TH241240MDC

Reg.No.....

FYUG PROGRAMME EXAMINATIONS, NOVEMBER 2024
(2024 Admission Regular)
SEMESTER I – MDC (PHYSICS)
PH1MDC01B24 - PHYSICS AROUND YOU

Time: 45 mnts **Maximum Marks: 35**

Answer all the 35 questions. Choose the correct option

Sl.No	Questions	CO	Level
1.	Which of the following is the SI unit of mass? a) Kilogram b) Pound c) Ounce d) Gram	1	R
2.	The SI unit of energy is: a) Watt b) Joule c) Newton d) Calorie	1	R
3.	Which unit is used to measure pressure? a) Pascal b) Joule c) Newton d) Watt	1	R
4.	Which quantity has the dimension $[M^0 L^1 T^{-1}]$? a) Mass b) Length c) Time d) Velocity	1	U
5.	If a train travels 240 kilometers in 3 hours, what is its speed? a) 60 km/h b) 80 km/h c) 90 km/h d) 100 km/h	1	Ap
6.	If a bicycle travels at 5 m/s for 10 seconds, what distance does it cover? a) 20 meters b) 30 meters c) 50 meters d) 70 meters	1	Ap
7.	The energy stored in a stretched rubber band is called: a) Kinetic energy b) Elastic potential energy c) Gravitational potential energy d) Thermal energy	1	U
8.	Which of these is an example of kinetic energy? a) A book on a shelf b) A runner in a race c) A car parked on a hill d) A charged battery	1	U
9.	How many millimeters are in 1 centimeter? a) 10 mm b) 100 mm c) 1000 mm d) 1 mm	1	R
10.	Convert 3.5 meters to centimeters. a) 35 cm b) 350 cm c) 300 cm d) 3.5 cm	1	U

11.	2 days is equal to how many hours? a) 12 hours b) 24 hours c) 48 hours d) 60 hours	1	U
12.	When a spring is compressed, the potential energy is converted into: a) Kinetic energy b) Thermal energy c) Chemical energy d) Sound energy	1	U
13.	Which of the following waves cannot travel through a vacuum? a) Light waves b) Sound waves c) Radio waves d) X-rays	1	R
14.	The principle of conservation of energy states that: a) Can be created b) Can be destroyed c) Can be transferred from one form to another d) Can vary with time	1	R
15.	What part of the wave affects its loudness? a) Amplitude b) Wavelength c) Frequency d) Speed	1	R
16.	When a wave enters a new medium and changes speed, this phenomenon is called: a) Reflection b) Refraction c) Diffraction d) Interference	1	U
17.	Sound travels fastest in a) Air b) Water c) Iron d) Oil	1	R
18.	The SI unit of electric power a) Joule b) Watt c) Volt d) Ampere	2	U
19.	How is electric power related to current and resistance? a) P = I/R b) P = I^2R c) P = IR d) P = V/R	2	A
20.	Which type of material is a good conductor of electricity? a) Rubber b) Copper c) Plastic d) Glass	2	U
21.	Which part of the electromagnetic spectrum is visible to the human eye? a)Infrared waves b) Visible light c) X-rays d) Gamma rays	3	U

22.	Which part of the electromagnetic spectrum is visible to the human eye? a) Infrared waves b) Visible light c) X-rays d) Gamma rays	3	U
23.	For total internal reflection to occur, light must travel: a) From a denser to a rarer medium b) From a rarer to a denser medium c) In a straight line d) In a vacuum	3	U
24.	Which of these applications uses total internal reflection? a) Mirrors b) Optical fibers c) Lenses d) Microscopes	3	Ap
25.	Optical fibers primarily work on the principle of: a)Refraction b)Diffusion c)Total internal reflection d) Absorption	3	U
26.	Optical fibers are widely used in: a) Imaging and telecommunications b) Cooking appliances c) Construction materials d) Vehicle engines	3	U
27.	Which color of light has the shortest wavelength among the visible spectrum? a)Red b) Yellow c) Blue d)Green	3	U
28.	Why does red light scatter less than blue light? a) Red light has a longer wavelength b) Red light has more energy c) Red light travels faster d) Red light is not affected by particles in the atmosphere	3	U
29.	When light reflects off a surface, it follows which principle? a)Angle of refraction b)Angle of incidence equals angle of reflection c)Energy conservation d)Light travels in straight lines	3	U
30.	What is the main characteristic of laser light? a)Divergent and incoherent b) Monochromatic and coherent c)Polychromatic and divergent d) Random and scattered	3	U

