BOARD OF INTERMEDIATE EDUCATION, TADEPALLI, AP
PART – III
HALF YEARLY EXAMINATIONS – DEC 2021
PHYSICS – II
(ENGLISH VERSION)

Time: 3 hrs   Max Marks : 60

SECTION – A

Note : Answer all the following Questions   10 X 2 = 20m

1. Define power of convex lens. What is its unit ?
2. A small angled prism of 4^0 deviates a ray through 2.48^0. Find the refractive index of the prism.
3. What is the importance of Oersted's experiment ?
4. How do you convert a moving coil galvanometer into an ammeter ?
5. What are the units of magnetic moment, magnetic induction and magnetic field ?
6. Define magnetic declination.
7. Define magnetic inclination or angle of dip.
8. What happens to the compass needles at the Earth's poles ?
9. A pipe, 30.0 cm long, is open at both ends. Which harmonic mode of the pipe resonates a 1.1 KHZ sources ?
10. The earth takes 24h to rotate once about its axis. How much time does the Sun take to shift by 1^0 when viewed from the earth ?

SECTION – B   6x4=24

11. Define critical angle . Explain total internal reflection using a neat diagram.
12. Explain Doppler effect in light. Distinguish between red shift and blue shift.
13. Derive the equation for the couple acting on a electric dipole in a uniform magnetic field.
14. State and explain Coulomb's inverse square law in electricity.
15. Derive an expression for the capacitance of a parallel plate capacitor.
16. Derive the formula for equivalent capacitance in series combination.
17. Explain the formation of mirage.
18. Derive an expression for the magnetic moment of a revolving electron.

SECTION – C   2x8=16

19. (a) How are stationary waves formed in closed pipes ? Explain the various modes of vibrations and obtain relations for their frequencies.

(b) A closed organ pipe 70cm long is sounded. If the velocity of sound is 331 m/s, what is the fundamental frequency of vibrations of the air column.

20. State Kirchhoff's laws for an electrical network. Using these laws deduce the condition for balance in a Wheatstone bridge.

21. State the working principle of potentiometer. Explain with the help of circuit diagram how the potentiometer is used to determine the internal resistance of the given primary cell.

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