

STATE BOARD OF TECHNICAL EDUCATION AND TRAINING TELANGANA  
DIPLOMA EXAMINATION (C-18)  
C-18-REGULAR-AUGUST-2021  
SEMESTER II , SEMESTER END EXAM

18AA-203F/A-203F/C-203F/CH-203F/CM-203F/EE-203F/EI-203F/FW-203F/M-203F/MET-203F/PT  
203F/PKG-203F/MNG-203F/BM-203F/ES-203F/EV-203F/IT-203F/EC-203F



6203

APPLIED PHYSICS

Duration: 3 Hours

[Total Marks: 60]

PART-A

**Instructions:**

1. Answer any **TWELVE** questions.
2. Each question carries **ONE** mark.

12 X 1 = 12

1. Define longitudinal wave motion.
2. Define stationary wave.
3. Define Amplitude.
4. Define Seconds Pendulum.
5. Define population inversion.
6. What is the energy of each photon according to quantum theory.
7. Define pole strength of a bar magnet.
8. Define magnetic field.
9. Define conductance and write the S.I. unit of conductance.
10. What is the relation between resistance and resistivity.
11. What is Fermi level
12. Name two examples of intrinsic semiconductors.
13. Write the formula for maximum acceleration in SHM.
14. What is acceptance angle in optical fibers.
15. State Ohm's law.

## PART-B

### Instructions:

1. Answer any **SIX** questions. 6 X 3 = 18
2. Each question carries **THREE** marks.

16. Evaluate the velocity of the sound in air if an observer at a distance of 400 meter from a building hears an echo after 2.5 seconds.
17. List three conditions of simple harmonic motion.
18. State the conditions of total internal reflection.
19. A bar magnet of pole strength 50 Am has a length of 20 cm .Calculate magnetic moment
20. Three currents 2 mA, 5 mA and X mA are flowing towards a junction and two currents 6 mA and 4 mA are flowing away from the junction. Find the value of the current 'X'.
21. List any three applications of PN diode.
22. Explain Doppler Ultrasound as an application of Doppler effect in medicine.
23. Draw the magnetic lines of force for (i) north pole and north pole close to each other (ii) north pole and south pole close to each other.
24. If 20 ohm and 30 ohm are connected in left and right gaps in meter bridge experiment, find the balancing length in S.I system.

## PART-C

### Instructions:

1. Answer any **SIX** questions. 6 X 5 = 30
2. Each question carries **FIVE** marks.

25. Explain Reverberation and Reverberation time.
26. Derive an expression for time period of a simple pendulum.
27. Write any five applications of optical fibre.
28. Derive the expression for moment of couple on a bar magnet placed in a uniform magnetic field.
29. Explain conversion of a galvanometer into Ammeter and voltmeter.
30. Explain working principle of Light Emitting Diode with neat diagram.
31. The displacement of a particle executing simple harmonic motion is given by  $y = 5 \sin \left( 2\pi t + \frac{\pi}{4} \right) m$ . Find (i) amplitude (ii) angular velocity (iii) time period (iv) frequency (v) initial phase.
32. Explain working of photo cell.
33. Explain conductors, insulators and semiconductors on the basis of energy