

(CBCS) DEGREE EXAMINATION, APRIL 2022.

Second Semester

Physics — Allied

ALLIED PHYSICS – II

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

The rate of flow of electric charge is called as

- (a) Voltage
- (b) Resistance
- (c) Electric Current
- (d) Potential difference

In which gate the output is high when any one or all inputs are high?

- (a) AND
- (b) NAND
- (c) OR
- (d) NOR

The nucleus consists of

- (a) neutrons
- (b) protons
- (c) neutrons and protons
- (d) electrons and neutrons

The difference in the mass of the resultant nucleus and the sum of the masses of two parent nuclear particle is known as

- (a) mass defect
- (b) solid defect
- (c) weight defect
- (d) nucleus defect

Which of the following formulae is used to determine the time of flight for projectile motion, when joint of projection and point of landing are on same level of horizontal plane?

- (a) $(2u \sin \alpha) / g$
- (b) $(u^2 \sin \alpha) / 2g$
- (c) $(2u \sin \alpha) / g \cos \theta$
- (d) $2ug \sin \alpha$

2. The electric current flowing through the resistor is inversely proportional to its
 - (a) Potential difference
 - (b) Voltage
 - (c) Charge
 - (d) Resistance
3. The production of induced current in one coil due to production of current in neighboring coil is
 - (a) Electromagnetism
 - (b) induction
 - (c) mutual induction
 - (d) steady current
4. Lenz devised a rule to find out the direction of
 - (a) current induced in a circuit
 - (b) electromagnetic difference
 - (c) potential difference
 - (d) flow of power in fuse
5. The two forces which are equal in magnitude but opposite in direction form a
 - (a) friction
 - (b) couple
 - (c) torque
 - (d) work done

10. The Special theory of relativity treats problems involving
 - (a) inertial frame of reference
 - (b) non-inertial frame of reference
 - (c) non-accelerated frame of reference
 - (d) accelerated frame of reference

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Write a short note on Current and Current density.

Or

- (b) What are the applications of Kirchhoff's Laws in Wheatstone bridge network.

12. (a) Define magnetic induction B and magnetic field intensity H.

Or

- (b) What is self inductance? Explain it.

13. (a) Explain the working action of Junction diode.

Or

- (b) What is OR-Gate? Explain it.

14. (a) Discuss about the Nuclear size and Nuclear mass.

Or

- (b) Write a note on mass defect.

15. (a) Define projectiles. Explain it.

Or

- (b) Explain the term "Frame of reference". Give it's an examples.

PART C — ($5 \times 8 = 40$ marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Write an essay on application of Kirchoff's Laws.

Or

- (b) Discuss about the conversion of galvanometer into voltmeter.

17. (a) Write down the properties of paramagnetic materials.

Or

- (b) Derive an expression for induced current and charge.

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18. (a) Describe about the characteristics of CE transistor.

Or

- (b) Explain NAND and NOR Gates

19. (a) Explain the basic properties of Nucleus.

Or

- (b) Write an essay on Nuclear forces.

20. (a) Write an essay on Range on the horizontal plane.

Or

- (b) Derive the equation of Lorentz transformation.
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