

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular & Supplementary Winter Examination-2023

Course: B. Tech.

Semester :III

Branch :Electronics Engineering/Electronics and Telecommunication

Engineering/Electronics and Communication Engineering

Subject Code & Name: BTEXC302/BTETC302 and Electronic Devices and Circuits

Max Marks: 60

Date:04-01-2024

Duration: 3 Hr.

Instructions to the Students:

1. All the questions are compulsory.
2. The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in () in front of the question.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

	(Level/CO)	Marks
Q. 1 Solve Any Two of the following.		12
A) Draw a neat circuit diagram of CB connection. Define α . Find the expression for collector current.	CO3	6
B) Explain transistor as an amplifier in CE configuration.	CO3	6
C) Determine V_{CB} in the transistor circuit shown in figure (a). The transistor is silicon and has $\beta = 150$.	CO2/CO3	6

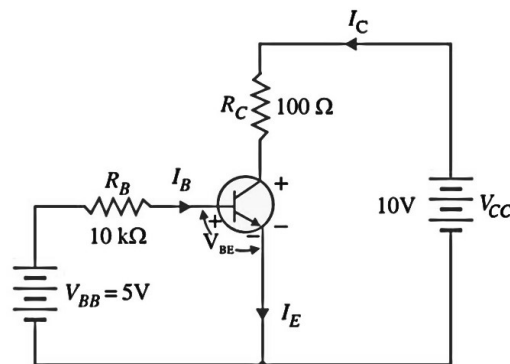


Figure (a)

Q.2 Solve Any Two of the following.		12
A) With a neat diagram, explain the working principle of p-channel D-MOSFET with different cases.	CO2/CO3	6
B) Give the comparison of FET with MOSFET and BJT.	CO3	6
C) A JFET has a drain current of 5mA. If $I_{DSS} = 10\text{mA}$ and $V_{GS(\text{off})} = -6\text{V}$, find the value of (i) V_{GS} and (ii) V_P .	CO3	6

Q. 3 Solve Any Two of the following.		12
A) Discuss with neat diagram transformer coupled class A power amplifier and derive its maximum efficiency.	CO2/CO4	6
B) Prove that the maximum conversion efficiency of a Class B transformer coupled amplifier is 78.5%.	CO2/CO4	6
C) With a neat diagram explain push-pull class B power amplifier and derive its maximum efficiency.	CO1/CO4	6
Q.4 Solve Any Two of the following.		12
A) Explain voltage series feedback amplifier with a neat diagram. How the overall gain, input impedance, output impedance is affected in these amplifiers.	CO4	6
B) Explain current series feedback amplifier with a neat diagram. How the input impedance, output impedance are affected in these amplifiers.	CO2/CO4	6
C) State and explain Barkhausen criterion of oscillations.	CO4	6
Q. 5 Solve Any Two of the following.		12
A) Draw and explain the Wein Bridge oscillator. Derive the expression for frequency of oscillation.	CO2/CO4	6
B) Draw and explain the Hartley oscillator. Derive the expression for frequency of oscillation.	CO2/CO4	6
C) Define voltage regulation. Explain series voltage regulator with a block diagram.	CO4	6

*** End ***