LADOKE AKINTOLA UNIVERSITY OF TECHNOLOGY, OGBOMOSO DEPARTMENT OF PURE AND APPLIED PHYSICS

B. TECH. (PHYSICS) DEGREE EXAMINATION – HARMATTAN SEMESTER 2011/2012 SESSION PHY 101 - GENERAL PHYSICS I (4 UNIT)

TIME ALLOWED: 45 minutes DATE: Monday 21st May, 2012 INSTRUCTION: Answer ALL questions by SHADING the rrect option; otherwise you place yourself at a grave disady A block of ice floats on water inside a container. If the block of ice gets completely melted, the level of water in the container will

A. increase

By remain the same

C. decrease

D. first decrease and then increase a bridge made of steel is 0.6 km long. What is the daily variation in its length if the night-time and day-time temperatures are 10 °C and 35 °C respectively? The linear expansion of steel is 0.0000 12 °C ·¹.

A. 0.18 cm

B. 0.18 m

C. 600.18 cm

D. 600.18 m

A lift is moving down with an acceleration of 3 ms². A ball is released 1.7 m above the lift floor. Assuming g = 9.8 ms², how long will the ball take to hit the floor?

A. 0.14 s

B. 0.90 s

C. 0.70 s

D. 0.80 s

A particle moving in a plane has its motion described by x=3t²+18 and y=36t+5 where distances are in meters and time in seconds. Find the magnitude and direction of its velocity at the instant when t = 2 s.

A. 37.95m/s, 71.57° to y-axis

D. 37.95m/s, 71.57° to x-axis

D. 37.95m/s, 71.57° to x-axis The motion of a particle is defined by the relation  $x = t^2 - (t-3)^3$  where x and t are expressed in meter and The motion of a particle is defined by the relation x = t² - (t-3)\* where x and t are expressed in meter and seconds, respectively. Determine when the acceleration is zero.

A. 3.33 m/s² Ram 3.33 m/s C. 3.33 m Q D. 3.33 s

A hose ejects water at a speed of 20 cms² through a hole of area 100 cm². If the water strikes a wall normally, calculate the force on the wall, assuming the velocity of the water normal to the wall is zero after collision.

A. 0.80 N B. 0.40 N C. 0.16 N D. 0.20 N

A force of 6 N acts horizontally on a stationary mass of 2 kg for 4 s. The K.E. gained by the mass in Joule is

A. 72 B 144 C. 24 D. 12

A train traveling at 30 m/s overcomes a frictional resistance of 100 N white moving. What is the power of the engine? (1 h.p. = ½ kW). A small mass of 0.2 kg is whirled round in a horizontal circle at the end of a string of length 0.5 m at a constant angular speed of 4 rad s<sup>-1</sup>. The tension (force) in the string in N is

A tugboat is travelling from Asaba to Onitsha across the river lows at 12 knots, the direction of motion of the boat relative to the direction of water flow is

A 36.87°

B 50.4 h.p.

C 6. 4.4 h.p.

C 7. 44.4 h.p.

C 8. 2.5 h.p.

A 4.0 h.p.

B 1.02.50 m D 162.50 m

C 142.50 m

D 162.50 m

A ball of mass 100 g falls from a height of 5 m on to a floor and rebounds to a height of 3 m. What energy is lost by the ball as a result of the impact on the floor?

A 5mall mass of 0.2 kg is whirled round in a horizontal circle at the end of a string of length 0.5 m at a constant angular speed of 4 rad s<sup>-1</sup>. The tension (force) in the string in N is

A tugboat is travelling from Asaba to Onitsha across the river Niger with a resultant velocity of 20 knots. If the river flows at 12 knots, the direction of motion of the boat relative to the direction of water flow is

A balloon inflated with helium gas at ground level is released. As it rises through a constant temperature atmosphere, 4.0 h.p. = ½ kW). A. its pressure reduces and volume remains constant

B. the product of pressure and volume remains constant

C. its pressure remains constant but volume decreases

D. both pressure and volume increase

Which of the following statements is NOT true? Thermostats are used to control the temperature of Which of the following statements is NOT true? Thermostats are used to control the temperature of pressure cookers B. heated apartments C. laundry irons D. aquaria for tropical fish Which of the following properties makes metals ideal for cooking utensils?

High coefficient of expansion B. Good conduction of heat

Low specific heat capacity D. Poor radiation of heat

piece of wood floats inside water at room temperature with a fraction of it above the liquid surface. As the reture of the water is raised, the part of the wood above the liquid will decrease because the density of water decreases with temperature increase because the density of water decreases with temperature decrease because the density of water increases with temperature increase because the density of water increases with temperature

