

Time: 3 hours

Marks: 80

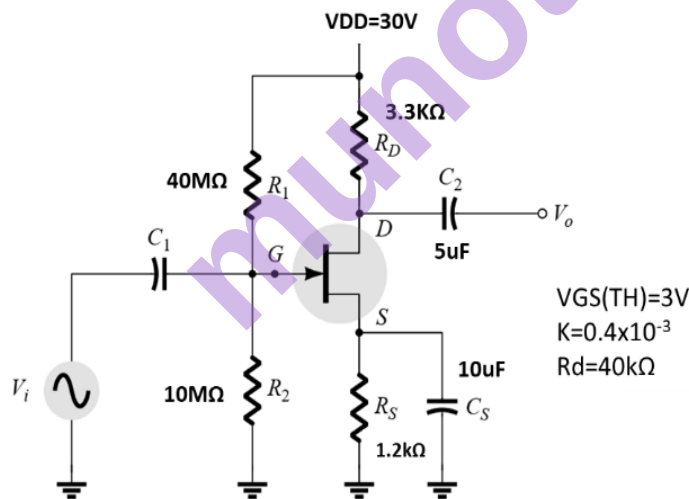
1. Question 1 is compulsory.
2. Attempt any three question out of remaining questions.
3. Assume suitable data if necessary.

Q.1 Attempt any four.

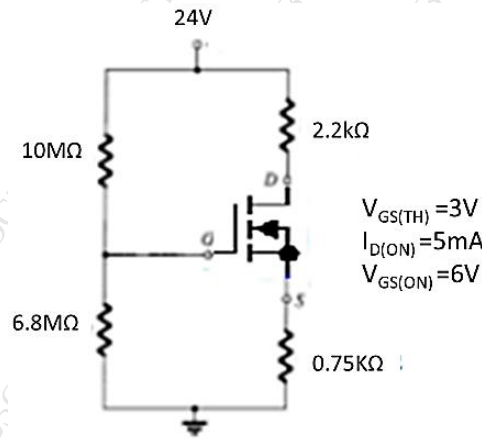
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|----|---|----|
| A. | Draw Output Characteristics of BJT in CE configuration and state the importance of active region. | 5M |
| B. | Compare N Channel JFET and P Channel JFET. | 5M |
| C. | Explain Varactor diode with the help of its construction, working principal and characteristics. | 5M |
| D. | Explain Series voltage regulator using zener diode and a transistor. | 5M |
| E. | Explain working of Biased Clamper. | 5M |

Q2. A Explain working of Full wave rectifier with C filter. Also draw output waveforms and derive expression for ripple factor. 10M

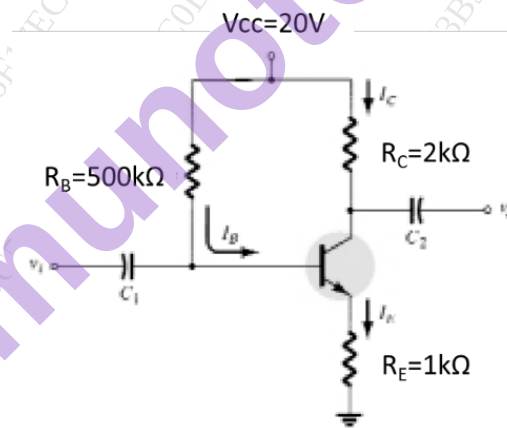
Q2. B For the given circuit obtain the value of Z_{in} , Z_o and A_v . Given $V_{GS(TH)}=3V$, $k=0.4mA/V^2$, $r_d=40k\Omega$ 10M



- Q3. A Derive equation of input resistance, output resistance, current gain and voltage gain for CB Amplifier. 10M
- Q3. B For the given E-MOSFET circuit, determine the values for I_{DQ} , V_{GSQ} and V_{DSQ} . 10M



- Q4. A Compare CE, CB and CC Amplifiers. 10M
- Q4. B Draw Energy Band diagram of PN junction diode under i) Zero Bias ii) Forward Bias and iii) Reverse Bias 10M
- Q5. A Find I_B , I_C , V_{CE} , V_c , V_E for the following circuit ($\beta=100$). 10M



- Q5. B Explain Solar cell with reference to construction, working and VI Characteristics. 10M
- Q6. A Design a single stage CE Amplifier for the following specifications: $A_v > 100$, $S=10$, $V_o=3V$, $FL=20Hz$. Use BC147A. Coupling and bypass capacitors are as follows $C_{C1}=C_{C2}=10\mu F$ and $C_E=100\mu F$. Specifications of BC547B: $h_{fe}=125$, $h_{ie}=2.7k\Omega$, $V_{BE}=0.7V$ 15M
- Q6. B Explain Series Clipper using Diodes. 5M
