D 50693   (Pages : 2)   Name.......................................

Reg. No................................

FIFTH SEMESTER (CBCSS—UG) DEGREE EXAMINATION NOVEMBER 2023

Physics/Applied Physics

PHY 5B 09/APH 5B 09—ELECTRONICS (ANALOG AND DIGITAL)

(2019 Admission onwards)

Time : Two Hours   Maximum : 60 Marks

The symbols used in this question paper have their usual meanings.

Section A (Short Answer Type)

Answer **all** *questions in two* **or** *three sentences, each correct answer carries a maximum of* 2 *marks.*

1. Write the disadvantage of bridge rectifier.

2. Express the output frequency of a bridge rectifier in terms of input frequency.

3. Which are the rectifiers needed transformers ?

4. Mention different kinds of filter circuits.

5. Explain a voltage multiplier.

6. Define transistor load line.

7. What is thermal runaway ?

8. Define stability factor.

9. Define : (a) Decibel gain ; and (b) Bandwidth.

10. Explain negative feed back.

11. What is gain-bandwidth product (GBW) ?

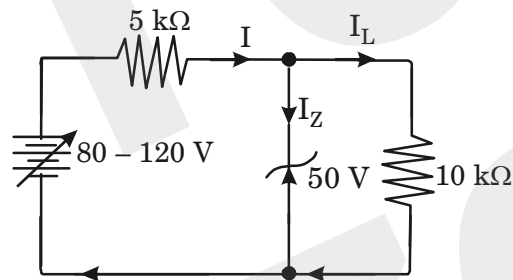12. Convert binary to decimal 11001010.

(Ceiling - 20)

Turn over

Section B (Paragraph / Problem Type)

*Answer **all** questions in a paragraph of about **half a page** to one page, each correct answer carries a maximum of 5 marks.*

13. For the circuit shown in Figure, find the maximum and minimum values of zener diode current.

14. With necessary diagrams analyse Rectifier Output.

15. Thepower supply A delivers 10 V d.c. with a ripple of 0.5 V r.m.s. while the power supply B delivers 25 V d.c. with a ripple of 1 mV r.m.s. Which is better power supply ? Explain.

16. A germanium transistor is to be operated at zero signal I_c = 1 mA. If the collector supply V_{cc} = 12 V, what is the value of R_B in the base resistor method ? Take β = 100.

17. Draw and explain DC and AC equivalent circuits of an amplifier.

18. Explain Inverting Amplifier. Derive its voltage gain.

19. Write and explain with example, De Morgan's theorem.

(Ceiling - 30)

Section C (Essay Type)

*Essays - Answer in about **two pages**, any **one** question.*
Answer carries 10 marks.

20. With necessary diagrams explain the input and output Characteristics of Common Emitter Connection

21. With figure explain the working of an RC coupled transistor amplifier. Explain frequency response. What are its advantageous and disadvantageous ?

(1 × 10 = 10 marks)