QP CODE: 23104815

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Reg No : .....

Name : .....

B.Sc DEGREE (CBCS) REGULAR/IMPROVEMENT/REAPPEARANCE EXAMINATIONS, FEBRUARY 2023

First Semester

B.Sc Physics Model III Electronic Equipment Maintenance

Core Course - PH1CRT21 - PRINCIPLES OF ELECTRONICS

2017 Admission Onwards

D2F7E8E1

Time: 3 Hours Max. Marks : 80

Part A

*Answer any **ten** questions.*

*Each question carries **2** marks.*

1. Explain the switching actions of a switch.
2. Briefly explain principles of Nickel Cadmium Cells.
3. What is a fuse? What are its different uses?
4. Explain why the conductivity of a pure semiconductor increases with temperature?
5. What is depletion layer? How is it formed in a PN junction?
6. Why is emitter follower preferred to transformer for impedance matching?
7. What is faithful amplification? Explain the conditions to be fulfilled to achieve faithful amplification in a transistor amplifier.
8. What are the limitations of LC and RC oscillators?
9. Why is driver stage necessary for push pull circuit?
10. The complementary symmetry push-pull amplifiers are called so. Why?
11. What is thermal runaway? How can it be avoided?
12. Why the power rating of a power transistor is required to be reduced when it is operated above ambient temperature of 25°C.

(10×2=20)

Part B

*Answer any **six** questions.*

*Each question carries **5** marks.*

13. Explain the V-I characteristics of photo-diode.

14. Briefly explain the basic idea of clipper circuit.

15. Describe the Centre - Tap Full-Wave rectifier using a crystal diode.

16. Why is capacitor input filter is preferred to choke input filter?

17. What is the practical importance of voltage regulation in power supplies?

18. Where is emitter follower employed practically and why? What are the practical applications of emitter follower?

19. With a neat circuit diagram ,explain the working of transformer coupled transistor amplifier.

20. Define and explain the following terms as applied to power amplifiers: (i) Collector efficiency (ii) Distortion (iii) Power dissipation capability.

21. A power transistor has thermal resistance θ = 300°C/W. If the maximum junction temperature is 90°C and the ambient temperature is 30°C, find the maximum permissible power dissipation.

(6×5=30)

Part C

*Answer any **two** questions.*

*Each question carries **15** marks.*

22. With the neat diagram,explain RC Differentiator circuit diagram. Also prove that its output voltage is the derivative of the input.

23. What are clamping circuits? What are their applications? Discuss with proper circuit diagrams, input and output waveforms how the following clamping circuits function (a) Positive clamper (b) Negative clamper (c) Positive biased clamper and (d) Negative biased clamper.

24. What is a phototransistor? How does it differ from an ordinary transistor and photodiode? Give its standard symbol and characteristics.

25. Draw and explain the circuit of Phase splitter circuit.

(2×15=30)