PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Explain the color codes in resistors and write the value.

Or

(b) Derive the expression for the condition for bridge balance in wheat stone bridge.

17. (a) State and explain Faraday's law of electro magnetic induction.

Or

(b) Derive the relation between μ and K.

18. (a) Explain the V-I characteristics of zener diode.

Or

(b) Write the symbol truth table for a NOR gate. Explain.

19. (a) Write the properties of nuclear forces.

Or

(b) Explain the law of radioactive disintegration.

20. (a) Derive the expression for horizontal range of a projectile.

Or

(b) Explain time dilation.

Reg. No. : .....

Code No. : 41135 E **Sub. Code : JAPH 21/ SAPH 21**

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2019.

Second Semester

Physics – Allied

ALLIED PHYSICS – II

(For those who joined in July 2016 only)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The resistance of a conductor is directly proportional
   (a) length (b) Area
   (c) volt (d) current
2. The unit of emf is
   (a) volt (b) joule
   (c) ampere (d) watt
3. Which of the following is ferromagnetic materials
   (a) Tungsten (b) Aluminium
   (c) Copper (d) Nickel
4. Tesla is a unit of
   (a) field strength (b) inductance
   (c) flux density (d) flux meter

5. Convert the following binary number to decimal number $(1010)_2$

(a) 11 (b) 35

(c) 15 (d) 10

6. The output of AND gate is low

(a) All the time

(b) When any input is low

(c) When any input is high

(d) When all inputs are high

7. The S.I unit of radio activity is

(a) Becquerel (b) Curie

(c) Fermi (d) Moles

8. The half life of radioactive nuclei is

(a) $0.693/\lambda$ (b) $0.793/\lambda$

(c) $0.693\,\lambda$ (d) $0.793\,\lambda$

9. Time of flight of body is given

(a) $t = 2\,ui \times \frac{\sin}{g}$ (b) $t = 2ui + \frac{\sin}{g}$

(c) $t = 2ui - \frac{\sin}{g}$ (d) $t = \frac{2ui}{g}$

10. The path of a projectile is called its

(a) Curve (b) Time of action

(c) Orbit (d) Trajectory

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

11. (a) Explain the V-I characteristics of a resistor.

Or

(b) State and explain Kirchoff's first and second law.

12. (a) Write the properties of Dia magnetic materials.

Or

(b) Derive the expression for the self inductance of a long selenoid.

13. (a) Describe the characteristics of a transistor connected in a common emitter mode.

Or

(b) State and explain Demorgan's theorem.

14. (a) Explain binding energy curve with diagram.

Or

(b) Obtain the expression for half life time.

15. (a) Derive the expression for the greatest height attained by the projectile.

Or

(b) Derive Lorentz transformation equation.