WEST BENGAL STATE UNIVERSITY

B.Sc. Honours/Programme 1st Semester Examination, 2021-22

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 from the following 2×5 = 10

1. Of Si or Ge diode, which one would be preferred to use in rectifier and why?

2. Draw ideal diode characteristics. How it differs from a practical one?

3. Why BJT is called current controlled device?

4. State reciprocity theorem.

5. What is 'Pinch off' voltage?

6. Mention best two advantages of negative feedback.

7. What is band-gap in semiconductor?

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

GROUP-B

Answer any *six* questions from the following 5×6 = 30

9. (a) How will you draw DC load line on the output characteristics of a transistor? 3

   (b) Draw voltage divider biasing circuit and derive an expression for its stability factor. 2

10. Derive an expression for the efficiency of a half-wave rectifier. 5

11.(a) Mention at least four ideal characteristics of Op-Amp. 2

(b) With circuit diagram, explain how Op-Amp can be used as an inverting amplifier. 3

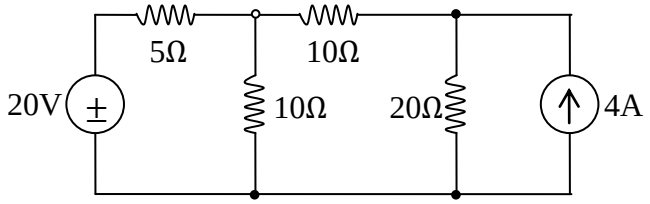
12. Compare voltage amplifier and power amplifier. What is collector efficiency of a power amplifier? 3+2

13. For a JFET, define (a) AC drain resistance (b) transconductance (c) amplification factor and (d) Deduce the relation between these parameters. 1+1+1+2

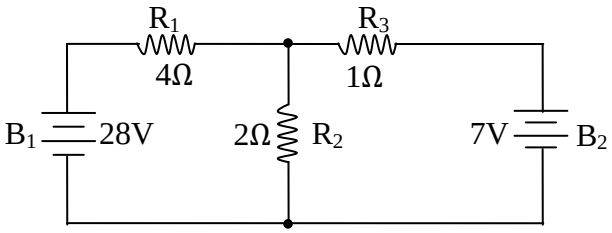
14. With the help of a simple circuit, explain how a Zener diode acts as a voltage regulator. 5

15.(a) State superposition theorem. 1

(b) Find the current flowing through 20Ω resistor of the following circuit using superposition theorem. 4



16. Find the current flowing through 2Ω (R_2) resistor of the following circuit using Thevenin's theorem. 5



17. Draw the circuit diagram of a phase shift oscillator and find its frequency of oscillation. 5

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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