31.	How does laser light compare to ordinary light in terms of brightness? a)Always dimmer b) Can be brighter c) Always the same d)Not measurable	2	U
32.	What is Snell's Law? a)The relationship between the speed of light and the angle of incidence b)The relationship between the angles of incidence and refraction c)The law of reflection d)The law of conservation of energy	3	U
33.	Which condition is necessary for laser action to occur? a)Population inversion b)Low power output c) Spontaneous emission d)Energy absorption	2	U
34.	What is the angle of incidence? a)The angle between the incoming light and the normal line b)The angle between the reflected light and the surface c)The angle between the incoming light and the surface d)The angle between two mirrors	3	U
35.	A periscope works based on the principle of a)Refraction b) diffusion c) reflection d) dispersion	3	U

(35x1=35)

CO: Course Outcomes Level: R – Remember, U – Understand, Ap- Apply, An- Analyze, E- Evaluate, C- Create

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Sl.No	Questions	CO	Level
1.	Which of the following is the SI unit of time? a) Hour b) Minute c) Second d) Day	1	R
2.	The SI unit of temperature is: a) Celsius b) Kelvin c) Fahrenheit d) Joule	1	R
3.	Which unit is used to measure force? a) Newton b) Joule c) Watt d) Pascal	1	R
4.	Which quantity has the dimension $[M^0 L^1 T^0]$? a) Pressure b) Energy c) Speed d) Velocity	1	U
5.	How many milliliters are in 1 liter? a) 10 ml b) 100 ml c) 1000 ml d) 1 ml	1	R
6.	Convert 2500 mm to liters. a) 0.25 liters b) 2.5 liters c) 25 liters d) 250 liters	1	U
7.	1 minute is equal to how many seconds? a) 30 seconds b) 60 seconds c) 120 seconds d) 90seconds	1	R
8.	If a cyclist travels 150 meters in 5 seconds, what is their speed? a) 25 m/s b) 30 m/s c) 15 m/s d) 10 m/s	1	U
9.	If an object moves in a straight line with varying speeds, it is said to have: a) Uniform motion b) Non-uniform motion c) Constant velocity d) Zero acceleration	1	R
10.	The energy stored in an object due to its position is called: a) Kinetic energy b) Potential energy c) Mechanical energy d) Thermal energy	1	R

11.	If a car moves at 15 m/s for 4 seconds, what distance does it cover? a) 30 meter b) 60 meters c) 45 meters d) 75 meters	1	U
12.	Which of these is an example of kinetic energy? a) A rock at the edge of a cliff b) A compressed spring c) A car moving down the road d) Water stored in a reservoir	1	U
13.	The law of conservation of energy implies that energy: a) Can change forms but is never lost b) Can be created and destroyed c) Can only be transferred d) Is constant in all situations	1	R
14.	Sound travels fastest in: a) Gases b) Liquids c) Solids d) Vacuum	1	R
15.	The SI unit of voltage a) Ampere b)Volt c)Ohm d)Watt	2	U
16.	If the current increases, what happens to the voltage in a circuit with constant resistance? a) Increases b) Decreases c) Remains the same d)Becomes zero	2	U
17.	Which instrument measures voltage? a) Voltmeter b) Ammeter c) Galvanometer d) Ohmmeter	2	U
18.	What is the speed of electromagnetic waves in a vacuum? a)_3 × 10^8 m/s b)3 × 10^6 m/s c)3 × 10^5 m/s d)3 × 10^3 m/s	3	R
19.	What is the law of reflection? a) Angle of incidence = Angle of reflection b) Angle of incidence > Angle of reflection c) Angle of incidence < Angle of reflection d) None of the above	3	U
20.	Why do stars appear to twinkle? a) Stars change their brightness b) Stars are moving rapidly c) Atmospheric refraction causes the light to change direction d) Stars are very close to Earth	3	U

