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# Vidya Jyothi Institute of Technology (Autonomous)

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(Aziz Nagar, C.B.Post, Hyderabad -500075)

R18

Subject Code:A23401

B.Tech. II Year I Semester Examinations NOVEMBER-2019

**SUBJECT:** Electronic Device & Circuits — **BRANCH : ECE,CSE&IT**

**Time: 3 Hours** — **Max. Marks:75**

**Note:** This question paper contains two ***Parts A and B.***

***Part A*** is compulsory which carries 25 Marks. Answer all the questions.

***Part B*** consists of 5 questions . Answer all the questions.

**Bloom's Level:**

| | | | |
|---|---|---|---|
| Remember | L1 | Analyze | L4 |
| Understand | L2 | Evaluate | L5 |
| Apply | L3 | Create | L6 |

| | PART - A<br>ANSWER ALL THE QUESTIONS | Bloom's Level | 25Marks |
|---|---|---|---|
| 1 | Define Static and Dynamic Resistance of P-N diode? | L1 | 2M |
| 2 | What is clipper?Draw the circuit diagram of positive clipper. | L2 | 3M |
| 3 | In a BJT, the emmiter current is 12mA and the emmiter current is 1.02 times the collector current. Find the base current. | L5 | 2M |
| 4 | Give the $h_{ic}$ and $h_{oc}$ equations of BJT? | L3 | 3M |
| 5 | Explain how transistor acts as an amplifier? | L6 | 2M |
| 6 | Define stability factor of an amplifier. What is ideal value? | L1 | 3M |
| 7 | What is pinch off voltage? | L2 | 2M |
| 8 | Why thermal runaway is not there in FETs? | L4 | 3M |
| 9 | Sketch the ohmic region in drain characteristics of JFET? | L6 | 2M |
| 10 | Why UJT is called as negative resistance device? | L3 | 3M |
| | **PART - B**<br>**ANSWER ALL THE QUESTIONS** | **Bloom's Level** | **50Marks** |
| 11.i.a) | Explain V-I characteristics of a PN junction diode. | L2 | 5M |
| b) | Calculate the factor by which the reverse saturation current in Silicon diode is multiplied when the temperature is increased from 25°C to 70°C. | L5 | 5M |
| | [OR] | | |
| ii.a) | Explain the operation of Full Wave Rectifier with necessary diagrams. | L3 | 5M |
| b) | With a neat circuit diagram and waveforms explain the operation of positive clamper and nagetive clamper. | L4 | 5M |
| 12.i.a) | Explain CE configuration with the help of input and output characteristics. | L2 | 5M |
| b) | Derive the CC h-parameters interms of CE h-parameters. | L5 | 5M |
| | [OR] | | |
| ii.a) | Derive an expression for voltage gain, current gain of CE amplifier using h-parameter model. | L4 | 5M |
| b) | Compare CB, CC and CE configurations? | L1 | 5M |
| 13.i.a) | Derive the expression for the stability factor for self-bais configuration. | L4 | 5M |
| b) | Draw the circuit diagram of CB amplifier and derive the expression for voltage gain,input impedance and current gain. | L3 | 5M |
| | [OR] | | |
| ii.a) | What is biasing? Explain the need of it. List out different types of biasing methods | L2 | 5M |
| b) | In a Silicon transistor circuit with a fixed bias, $V_{CC}$=9V, $R_C$=3KΩ, $R_B$=8KΩ, β=50, $V_{BE}$=0.7V.Find the operating point and Stability factor. | L4 | 5M |
| 14.i.a) | Why we call FET as a Voltage Controlled Device. | L2 | 5M |
| b) | Give the comparison between BJT and JFET. | L5 | 5M |
| | [OR] | | |
| ii.a) | Explain how JFET act as voltage variable resistor. | L4 | 5M |
| b) | Explain the working of a depletion type MOSFET with a neat construction diagram and its characteristics. | L2 | 5M |
| 15.i. | Draw the circuit of source follower amplifier and derive the expressions for AI, AV, Ri and Ro. | L4 | 10M |
| | [OR] | | |
| ii.a) | Explain tunnel diode operation with the help of energy band diagrams. | L1 | 5M |
| b) | Explain the static characteristics of SCR. | L2 | 5M |