

Roll No. _____

[Total No. of Pages :2

SVIS 304 A-15
B.Sc. VIth Semester Degree Examination
Physics
(Electronics Astrophysics, Bio physics)
Paper - 6.2

Time : 3 Hours

Maximum Marks : 80

Instructions to candidates:

1. Answer **all** the questions from **section -A**
2. Answer any **five** questions from **section -B** and **four** from **Section - C**

Section - A

1. Define h-parameters (15×1=15)
2. What is an Amplifier
3. Define CMRR
4. On which principle LED works.
5. Write 2 applications optical fibre
6. Write an equation for voltage gain in inverting amplifier
7. Write the truth table of NAND gate
8. What is pinch off voltage in FET
9. Define modulation
10. Write Barkhausen criteria.
11. How many Light year is equal too 1 parsec
12. What are the types of Galaxies.
13. Define Luminosity of star
14. Mention the types of Nucleic acid
15. What is chloroplast.

Section - B

16. Explain V-I characteristics of CE mode configuration in transistor (5×5=25)
17. What is non inverting operational amplifier, derive an equation for voltage gain.

18. Write a note on Logic gates.
19. Explain FM modulation.
20. Write the merits and demerits of LED and LCD.
21. Write a note on Milky way Galaxy
22. Describe Urey-Miller experiment

Section - C

(4×10=40)

23. a) Explain FET parameters and obtain relation between them.
b) FET amplifier has load resistance $R_L=500K\Omega$, ac drain resistance (r_d) and amplification factor (μ) of FET are $100K\Omega$ and 24 respectively. Calculate voltage gain of an amplifier. **(7+3)**
24. a) Draw a circuit diagram of phase shift oscillator and explain its working principle
b) Explain J-K flip-flop with block diagram. **(5+5)**
25. a) Explain Half adder with block diagram.
b) Explain positive feed back amplifier and discuss merits and demerits. **(6+4)**
26. a) Obtain an expression for numerical aperture of optical fibre
b) Write applications of optical fibre and calculate acceptance angle of optical fibre when $n_1=1.52$ and $n_2=1.45$ **(6+4)**
27. a) Write a note on H-R-diagram
b) Define absolute magnitude and apparent magnitude and obtain relation between them. **(5+5)**
28. a) Write a note on membrane potential
b) Explain structure and function of proteins **(5+5)**