q.4	Solve any two questions out of three.	16	
i)	Draw circuit diagram and explain the operation two transistor current source	4	U
ii)	Draw small signal equivalent circuit of CE amplifier and derive the equation of voltage gain, input and output resistance.	2	U
iii)	<p>(a) Determine <math>g_m</math>.                  (b) Find <math>r_d</math>.                  (c) Determine <math>Z_i</math>.                  (d) Calculate <math>Z_o</math>.                  (e) Determine the voltage gain <math>A_v</math>.                  (f) Determine <math>A_v</math> ignoring the effects of <math>r_d</math>.</p>	2	Apply
			

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