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PHYSICS ANSWER KEY

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KERALA IInd TERM Exam 2023- PHYSICS ANSWER KEY

QN	Answer
1	$6.67 \times 10^{-11}\ Nm^2/kg^2$
2	Adhesive force
3	ON
4	Joule
5	a. relative density is the density compared to a reference substance (usually water) under standard conditions. b. Density of ice is greater than Kerosene, So it will sink.
6	a. The area under velocity-time graph gives the displacement b. The size of the graph increases as we decrease the scale.
7	Every object will remain at rest or in uniform motion in a straight line unless compelled to change its state by the action of an external force.
8	a. $F = \frac{Gm1m2}{d2}$, 8 x G = G x10x20 8 x G $= \frac{Gx10x20}{d2}$ $= d = 5m$ b. $F = \frac{Gx10x10}{4} = 25$
9	Work done by the applied force is positive and work done by fractional force is negative
10	a. Graph (2) - motion of a body without acceleration b. Graph (3)- a truly falling body
11	Inertia of rest / Inertia of motion Dust comes out of a hanging mat when beaten with a stick / Athletes take a short run before doing a long jump Passengers standing in a bus tend to fall backwards when the bus suddenly starts moving forward / A fan continues its rotation for some time even after it is switched off.
12	a. Electrical energy → light and heat energies

	b· Electrical energy → mechanical energy
13	a· Impulse- momentum principle b· Any two applications

	□ Airbags in cars reduce the impact of a collision, China and glass wares are packed with soft material when transported, During a pole vault jump, the impact is reduced by falling on foam bed·
14	a· Honey b· Viscosity It is the characteristic property of a liquid to oppose the relative motion between its different layers
15	a· Momentum before collision = $m_1u_1 + m_2u_2$ = (6 x 8) + (4 x 4) = 48+16= 64 Kg m/s b· Momentum after collision = 64 Kg m/s c· Law of Conservation of momentum
16	a· mass x g_{earth}= 1752 x 10 = 17520N b· mass x g_{moon} = 1752 x 1·62 = 2803·2N
17	a. An aero plane flying at certain height b. Stretched bow and wound spring - potential energy
18	a· Centripetal force, fc= mv^2 /R = 30X36/30= 60N m= 40+10=50 Kg = 50 x6x 6 = 60 N b· To reduce centripetal force a· Reduce the speed or mass of the body b· Increase the radius of the path
19	a· Instrument P- Common Balance b· In poles, the value g is more and weight becomes more

20	a· Zero, in free fall no reacting force is acting upward, and gravitational force is utilized to give acceleration to the object· b· Gravitational force = GM/R^2
21	a· Potential energy is converted into kinetic energy b· Kinetic energy= $K=1/2MV^2$ m=200g, 200/1000 = 0·2 Kg 1/2X0·2X0·25X0·25= = 0 ·00625 J c· Work done = change in Kinetic energy =$^{= 0\ \cdot 00625\ J=}$ $6{\cdot}25 \times 10^{-3}$
22	a· Velocity at 3rd second = 6m/s and velocity at 9th second =18 m/s b· Momentum of the car at 3rd second = 800x 6=4800kg m/s Momentum of the car at 9th second = 800x 18=14400kg m/s c· Rate of change of momentum of the car= $\frac{m(v-u)}{t} = \frac{800(18-6)}{6}$ = 1600 N d· Rate of change of momentum of the car = Magnitude of force= rate of change of momentum = 1600N