K18U 0135

Reg. No. : ....

Name : ....

VI Semester B.Sc. Degree (CBCSS – Reg./Supple./Imp.) Examination, May 2018
CORE COURSE IN PHYSICS
6B14 PHY : Electronics – II
(2014 Admn. Onwards)

Time : 3 Hours Max. Marks : 40

SECTION – A

Answer **all**. Very short answer type. **Each** question carries **1** mark.

1. RC coupling is used for ___________ amplification.
2. An oscillator employs ___________ feedback.
3. In a non-inverting amplifier, $R_i = 10K\Omega$ and $R_f = 100K\Omega$. The closed loop voltage gain is ___________
4. The inputs to an XOR gate is 1, 0 and 1, the output will be ___________ (1×4=4)

SECTION – B

Answer **any seven**. Short answer type. **Each** question carries **two** marks.

5. What do you mean by operating point ?
6. What is meant by negative feedback ?
7. What is Barkhausen criterion ?
8. What do you understand by hybrid parameters ?
9. What do you mean by CMRR ?
10. What do you mean by (i) open-loop voltage gain (ii) closed-loop voltage gain of an op-amp ?
11. What is indicated by plus (+), dot(.) and bar (–) in a Boolean expression ?

P.T.O.

12. State De Morgan's theorems.
13. What is the Boolean equation for CARRY and for SUM in a half adder ?
14. What is a QUAD in a karnaugh map ? (2×7=14)

SECTION – C

Answer **any four**-short essay/problem. **Each** question carries **three** marks.

15. Calculate the emitter current in the voltage divider circuit. Also find the value of V_{CE} and collector potential V_C. Given $V_{CC} = 20V$, $R_1 = 20K\Omega$, $R_2 = 5K\Omega$, $R_C = 2K\Omega$, $R_E = 2K\Omega$.
16. Calculate the operating frequency and feedback fraction of a Hartley oscillator. Given $L_1 = 1mH$, $L_2 = 0.1\ mH$, $C = 10\ pF$. The mutual inductance between the coils, $M = 0.02\ mH$.
17. In a negative feedback amplifier, the gain without feedback $A_V = 6400$, $Z_{in} = 1K\Omega$, $Z_{out} = 5K\Omega$, $R_1 = 10K\Omega$ and $R_2 = 70K\Omega$. Find (i) feedback fraction, (ii) gain with feedback, (iii) input impedance with feedback, (iv) output impedance with feedback.
18. In an op-amp, the resistance R_i to the inverting terminal is $2.2K\Omega$ and closed loop voltage gain is –100. Find the feedback resistance R_f.
19. Simplify the expression : $X = \overline{A}\overline{B}C + A\overline{B}C + AB\overline{C} + ABC$.
20. Explain product of sum method with examples. (3×4=12)

SECTION – D

Answer **any two**. Long essay type. **Each** question carries **five** marks.

21. Draw the circuit of a single stage CE amplifier. Explain the function of each components. Also show that o/p is 180° out of phase with the i/p.
22. Explain negative feedback. Derive an expression for gain in a negative voltage feedback amplifier. What are the advantages of negative feedback ?
23. Explain the working of inverting and non inverting amplifier and derive an expression for voltage gain for each case.
24. Explain Karnaugh map. Explain pairs, quads and octets with examples. (5×2=10)
