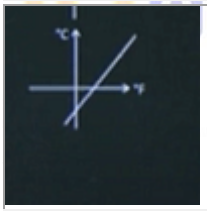
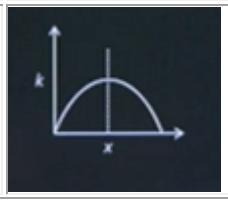
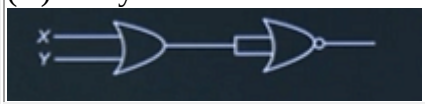
JEE MAIN 24 JANUARY 2025 SHIFT 2

PHYSICS QUESTION PAPER WITH ANSWER KEY

Q.No.	Questions	Answers
1	A solid sphere and hollow sphere rolls down purely equal distances on same inclined plane (starting from rest) in time t_1 t_2 then	$t_1 < t_2$
2	A solid sphere rolls without slipping on a horizontal plane. What is ratio of translation kinetic energy to the rotational kinetic energy of the sphere	5/2
3	If the acceleration due to gravity on the surface of earth is g, then acceleration due to gravity on a planet whose diameter is 1/3 of that of earth nad same mass as that of earth is g=ng where n is=	9g
4	If E, p, m, and c denote the energy, linear momentum, mass, and speed of light , then the equation representing the correct relation could be	$E^2 = p^2c^2 + m^2c^2 + m^2c^4$
5	Temperature of a body reduces from 40 degree to 24 degree in 4 minutes in surrounding of 14 degree celsius. What is the temperature of body after further 4 minutes?	56/3 degree Celcius
6	The position of a particle varies with time as r= $(5t^2t - 5tj)$ m. The magnitude and direction of velocity at t= 1/2 S is	$5\sqrt{2}$ m/s, -45 degree with +X axis
7	Which of the following graph correctly represents the relation between Celcius and Fahrenheit.	
8	In given thermodynamics process (Circular in nature) find magnitude of work done by the gas in cycle ABCA	5π
9	Arrange the following in order of decreasing wavelength a. Microwave b. Ultraviolet c. Infrared d. X-rays	a>c>b>d
10.	A particle oscillates along x axis according to law $x = x_0\sin^2(t/2)$ where x_0=1. Variations of kinetic energy (k) with position (x) is given by graph.	

11	For which of the following input, output of the circuit is zero. (A) x=0 y=0 (B) x=0 y=1 (C) x=1 y=0 (D) x=1 y=1 	B,C,D only
12	There is a conical pendulum of mass m and length l making 60 degree with vertical. Then tension in thread it.	2mg
13	There are two identical conducting spheres placed at certain distance I. On of them is carrying charge of $4x\ 10^{-8}$ C and other is neutral. Now both are connected using a conducting wire and force between them is found to be 9×10^{-3} N, then distance is	2cm
14.	The excess pressure required to decrease the volume of water sample by 0.2% is $P \times 10^{5}$ Pa. If the bulk modulus of water is 1.25×10^{9} Pa. then value of P is	25