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		JEE(Main) 2023	DATE : 08-04-2023 (SHII	T-2)   PAPER-1   PHYS	ICS
44.	The waves en	nitted when a metal targe	t is bombarded with high ener	gy electrons are	
	(1) X-ray	(2) Microwaves	s 💦 (3) Radio Waves	(4) Infrared rays	
NTA .	Ans. (1)				
Reso	Ans <mark>. (1)</mark> Reso				
45.	Given below a	are two statements:			
	Statement I :	Area under velocity-time	graph given the distance trav	<mark>elle</mark> d by the body in a given t	ime
	Statement II	: Area under acceleration	-time graph is equal to the cha	ange in vel <mark>ocity</mark> in the given t	ime.
	In the light of	given stateme <mark>nt, c</mark> hoose t	the correct ans <mark>wer</mark> from the o	otions given below:	
	(1) Both State	ment I and Statement II a	are False esonance		
	(2) Statement	I is incorrect but Stateme	ent II is true.		
	(3 <mark>) Sta</mark> tement	I is correct but Statemen	t II is False.		
	(4) Both State	ment I and Statement II a	are true.		
NTA	Ans. (2)				
Reso	Ans <mark>. (2)</mark>				
<mark>46</mark> .	A radio active	material is reduced to 1/	8 of its original amount in 3 d	ays. If 8 × 10 <sup>-3</sup> kg of the mat	erial i
	lef <mark>t aft</mark> er 5 day	/s the initial amount of the	e material is		
	(1) 40 g	(2) 32 g	(3) 64 g	(4) 256 g	
NTA .	Ans. (4)				
Reso	Ans. (4)				
Sol.	T <sub>1</sub> = 1 days				
	2				
	$m_0 \times \frac{1}{m} = 8 \times 1$	10 <sup>-3</sup>			
	<sup>110</sup> 32 - 0 ^				
	$m_0 = 32 \times 8 \times$	$10^{-3} = 256 \text{gm}$			
	cating for better to				
47.	Th <mark>e or</mark> bital an	oular momentum of a sa	tellite is L. when it is revolving	n in a circular orbit at height	h fror
	earth surface.	. If the distance of satelli	te from the earth centre is in	creased by eight times to its	s initi
	value, then the	e new angular momentun	n will be-		
	(1) 3 L	(2) 4 L	(3) 9 L	(4) 8 L	
NTA	Ans. (1)		( )		
Reso	Ans. (1)				
	cating for better to	GM			
Sol.	L <mark>= mv</mark> r = m <sub>v</sub>	$\frac{GM}{r}r = m\sqrt{GM}\sqrt{r}$			
	Educating	or botter tomorrow Educating I	for better tomorrow Educating for better		
	So L∝v	$\sqrt{r}$ $\frac{L_f}{L_f} = \sqrt{\frac{9r}{2}}$	$\frac{L_{f}}{L_{f}} = \sqrt{\frac{9r}{2}} \Rightarrow L_{f} = 3L_{i} = 3L.$		
		L <sub>i</sub> Vr	L <sub>i</sub> Vr		
<mark>48</mark>	A bullet of ma	ss <mark>0.1</mark> kg moving horizont	tally with speed 400 ms <sup>-1</sup> hits a	<mark>a w</mark> ooden block of mass 3.9 k	<g kep<="" td=""></g>
	on a horizonta	al r <mark>ough surface. The bull</mark>	et gets embedded into the blo	ock and moves 20 m before o	comin
	to <mark>rest</mark> . The co	pefficient of friction betwee	en the block an <mark>d th</mark> e surface i	s (Given g <mark>= 10</mark> m/s²)	
	(1) 0.50	(2) 0.90	(3) 0.25	(4) 0.65	
NTA	Ans. (3)				
NTA Reso	Ans. (3) Ans. (3)				

