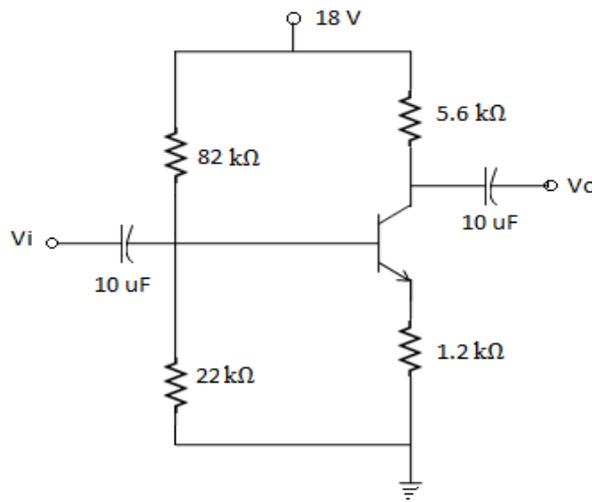


GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III (NEW) EXAMINATION – SUMMER 2021****Subject Code:3134104****Date:14/09/2021****Subject Name:Electronic Devices and Circuits****Time:10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

| | MARKS |
|---|-----------|
| Q.1 (a) Explain p and n semiconductor formation in detail. | 03 |
| (b) With help of voltage doubler circuit, describe the action of voltage multipliers. | 04 |
| (c) Explain Voltage Divider biasing in detail. | 07 |
| Q.2 (a) Draw a diode curve and label all significant points and areas. | 03 |
| (b) Compare Zener Diode and PN junction Diode. | 04 |
| (c) Draw and explain series and shunt positive clipper with output waveforms. | 07 |
| OR | |
| (c) Draw and explain bridge rectifier circuit with capacitor filter. | 07 |
| Q.3 (a) Label the three regions of operation on a bipolar junction transistor collector curve. | 03 |
| (b) Differentiate FET and BJT. | 04 |
| (c) Determine the levels of I_{CQ} and V_{ceQ} for the voltage-divider configuration of Figure. | 07 |

**OR**

| | |
|---|-----------|
| Q.3 (a) Draw Ebers-Moll model and π -model of a transistor. | 03 |
| (b) With the help of neat figure, explain the operation of a N-P-N transistor. | 04 |
| (c) Explain how the swamped amplifier works and list three of its advantages. | 07 |
| Q.4 (a) Explain Principal of operation of Photodiode. | 03 |
| (b) Classify the power amplifier based on classes of operation, type of coupling and frequency range. | 04 |
| (c) Explain the working of a transformer coupled class A power amplifier and show the efficiency of class A transformer coupled amplifier is 50%. | 07 |

OR

- Q.4** (a) Explain the effect of coupling and bypass capacitors on the bandwidth. **03**
(b) Explain operation of class B-push pull amplifier with the help of circuit and wave form. **04**
(c) Explain Darlington pair in detail. Also derive its current gain. **07**
- Q.5** (a) Differentiate between current shunt feedback and voltage shunt feedback. **03**
(b) Differentiate Ohmic region and Saturation region of JFET. **04**
(c) Explain the construction and operation of n type JFET. **07**
- OR**
- Q.5** (a) Compare E MOSFET with D MOSFET. **03**
(b) Explain the JFET application as analog switch. **04**
(c) Explain construction, operation and characteristic of P-channel Enhancement type MOSFET in detail. **07**
