

SEMICONDUCTOR DEVICES

Test Paper-III

MAX MARKS: 30

TIME: 90Mts

Sl. No.	QUESTION	ANSWER PAGE	MARKS
1	Why Si and GaAs are preferred materials for solar cells?	Page:490	3
2	What must be the minimum band gap for a semiconductor to be used for the fabrication of visible LEDs?	Page:488	1
3	Give the V-I characteristic curve of a a. Solar cell. b. Photo diode	Page:489 Page:487	2
4	What is an n-p-n transistor give the symbol representing the same. Give the biasing condition of the transistor with a suitable circuit diagram. Also give the relation between the base current, collect current and emitter current.	Page:491	3
5	Explain why base region is thin, emitter is heavily doped when compared to the collector and the base in case of a transistor.	Page:492	2
6	What is a pnp transistor? Give the symbol representing the same. Also give the biasing condition of the transistor with a suitable circuit diagram.	Page:492	3
7	Explain how an npn transistor works as a CE amplifier with a suitable circuit diagram by giving the input and output waveforms.	Page:498	3
8	Give the circuit arrangement for studying the input and output characteristics of npn transistor in CE configuration Also give the input and output characteristic curves of CE Configuration.	Page:494	3
9	Define the following terms for a transistor in CE Mode a. Input resistance b. Output resistance c. Current amplification factor	Page:494	3
10	For a transistor amplifier, the audio signal voltage across the collector resistance of $2.0\text{k}\Omega$ is 2.0 V . Suppose the current amplification factor of the transistor is 100, what should be the value of R_B in series with V_{BB} supply of 2.0V if the dc base current has		3

to be 10 times the signal current? Also calculate the dc drop across the collector resistance.

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| 11 | Give any two differences between an analog signal and a digital signal | Page:502 | 2 |
| 12 | Draw the input and output waveforms of AND gate. | Page:504 | 1 |
| 13 | What is a NAND gate Give the Truth table and logic symbol of the same? | Page:504 | 1 |