Reg. No. : ....

Name : ....

V Semester B.Sc. Degree (CBCSS – OBE – Regular/Supplementary/ Improvement) Examination, November 2023
(2019 – 2021 Admissions)
CORE COURSE IN PHYSICS
5B09PHY : Electronics – II

Time : 3 Hours | Max. Marks : 40

PART – A

Short answer questions. Answer **all** questions. **Each** question carries **1** mark. **(6x1=6)**

1. What are the consequences of no or faulty biasing of a transistor ?

2. What is an oscillator ? What type of feedback is applied for oscillator ?

3. Why a power amplifier is called a large signal amplifier ?

4. Write an example of a Boolean function in POS form.

5. Draw a logic diagram to implement the Boolean expression $F = x(y \ominus z) + \bar{v}$.

6. What are encoders ?

PART – B

Short essay questions. Answer **any six** questions. **Each** question carries **2** marks. **(6x2=12)**

7. What do you mean by decibel system ? Write down the expression for power gain in decibel.

8. Mention the essential conditions to be satisfied by an oscillator circuit.

9. Explain the difference between voltage and power amplifier.

10. With negative feedback, voltage gain reduces. Explain why ?

P.T.O.

11. Explain a magnitude comparator.

12. Draw and explain a binary half adder.

13. What are the characteristics of an ideal op-amp ?

14. Define CMRR and slew rate of an op-amp.

PART – C

Problems. Answer **any four** questions. **Each** question carries **3** marks. **(4x3=12)**

15. Draw and explain briefly the working of a capacitor coupled two stage amplifier.

16. Distinguish between coupling and bypass capacitors.

17. Briefly explain the operation of a transformer coupled Class A power amplifier.

18. Find the voltage gain and output voltage of a non-inverting amplifier with $R_f = 10K\Omega$, $R_1 = 1K\Omega$ and input voltage = +1v.

19. Minimize the Boolean function $f = \overline{A}BC + \overline{A}B\overline{C} + A\overline{B}\overline{C} + AB\overline{C} = \sum (0, 2, 4, 6)$.

20. Draw and explain a decimal to BCD encoder.

PART – D

Long essay questions. Answer **any two** questions. **Each** question carries **5** marks. **(2x5=10)**

21. What are h-parameters ? Obtain an expression for current gain, input impedance, output impedance and voltage gain of a transistor amplifier in terms of h-parameters.

22. With the circuit diagram, explain the working of an op-amp as an inverting and non-inverting amplifier.

23. Discuss in detail about Hartley oscillator.

24. What is a full adder ? Draw and explain a binary full adder. How it can be realised using two half adders ?