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		JEE(Main) 2023	DATE	: 08-04-2023 (	SHIFT-2)   PAPE	R-1   PHYSICS
Sol.	By momentum	conservation				
	$0.1 \times 400 = (3.1)$	9+0.1)V				
	v = 10  m/s $v^2 = u^2 + 2as$					
	$O = 10^2 - 2as$					
	100 100	Educating for better tomorrow				
	$a = \frac{1}{40} = \frac{1}{400}$	= 2.5 IICHCE Rest				
	μg = 2.5					
40	$\mu = 0.25$	iatad from a linear anton	na of lo	nath « is proportie	anal to (Civon ) - V	Novelength of wave)
49.	The power radi		ina orie		$\int dx = 0$	wavelength of wave).
	(1) $\frac{\ell}{\lambda}$	(2) $\frac{\ell}{2^2}$		(3) $\frac{\ell^2}{\lambda}$	(4) $\left(\frac{\ell}{\lambda}\right)^{-1}$	
ΝΤΑ	Ans. (4)	٨		λ.		
Reso	Ans. (4)					
50.	Match List-I wi	th List-II				
	(A) Torque	2	(1)	ML <sup>-2</sup> T <sup>-2</sup>		
	(B) Stress		(II)	ML <sup>2</sup> T <sup>-2</sup>		
	(C) Pressu	ire gradient	(III)	ML-1T-1		
	(D) Coeffic	ient of viscosity	(IV)	ML-1T-2		
	Choose the co	rrect answer from the op	otions giv	ven below:		
	(1) A-IV, B-II, C	;-III, D-I	(2) A-	II, B-IV, C-I, D-III		
NTA	(3) A-II, B-I, C- Ans. (2)	IV, D-III	(4) A-	III, D-IV, C-I, D-II		
Reso	Ans <mark>. (2)</mark>					
51.	A series comb	pination of resistor of re	esistanc	e 100 Ω, induct	or of inductance 1	H and capacitor of
	capacitance 6.	25 μF is connected to ar	n ac sou	rce. The quality f	actor of the circuit w	vill be
Reso	Ans. 4					
nood	X. 1 I	1 1 1 1				
Sol.	$\frac{\Lambda_L}{R} = \frac{1}{\sqrt{LC}} \times \frac{L}{R}$	$=\frac{1}{R}\sqrt{\frac{L}{C}}=\frac{1}{100}\sqrt{\frac{1}{6.25\times 100}}$	$\frac{10^{-6}}{10^{-6}} =$	4 Res		
	osonanco <sup>®</sup>	Reconance"				
52.	A body of mas	s <mark>5 kg</mark> is moving with a r	moment	um of 10 kg ms <sup>-1</sup>	. Now a force of 2	N acts on the body in
	th <mark>e dir</mark> ection of	its motion fo <mark>r 5 s</mark> . The ir	ncrease	in the Kinetic end	ergy of the body <mark>is_</mark>	Resolance <sup>®</sup>
NTA	Ans. 30					
Reso Sol	Ans. 30	Educating for better tomorrow				
501.		$n = 20 \text{ kg} \cdot \frac{11}{5}$				
	$K_i = \frac{10}{2 \times 5} = 10,$	$K_f = \frac{20}{2 \times 5} = 40$				
	Change in K.E.	. = 30J.				
	Ű					
		Resonanc	e Ec	duventur	es Ltd.	
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**53.** Two transparent media having refractive indices 1.0 and 1.5 are separated by a spherical refracting surface of radius of curvature 30 cm. The centre of curvature of surface is towards denser medium and a point object is placed on the principle axis in rarer medium at a distance of 15 cm from the pole of the surface. The distance of image from the pole of the surface is \_\_\_\_\_\_cm.

**56.** The number density of free electrons in copper is nearly 8 x  $10^{28}$  m<sup>-3</sup>. A copper wire has its area of cross section= 2 ×  $10^{-6}$  m<sup>2</sup> and is carrying a current of 3.2 A. The drift speed of the electrons is  $\times 10^{-6}$ 

NTA Ans. 25  
Reso Ans. 25  
Sol. 
$$i = neAv_d$$
  
 $v_d = \frac{i}{neA} = \frac{3.2}{8 \times 10^{28} \times 1.6 \times 10^{-19} \times 2 \times 10^{-6}} = \frac{1}{8 \times 10^3} = \frac{5}{4} \times 10^{-4} = 125 \times 10^{-6}$ .

## **Resonance Eduventures Ltd.**

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