15610

B.Sc VI Semester Degree Examination, May - 2018

PHYSICS

Electronics, Astrophysics and Biophysics

Paper No : 8 (6.2)

(Old)

Time : 3 Hours Maximum Marks : 80

Instructions to Candidates:

1) Answer **ALL** questions of Section - A

2) Answer any **FIVE** Questions of section - B and answer any **FOUR** question from Section - C.

SECTION - A

Answer the following : **(15×1=15)**

1. Define current gain in common Emitter Configuration.
2. What is the phase relationship between output signal and input signal in common emitter amplifier.
3. Define positive feed back.
4. What is the output of X-OR gate for all inputs present?
5. What is meant by flip - flop.
6. Define the modulation factor.
7. What is the principle used in Optical Fibre.
8. Give any one use of Liquid Crystal.
9. Name any one Universal gate.
10. Mention any one application of Optical fibre.
11. Define Light year.
12. What is the source of Stellar energy?
13. What is the major difference between Plant cell and Animal cell?
14. What are ribosomes?
15. What are aminoacids?

P.T.O

SECTION - B

Answer any **FIVE** of the following : **(5×5=25)**

16. Mention the advantages of JFET over BJT.

17. Draw the h - parameter equivalent circuit and hence write the expression for

i) Current gain

ii) Voltage gain

iii) Input impedance

iv) Output impedance.

18. With a neat diagram explain the working of phase shift oscillator.

19. With logic diagram and truth table explain the working of full adder.

20. Explain the theory and construction of light emitting diode.

21. Write a note of Milky Way galaxy.

22. Describe Miller and Urey's experiment.

SECTION - C

Answer any **FOUR** of the following : **(4×10=40)**

23. a) Explain the common emitter characteristics of transistor.

b) Derive the expression for voltage gain of an OP - amplifier in inverting mode.

24. a) A frequency modulated voltage wave is given by the equation $e = 14 \cos (8\times10^8 t + 6\sin 1250t)$ find modulating index and signal frequency.

b) What is frequency Modulation? Derive mathematical equation of FM wave. **(3+7)**

25. a) Explain different modes of propagation in Optical fibres.

b) Derive the expression for angle of acceptance and numerical aperture of Optical fibre.

26. a) Write logical symbol, Boolean expression and truth table of AND and OR gates.

b) Compare LED and LCD. **(5+5)**

27. a) Explain stellar classification.

b) Define absolute and apparent magnitudes of stars and relation between them. **(5+5)**

28. a) What are the organelles constituents of a cell.

b) Explain membrane potential and its physical basis. **(5+5)**