Reg. No. : ....

Name : ....

**VI Semester B.Sc. Degree (CBCSS – Reg./Supple./Improv.)
Examination, April 2020
(2014 Admission Onwards)
CORE COURSE IN PHYSICS
6B14PHY – Electronics-II**

Time : 3 Hours

Max. Marks : 40

SECTION – A

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

1. The most commonly used transistor arrangement is _____ configuration.

2. Oscillator employes _____ feedback.

3. The gain of an ideal OP-AMP is _____.

4. The inputs to a NOR gate is 000, the output will be _____.

SECTION – B

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

5. What do you understand by hybrid parameters ? What are their dimensions ?

6. What is Quality factor ?

7. Define β. Show that $\beta = \dfrac{\alpha}{1-\alpha}$.

8. What do you mean by CMRR ?

9. What are the three basic logic gates ?

10. Explain the function of class B power amplifiers.

11. What are encoders and decoders ?

12. What is the purpose of a coupling capacitor in a transistor amplifier ?

13. Sketch the model of dc load line and show the Q point, saturation point and cut off point.

14. Draw a half adder circuit. What is the Boolean equation for CARRY and for SUM in a half adder ?

SECTION – C

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

15. For a single stage transistor amplifier the collector load $R_C = 2\ K\Omega$ and i/p resistance $R_i = 1\ K\Omega$. If the current gain is 50. Calculate the voltage gain of the amplifier.

16. Explain the working of an OP-AMP as an integrator.

17. Simplify the expression : $X = \overline{A}\overline{B}C + A\overline{B}C + AB\overline{C} + ABC$.

18. The gain of an amplifier is 100. When negative feedback is applied, gain is reduced to 40. Find the feedback fraction applied. If the gain falls to 60 when feedback is applied, what would have been the gain without feedback, keeping the same feedback fraction.

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

20. Explain sum of product method with examples.

SECTION – D

Answer **any two** – long essay type – **each** question carries **five** marks.

21. What is meant by transistor biasing ? Explain the biasing methods of base resistor and voltage divider bias used in transistors.

22. Explain Karnaugh map simplification with examples of pairs, quads and octects.

23. Explain the working of an op-amp in inverting and non-inverting configurations. Also derive an expression for closed loop voltage gain in each case.

24. With the help of a neat diagram explain the phase shift oscillator and mention the advantages and disadvantages.

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