Vidya Jyothi Institute of Technology (Autonomous)

(Accredited by NAAC & NBA, Approved By A.I.C.T.E., New Delhi, Permanently Affiliated to JNTU, Hyderabad)

(Aziz Nagar, C.B.Post, Hyderabad -500075) **Subject code: A21003** **R18**

I B. Tech I SEM REGULAR EXAMINATION – DECEMBER 2018

APPLIED PHYSICS

(COMMON TO ECE, CSE & IT)

Time: 3hrs **Max.Marks:75**

Note: This question paper contains two PARTS A and B.
PART A is compulsory which carries 25 marks. Answer all questions.
PART B consists of 5 questions. Answer all the questions.

PART - A

ANSWER ALL THE QUESTIONS **25 M**

1. Explain coherence and write in brief the methods to produce coherent sources [3M]
2. Write a note on polarization. [2M]
3. Calculate de-Broglie wavelength of an electron accelerated by potential of 100V and 300V. [3M]
4. Write about Heisenberg's Uncertainity principle. [2M]
5. Write in brief the importance of Fermi Distribution function [3M]
6. Write about E-K diagram. [2M]
7. Write in brief Direct and Indirect bandgap semiconductor materials [3M]
8. List out the advantages of LED [2M]
9. Draw the refractive index profile of SIF and GIF optical fibers [2M]
10. Write in brief the characteristics of laser. [3M]

PART-B

ANSWER ALL THE QUESTIONS **5QX10M=50M**

11.i). Explain in detail about Newton rings experiment [10M]

(OR)

ii). Discuss in detail the diffraction of light due to single slit and get the necessary conditions. [10M]

12.i). Explain in detail Davisson and Germer Experiment with a neat diagram [10M]

(OR)

ii). Show that the energies of a particle in the one dimensional potential box are quantized [10M]

13. i). Derive an expression for the carrier concentration of an intrinsic semiconductor [10M]

(OR)

ii). Discuss in detail Kronig-Penny Model and give the conclusions [10M]

14.i). Explain in detail Hall Effect and give the applications in brief [10M]

(OR)

ii). a) Explain how a PN junction is formed [5M]
b) Draw and explain the V-I characteristic curve of a PN junction diode [5M]

15. i) a). Discuss in detail the optical fiber losses [5M]
b) Write the applications of optical fibers. [5M]

(OR)

ii). Explain in detail He-Ne laser and give the applications [10M]

VJIT(A)