UPL UNIVERSITY OF SUSTAINABLE TECHNOLOGY
D.E. –SEMESTER-I/II EXAMINATION- SUMMER 2025

Course Code: MH1104   **Date:11/06/2025**

Course Name: Basic Physics

Time:10:00AM to 1:00PM   **Total Marks: 70**

Instructions:
1. Make suitable assumptions wherever necessary.
2. Figures to the right indicate full marks.
3. Use section wise separate answer book.
4. Each section covers 35 marks.

SECTION – A [35 Marks]

Instructions:
1. Question-1 is compulsory. Attempt any eleven out of fifteen questions.
2. Attempt any two questions from Question-2, 3 and 4.

Q.1		Attempt any eleven.	Marks
	(1)	Which of the following physical quantity is derived one? (a) Mass (b) Volume (c) time (d) length	01
	(2)	6 m =_____cm (a) 600 (b)60 (c) 0.600 (d) 0.6	01
	(3)	Write down the number of significant figures in the following number: 0.00232636 (a) 6 (b) 5 (c) 3 (d) 4	01
	(4)	What is the least count of vernier caliper having value of one main scale division is 1 mm and 10 divisions on its vernier scale. (a) 0.1 mm (b) 10 mm (c) 0.01 mm (d) 1 mm	01
	(5)	Round off the following number in 3 digit: 6.25923 (a) 6.25 (b) 6.26 (c) 6.27 (d) 6.24	01
	(6)	Electrons are_____ (a) Positive Charge (b) Negative charge (c) Neutral (d) Positive & negative	01
	(7)	The Algebraic sum of current at any junction is equal to Zero. This statement is known as… (a) Kirchhoff's current law (b) Kirchhoff's voltage law (c) Ohm's law (d) Lenz's law	01
	(8)	What is the SI unit of Charge? (a) Watt (b) Coulomb(C) (c) Ampere(A) (d) Joule	01

(9) Force between two negative charges is....
(a) Attractive (b) Repulsive (c) small (d) zero   01

(10) SI Unit of Resistance is _____
(a) Watt (b) Coulomb(C) (c) Ampere(A) (d) Ohm   01

(11) What is the SI unit of Magnetic Flux?
(a) Weber (b) Tesla (c) Ampere (d) Joule   01

(12) Electromagnetic induction is a current produced because of voltage   01
production (Electromotive force) due to changing....

(13) The magnetic field lines outside the bar magnet: 01
(a) Start from south pole and end at north pole
(b) Start from north pole and end at south pole
(c) Start from both the pole and end at infinity
(d) Random path

(14) A Current that not change its magnitude and polarity at regular intervals   01
of time is...
(a)AC current (b)DC Current (c)Constant current (d)AC voltage

(15) Which of the following material is Para magnetic material?   01
(a) Plastic (b) rubber (c) wood (d) Aluminum

Q.2 **(a)** Draw the diagram of vernier caliper.   03

(b) Explain Positive And Negative Error of Micrometer screw gauge with   04
Diagram.

(c) The Value of Refractive indices of glass are 2.34,2.33,2.33,2.31 and 2.35   05
find Out Mean value, Absolute error, Mean absolute error, relative Error
and Percentage Error.

Q.3 **(a)** Write the properties of Electric field lines.   03

(b) What is Kirchhoff's voltage law? Explain it with proper diagram.   04

(c) Explain Series and Parallel combination of Resistance with proper   05
diagram.

Q.4 **(a)** Write the properties of magnetic field lines.   03

(b) Explain AC and DC Current with proper diagram.   04

(c) Explain Electromagnetic Induction With proper diagram.   05

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SECTION – B [35 Marks]

Instructions:
1. Question-5 is compulsory. Attempt any eleven out of fifteen questions.
2. Attempt any two questions from Question-6, 7 and 8.

			Marks
Q.5		**Attempt any eleven.**	**Marks**
	(1)	What is the SI unit of heat?	01
		(a) Meter (b)Joule (c) Second (d) Kelvin	
	(2)	A device used to measure the temperature is...	01
		(a) transistor (b) thermometer (c) mercury (d)Volt meter	
	(3)	Degree of hotness or coldness is called	01
		(a) power (b)Force (c) Momentum (d) Temperature	
	(4)	The normal temperature of human body is	01
		(a) 50°C (b) 37 K (c) 37°F (d) 37°C	
	(5)	The process of transferring of heat without any contact between the source of heat and the heated object is called	01
		(a) conduction (b) convection (c) radiation (d) induction	
	(6)	What is the SI unit of Force?	01
		(a) kg (b) Newton(N) (c) m/s (d) watt	
	(7)	A fundamental property of a body to oppose any changes in its state is known as...	01
		(a) Inertia (b) Force (c) Power (d) Work	
	(8)	Which one is the fundamental force of the universe?	01
		(a)Frictional force (b)Spring Force (c)Gravitational force (d)Pseudo force	
	(9)	How much force is required to accelerate a 6 kg car by 15 m/s^2?	01
		(a) 80 N (b) 60 N (c) 21 N (d) 90 N	
	(10)	What is the Equation of Impulse of force?	01
		(a) I= ma (b) I = F.dt (c) p = mv (d) p = m/a	
	(11)	Light wave is_____ Wave.	01
		(a)Transverse (b)longitudinal (c) Non mechanical (d) inverse	
	(12)	Time required for complete one cycle or oscillation is known as ...	01
		(a)Frequency (b)year (c) Time period (d)Velocity	

(13) Sound wave is _____ Wave.   **01**
   (a)Transverse (b)longitudinal (c) Non mechanical (d) inverse

(14) Speed of light (C) = _____   **01**
   (a) 100 m/s   (b) 3 m/s   (c) 3×10^8 m/s   (d) 60 m/s

(15) The waves which not require a medium to transport their energy......   **01**
   (a)Mechanical (b) Electromagnetic (c) Non mechanical   (d) inverse

Q.6 **(a)** Give the application of thermal conductivity.   **03**
   (b) Write a short note on Mercury thermometer.   **04**
   (c) Explain heat conduction and heat convection with one example.   **05**

Q.7 **(a)** State the newton's first, second and third law of motion.   **03**
   (b) Explain Impulse of force with one example.   **04**
   (c) State the newton's 2nd law of motion and Derive the equations of force from the 2nd law.   **05**

Q.8 **(a)** Define Amplitude, Time period and Frequency.   **03**
   (b) Define Mechanical, Non-Mechanical, Transverse and Longitudinal wave.   **04**
   (c) Explain Reflection, Refraction and Polarization of light with proper diagram.   **05**

END OF PAPER