21.	In which type of medium transition does total internal reflection occur? a) Rarer to denser b) Denser to rarer c) Transparent to opaque d) Any medium transition	3	U
22.	What role does total internal reflection play in the sparkle of diamonds? a) It prevents light from leaving the diamond b) It reflects light multiple times within the diamond. c) It diffuses light evenly. d) It makes the diamond appear darker	3	U
23.	What is an optical fiber? a) A Fiber that transmits electric current b) A transparent fiber used to transmit light signals c) A type of metal d) A plastic fiber used in clothing	3	U
24.	Why does the sky appear blue during the day? a) Because blue light is absorbed b) Because blue light is scattered more than other colors c) Because the sun emits mostly blue light d) Because air filters out other colors	3	U
25.	When sunlight passes through a prism, it: a) Absorbs all colors b) Separates into different colors due to refraction c) Turns completely white d) Stays a single color.	3	U
26.	What occurs when light exits a denser medium into a less dense medium? a) It bends away from the normal b) It bends towards the normal c) It remains straight d) It slows down	3	U
27.	Which of the following phenomena is caused by refraction? a) A rainbow b) The bending of a straw in a glass of water c) The reflection of light d) The dispersion of light	3	U

28.	What is the term for the ability of a laser to emit light of a single wavelength? a) Polychromaticity b) Monochromaticity c) Coherence d) Brightness	2	U
29.	Lasers in medicine are commonly used for: a) Generating electricity b) Surgical procedures and skin treatments c) Illuminating buildings d) Powering medical devices	2	U
30.	What safety precaution is crucial when using lasers in a laboratory? a) Wearing sunglasses b) Using reflective surfaces c) Wearing appropriate laser safety goggles d) Keeping doors open	2	Ap
31.	Which of the following is a property of laser light? a) It can easily scatter in all directions b) It travels in straight lines c) It is always visible to the naked eye d) It is always polarized	2	R
32.	When light enters a denser medium, it bends a) away from the normal b)towards the normal c) in a circular path d) in a straight line	2	U
33.	Which of the following uses sound waves to create images of the inside of the body? a) X-ray b) MRI c) Ultrasound d) CT scan	3	R
34.	Which of the following is NOT a type of wave? a) Sound wave b) Water wave c) Light wave d) Heat wave	3	R
35.	What factor determines the pitch of a sound wave? a) Frequency b) Amplitude c) Wavelength d) Speed	3	R

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Sl.No	Questions	Ans	CO	Level
1.	Sound travels slowest in: a) Solids b) Liquids c) Gases d) Vacuum		1	R
2.	Which part of the wave determines its loudness? a) Frequency b) Wavelength c)Amplitude d)Speed		1	U
3.	Which of the following waves can travel through a vacuum? a) Sound waves b) Water waves b) Light waves d) Mechanical waves		1	U
4.	The principle of conservation of energy states that energy: a) Can be created b) Can be destroyed c) Is always conserved and cannot be created or destroyed d) Can be lost in some situations		1	R
5.	When an object falls freely, its potential energy is converted into: a) Sound energy b)Heat energy c) Kinetic energy d) Electrical energy		1	U
6.	Which of these is an example of potential energy? a) A ball rolling on the ground b) Water held behind a dam c) A car moving at a high speed d) A spinning fan		1	U
7.	The energy an object has because of its motion is called: a) Potential energy b) Kinetic energy c) Thermal energy d) Chemical energy		1	R
8.	If a car moves at 20 m/s for 2 seconds, what distance does it cover? a) 10 meters b) 20 meters c) 40 meters d) 60 meters		1	U
9.	If an object covers equal distances in equal intervals of time, it is said to have: a) Uniform motion b) Non-uniform motion c) Acceleration d) Zero velocity		1	R
10.	If a car travels 100 meters in 10 seconds, what is its speed? a) 10 m/s b) 100 m/s c) 5 m/s d) 50 m/s		1	U
11.	1 hour is equal to how many seconds? a) 600 seconds b) 1800 seconds c) 3600 seconds d) 7200 seconds		1	U

