K17U 0381

Reg. No. : .....

Name : .....

VI Semester B.Sc. Degree (CBCSS – Regular) Examination, May 2017

CORE COURSE IN PHYSICS

(2014 Admn.)

6B14 PHY : Electronics – II

Time : 3 Hours

Max. Marks : 40

SECTION – A

Answer **all**-very short answer type – **Each** question carries **1** mark.

1. The purpose of coupling capacitor in a transistor amplifier is to _____
2. An oscillator converts _____
3. The gain of an ideal Op-amp is _____
4. De Morgan's first theorem says that a NOR gate is equivalent to a _____

(1×4=4)

SECTION – B

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

5. What is meant by band-width ?
6. What is Barkhausen criterion ?
7. Why is amplifier circuit is necessary in an oscillator ?
8. What is an Op-amp ?
9. Discuss the operation of a summing amplifier.
10. What are the three basic logic gates ?
11. What are encoders and decoders ?
12. What is a QUAD in a karnaugh map ?
13. Sketch the common emitter output characteristics of a BJT.
14. Draw a full adder and its truth table.

(2×7=14)

P.T.O.

SECTION – C

Answer **any four** – Short essay/problem – **each** question carries **three** marks.

15. If the amplifier is to operate over a frequency range from 2 KHz to 10 KHz. Select a suitable value for the emitter bypass capacitor ? Given V_{cc} = 12V, $R_1 = 22K\Omega$, $R_2 = 6.8K\Omega$, $R_C = 1K\Omega$, $R_E = 560\Omega$.

16. The gain of an amplifier is 100. When negative feedback is applied, gain is reduced to 20 ? Find the fraction of output that is feedback to the input.

17. Determine the operating frequency and feedback fraction for Colpitt's oscillator. Given $C_1 = 0.001\mu F$, $C_2 = 0.01\mu F$, $L = 10\mu H$.

18. A certain differential amplifier has a differential voltage gain of 2000 and a common mode gain of 0.2. Determine CMRR and express it in dB.

19. Simplify the following Boolean expressions : $Y = (\overline{A} + B)(A + B)$.

20. Explain sum of product 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 Barkhausen criterion. With the help of a diagram explain the working of a phase shift oscillator.

23. Explain the working of an op-amp integrator and differentiator.

24. Explain Karnaugh map. Explain pairs, quads and octets with examples. **(5×2=10)**
