Question Paper

Exam Date & Time: 06-Jun-2024 (10:00 AM - 01:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

THIRD SEMESTER BSc. HEALTH SCIENCES DEGREE EXAMINATION - JUNE 2024
SUBJECT: BHS-203 - PHYSICS I
(OLD SCHEME - SPECIAL EXAM)

Marks: 75 **Duration: 180 mins.**

Answer all the questions.

1. Short descriptive questions.

1A)	Find the dimensional formula of pressure.	(2)
1B)	Define vector product of two vectors.	(2)
1C)	Find unit vector in direction of vector A=2i+3j+4k.	(2)
1D)	A projectile is fired with a speed u at an angle θ with the horizontal. Find its speed when its direction of motion makes an angle α with the horizontal.	(2)
1E)	Write Newton's first law of motion.	(2)
1F)	What is centrifugal force?	(2)
1G)	Define kinetic energy.	(2)
1H)	What do you mean by fluid?	(2)
1I)	A block of mass m is kept on a horizontal table. If the static friction coefficient is μ , find the frictional force acting on the block.	(2)
1J)	A flat plate of area 0.1 m^2 is placed on a horizontal surface and is separated from it by an oil film 10^{-5} m thick. If the coefficient of viscosity of oil is 1.5 kg m^{-1} s^{-1}, find the force required to cause the plate to slide on the surface at a constant speed of 1mm/s.	(2)
1K)	If the intensity is increased by a factor of 20, by how many decibels is the sound level increased?	(2)
1L)	What is diffraction of waves?	(2)
1M)	What is astigmatism?	(2)
1N)	What is dispersion of light?	(2)

2. Descriptive questions

2A)	Write laws of friction.	(3)
2B)	Show that energy is always conserved during simple harmonic motion.	(3)
2C)	What are sound waves? Explain.	(3)
2D)	If water be used to construct a barometer, what would be the height of water column at standard atmospheric pressure (76 cm of mercury)? Density of water is 1000 kg/m^3, density of mercury is 13.6 X 10^3 kg/m^3.	(3)

3 Long question:

3A)	**What are absorption spectra? Discuss in detail.**	**(5)**
3B)	**Explain working of aspirator pump.**	**(5)**

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