WEST BENGAL STATE UNIVERSITY

B.Sc. Honours/Programme 1st Semester Examination, 2020, held in 2021

ELSHGEC01T/ELSGCOR01T-ELECTRONICS (GE1/DSC1)

Time Allotted: 2 Hours   Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.
All symbols are of usual significance.

GROUP-A

Answer any *five* questions   2×5=10

1. Define Intrinsic and Extrinsic semiconductor.

2. In relation to semiconductor, what do you mean by effective mass?

3. What is reverse saturation current in semiconductor diode?

4. Why you can't measure the barrier potential by a voltmeter?

5. Why BJT is called a "bipolar" device?

6. What is thermal runaway?

7. Distinguish between Avalanche breakdown and Zener breakdown.

8. Draw circuit diagram of emitter follower.

GROUP-B

Answer any *six* questions   5×6=30

9. Define α and β related to BJT. Establish a relation among them.   5

10. State and prove maximum power transfer theorem.   5

11. Derive Shockley Current-Voltage relation for P-N junction.   5

12.	Draw the circuit diagram of a full wave rectifier and briefly explain its working principle. What is the maximum efficiency of a full wave rectifier?	4+1
13.	Explain the formation of P-N junction barrier.	5
14.	With the help of a simple circuit, explain how a Zener diode acts as a voltage regulator.	5
15.(a)	How will you draw DC load line on the output characteristics of transistor?	2
(b)	A transistor in CE mode is connected with a resistance 5 kΩ and a power supply of 5 V in the collector circuit. If $\alpha = 0.99$ and the voltage drop across the 5 kΩ resistor is 5 V, find the base current.	3
16.	Why Hybrid parameters are named so? Mention and Define different Hybrid parameters.	1+4
17.	Using super position theorem, find the current through 10 Ω resistor.	5
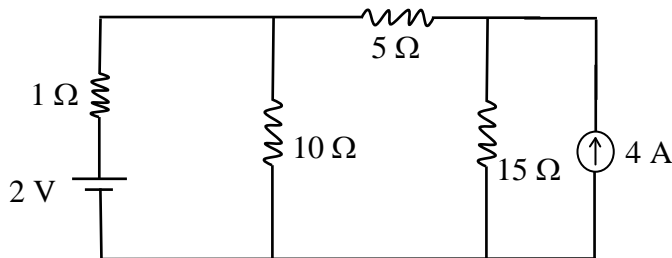
18.	Draw voltage divider circuit and derive an expression for its stability factor.	2+3

N.B. : *Students have to complete submission of their Answer Scripts through E-mail / Whatsapp to their own respective colleges on the same day / date of examination within* 1 *hour after end of exam. University / College authorities will not be held responsible for wrong submission (at in proper address). Students are strongly advised not to submit multiple copies of the same answer script.*

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