

18. Explain how Kirchhoff's Current Law (KCL) and Kirchhoff's Voltage Law (KVL) are fundamental principles in electrical circuit theory that help in analyzing and solving complex electrical circuits.
19. Describe the properties of ferromagnetic materials and explain how they differ from other types of magnetic materials. Provide examples of ferromagnetic materials and highlight their practical applications in various fields.
20. Differentiate between nuclear fission and nuclear fusion.

SECTION C – (5 x 10 = 50 marks)

ANSWER ALL QUESTIONS

21. A Explain Newton's laws of motion in detail.
OR
B Explain the simple harmonic motion of pendulum in detail.
22. A Explain laws of three laws of thermodynamics with example.
OR
B Explain reversible and irreversible processes with suitable examples.
23. A What is Coulomb's law? Explain Vector form of Coulomb's law.
OR
B Explain Kirchhoff's law and their application.
24. A Define semi-conductors. Explain different types of semi-conductors.
OR
B Explain the principle, construction and working of the Wheatstone Bridge.
25. A What is Transmutation of elements? Explain with an example.
OR
B Explain about the nuclear shell model of an atom.

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END SEMESTER EXAMINATION NOV/DEC-2023

First Semester

B.Sc FORENSIC SCIENCE

CORE COURSE II – BASICS OF PHYSICS IN FORENSIC

Time: Three Hours

Maximum: 75 marks

SECTION A – (15 x 1 = 15 marks)

ANSWER ALL QUESTIONS

1. Which of the following is NOT true for an object moving along a straight path in an accelerated motion?
A Its velocity always changes B Its speed keeps changing
C A force is always acting on it D It always goes away from the Earth
2. The inertia of an object causes the object to
A decrease its speed B Increase its speed
C resist any change in the state of its motion D decelerate due to friction
3. According to the work-energy theorem, the change in kinetic energy of a body is equal to work done by:
A Non-conservative force on the particle B Conservative force on the particle
C External force on the particle D All the forces on the particle

4. A thermodynamic process proceeds in a manner such that the system remains almost infinitesimally close to equilibrium. Such a process is termed as:
- A Flow process B Quasi-static process
C Non-flow process D Irreversible process
5. Work that is done through a process that doesn't result in an equal rise in any system's kinetic or potential energy is referred to as ____.
- A An irreversible process B A reversible process
C A quasi-static process D None of the above
6. What is the value of absolute zero on the Fahrenheit scale?
- A 0°F B -22°F
C -459.4°F D None of the above
7. What is the direction of the magnetic field around a straight current-carrying wire?
- A Outwards B Counterclockwise
C Inwards D Clockwise
8. Which of the following is an example of an electromagnetic wave?
- A Radio wave B Water wave
C Sound wave D None of the above
9. What is the SI unit of magnetic field strength?
- A Ohm B Ampere
C Volt D Tesla
10. What is the purpose of an amplifier?
- A To increase the amplitude of a signal B To decrease the amplitude of a signal
C To convert AC signals to DC signals D To convert DC signals to AC signals

11. Which of the following devices is used for rectification?
- A Resistor B Diode
C Transistor D Capacitor
12. What is the primary material used in semiconductor device?
- A Silicon B Gold
C Copper D silver
13. What is the concept of nuclear quantum number?
- A A measurement of the number of protons in the nucleus B A measurement of the energy levels within the nucleus
C A measurement of the spin of the nucleus D A measurement of the number of neutrons in the nucleus
14. What is the maximum value of the nuclear quantum number?
- A 2 B 1
C 4 D 3
15. What does the nuclear quantum number determine?
- A The stability of the nucleus B The energy level of the nucleus
C The size of the nucleus D The shape of the nucleus

SECTION B – (2 x 5 = 10 marks)

ANSWER ANY TWO QUESTIONS

16. Explain Kepler's Third Law of Planetary Motion in detail and provide an example to illustrate its application.
17. $(P + \frac{an^2}{V^2}) (V - nb) = nRT$
Identify the above equation and Please provide a detailed explanation of the image above, including an explanation of all variables involved.