

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) What is BJT? Explain in detail.

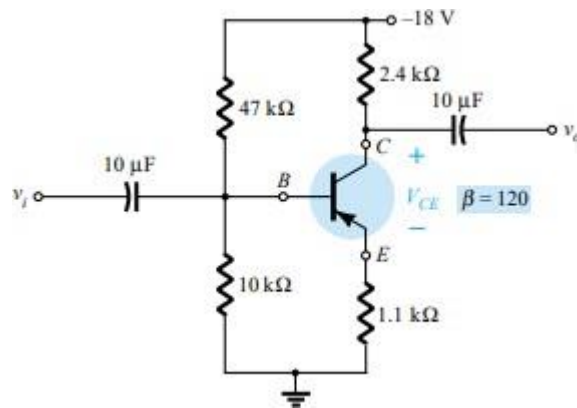
1/7

6

B) Determine V_{CE} for the voltage divider bias configuration?

1/3

6



C) Draw a neat diagram of cascaded amplifier and explain in detail.

1/3

6

Q. 2) Solve Any Two of the following.

12

A) Explain construction & characteristics of JFET.

2/1

6

B) Determine the following parameter for given figure

2/1

6

(a) V_{GSQ} .

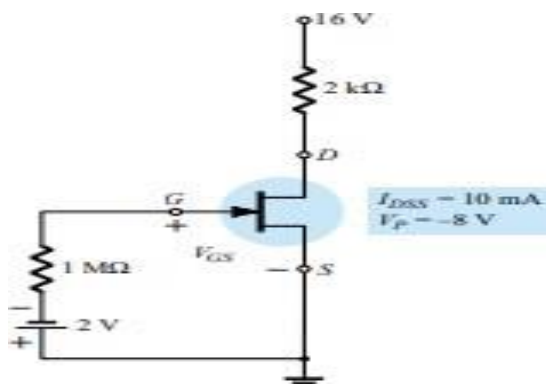
(b) I_{DQ} .

(c) V_{DS} .

(d) V_D .

(e) V_G .

(f) V_S .



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| C) Write short notes on CMOS. | 1/5 | 6 |
| Q. 3) Solve Any Two of the following. | | 12 |
| A) Write short note on Transformer coupled class A power amplifier. | 1/5 | 6 |
| B) Derive Expression for Maximum Efficiency of Class B Power Amplifier? | 2/1 | 6 |
| C) Calculate the efficiency of a class B amplifier for a supply voltage of $V_{CC} = 24\text{ V}$ with peak output voltages of: (a) $V_L(p) = 22\text{ V}$. (b) $V_L(p) = 6\text{ V}$. | 1/1 | 6 |
| Q. 4) Solve Any Two of the following. | | 12 |
| A) What is feedback? Explain its types in detail. | 2/1 | 6 |
| B) Determine the voltage gain, input, and output impedance with feedback for voltage series feedback having $A = -100$, $R_i = 10\text{ k}\Omega$, $R_o = 20\text{ k}\Omega$ for feedback of (a) $\beta = -0.1$ and (b) $\beta = -0.5$ | 1/7 | 6 |
| C) Explain feedback amplifier in detail. | 2/3 | 6 |
| Q. 5) Solve Any Two of the following. | | 12 |
| A) Explain RC phase shift oscillator in detail. | 1/1 | 6 |
| B) The tuned collector oscillator circuit used in the local oscillator of a radio receiver makes use of an LC tuned circuit with $L_1 = 58.6\text{ }\mu\text{H}$ and $C_1 = 300\text{ pF}$. Calculate the frequency of oscillations. | 2/5 | 6 |
| C) Write short note on Colpitts oscillator. | 2/5 | 6 |

*** End ***