12.	Convert 5 kilograms to grams. a) 50 grams b) 500 grams c) 5000 grams d) 50,000 grams		1	U
13.	How many centimeters are in 1 meter? a) 10 cm b) 100 cm c) 1000 cm d) 1 cm		1	R
14.	Which quantity has the dimension $[M^1L^0T^0]$? a) Length b) Time c) Mass d) Velocity		1	U
15.	Which unit is used to measure mass? a) Gram b) Meter c) Ampere d) Pascal		1	R
16.	The SI unit of resistance is: a) Volt b) Coulomb c) Ampere d) Ohm		1	R
17.	Which of the following is the SI unit of length? a) Kilogram b) Meter c) Second d) Liter		1	R
18.	The SI unit of electric current a.) Ampere b) Volt c) Ohm d) Coloumb		2	U
19.	Ohm's law is represented by which of the following equations? a) V = I/R b) I = VR c) V = IR d) R = V/I		2	Ap
20.	Which instrument is used to measure electric current? a) Voltmeter b) Ammeter c) Ohmmeter d) Wattmeter		2	U
21.	Which of the following is NOT an electromagnetic wave? a) Radio waves b) Sound waves c) X ray d) Microwaves		3	R
22.	What is refraction? a) Bending of light as it passes through a medium b) Reflection of light off a surface c) Absorption of light by a medium d) Scattering of light		3	U

23.	Which phenomenon is responsible for the twinkling of stars? a) Total internal reflection b) Diffraction c) Atmospheric refraction d) Reflection		3	U
24.	What condition is necessary for total internal reflection to happen? a) Angle of incidence must be less than the critical angle b) Angle of incidence must be greater than the critical angle c) Angle of incidence must be zero d) Angle of reflection must be zero		3	U
25.	What is the critical angle? a) The minimum angle at which light completely refracts b) The minimum angle of incidence at which total internal reflection occurs c) The maximum angle of refraction d) The angle at which light absorbs completely		3	U
26.	Which part of an optical fiber carries the light signals? a) Core b) Cladding c) Outer coating d) Jacket		3	U
27.	Which type of scattering is responsible for the blue color of the sky? a) Mie scattering b) Rayleigh scattering c) Reflection d) Refraction		3	U
28.	What color does the sky often appear at sunset? a) Blue b) Red or orange c) Yellow d)White		3	R
29.	What does "LASER" stand for? a) Light Amplification by Stimulated Emission of Radiation b) Light Absorption by Stimulated Emission of Radiation c) Light Amplification by Spontaneous Emission of Radiation d) Laser Amplification by Stimulated Emission of Radiation		2	R
30.	Mirrors in a laser cavity are used to: a) Absorb photons b) Redirect and amplify light c) Block light d) Produce energy		2	U

31.	Which of the following is a common use of lasers? a) Cooking food b) Reading barcodes c) Producing heat d) Generating sound		2	U
32.	Laser light is: a) Multicolored b) White light c) Monochromatic d) Polychromatic		2	U
33.	If the angle of incidence is 30 degrees, what is the angle of reflection? a) 15 degrees b) 30 degrees c) 60 degrees d) 90 degrees		3	A
34.	What is the result of total internal reflection? a) Light passes through the medium b) Light is completely absorbed c) Light reflects back into the medium d) Light refracts out of the medium		3	U
35.	What is the line drawn perpendicular to the surface at the point of incidence called? a) Normal b) tangent c) parallel line d) axis		3	U

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