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		-banomena	explains the fa	act that a	house whose	00.	Refraction den extension of 1.2 cm. If the
	Which of the following cooler in the hot season	than one co.	ated with blac	k paint?		D. 1	Refraction 612 cm If the
	cooler in the hot season	B Conve	ection	C. Rei	lection	nm cause	Refraction of 1.2 cm. If the dan extension of 1.2 cm. If the der this stress? ** **X1-3×10-12** 6.524×10-6 m 3.312×10-6 m
	A. Conduction	ed from a W	ire of length 2	5 cm and	diameter 4.0	meter un	der this stress? X1.3X10 2.5.4
183	A 170 kg mass suspende	hat is the Yo	oung's modulu	is and the	e change in on	08 Nim-25	6.524×10 <sup>-6</sup> m 3.312×10 <sup>-5</sup> m 0 <sup>-6</sup> m <sup>3</sup> if the bulk modulus of water
1	Poisson's ratio is ordinary	8.832x10-6	m ,	1	8 600x	08 Nm-2,	3.312x10° m
	A. 2.088X10 3XIII	4.410X10"	m .	L	volume 3 m <sup>3</sup> of	vater by 1	3.312x10° m 0° m³ if the bulk modulus of water 1x10⁴ Pa
	what is the increase in pres	ssure that is r	required to decr	ease the v	voiding 5 m.,		ad n
19-	is 3x10 <sup>10</sup> Nm <sup>-3</sup> ?	-		C. Sx	10 <sup>3</sup> Pa	D!	1x104 Pa 4.6210-3 x1-12x15 x
	A. 2x10 <sup>5</sup> Pa A glass fibre of diameter 60	B. 3x10	Pa	ra load o	f 1.3 g. What is	the breaki	
	A glass fibre of diameter 60	0 nm is foun	1010 Nm <sup>-2</sup>	C. 3.8	27x10 <sup>1</sup> Nm <sup>-2</sup>	D.	1.27×10° Nm2 2.20+x13-5
	A. 4.505X10 1911						ids are not crystalline 25 x 13 - 2
21	Which of the following is t	irue?	od definite mel	ting poir	nt B. A.	I true soi	accustly insoluble
	Which of the following is to Crystals have definite.  Amorphous have definite.	ofinite chan	e and definite	melting	point D. C	ystals are	0 : 08 £ 3 £ 2(3
	C. Amorphous have de	emine snap	I mangured by			Infrared	ray D. None of the above
22	C. Amorphous have de Crystal structures are distin	meter B.	Geiger N	Auller co	unter C.	inirared	25 m <sup>3</sup> at a temperature of 27 °C.
	A. Gamma spectron	are compres:	sed slowly and	thermally	from a volume	TOO IN TO	
23.	How much work is done?				C421 I	D.	6918]
	Mow much work is done.	B69	918 J	C	5431 J	e at rest (	Calculate their common velocity if
	A ball of mass 0.4 kg movi	ing at 10 ms	collides with	another b	all of equal mas	Sarres	
24.	the two balls move off togo				20.0 ms <sup>-1</sup>	D/	10.0 ms <sup>-1</sup>
						7	
25.	4 40	f Young's r	modulus of ela	isticity?	M][L][T] <sup>2</sup>	D.	[M] [L]'[T]'
	A. [M] [L] [T] 2	B/ [M	1],[[],[1],	C. I	a water of dens	ity 1050 h	igm <sup>-3</sup> where it floats again. The
26.	A ship floating in clear wat	ter of density	y 1000 kgm m	oves to se			igm <sup>3</sup> where it floats again. The
	A. increases	B. dec	a total weight o	f 200 N a	ind a volume of	20 m <sup>3</sup> . As	ssuming the air density is 1.2 kgm <sup>2</sup> ,
27.	hot-air balloon moving u	ipwards has	a total trengin o				
		a balloon in f	VIS				
	the net upward force on the	e balloon in a	14 12		110	n	176
	the net upward force on the	B. 40	14 13	C. 2	240	D.	176
200	the net upward force on the	B. 40	14 13	C. 2	240	D.	176
	A. 36 A hyganiteter floats in waters above the oil level, Widensity 0.9 gm <sup>3</sup> ?	B. 40 er with 6.0 c	m of its stem at	C. 2 nove the 1 nabove th	water level, and ne water level w	D. in oil of a hen the h	176 iensity 0.8 gm² with + 0 cm of the grometer is placed in a liquid of
*	A. 36 A hyganiteter floats in waters above the oil level, Widensity 0.9 gm <sup>3</sup> ?	B. 40 er with 6.0 c	m of its stem at	C. 2 nove the 1 nabove th	water level, and ne water level w	D. in oil of a hen the h	176 iensity 0.8 gm² with + 0 cm of the grometer is placed in a liquid of
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34.	the net upward force on the A. 36  A hyperneter those in water above the oil level. We density 0.9 gm <sup>3</sup> ?  A. 2.57 cm  The mass of gas emitted first on the mass of g	B. 40  B. 40  Chat is the ler  B. 1.5  Com the rear of the learner of the rear	om of its stem at night of the stem of a toy rocket in the initial accels of moving with a ater is 1000 kgr on the initial accels on	C.  a above the same above the control of the contr	water level, and ne water level w 7.15 cm y 0.1 kgs <sup>-1</sup> . If the fithe rocket? 5.2 ms <sup>-2</sup> of 20 ms <sup>-1</sup> on to late the force of 20 N reached by a fa V=mg-U  If the velocity  300 N It an elevation of us <sup>2</sup> , neglect air is 83.25 sc 6°C. If a LAUT water? 1:3 5.a speed of 60 1s. The distance 7, 860.6 m	D. in oit of a hen the hy D. a vertica a the wall D. lling body D. of the car D. f 20km to resistance D. km/h in 2 traveled D.	176 iensity 0.8 gm² with 10 cm of the gerometer is placed in a liquid of  5.17 cm the gas relative to the rocket is  3.2 ms² I wall. The cross-sectional area of assuming the water is brought to rest  205 N we have  U+V=2mg is 20 ms², calculate the centripetal  250 N ward a point directly above its target.  ).  90.72 s lent wishes to bathe with water at  3:1 mins. It travels at this speed for 6 mins by the car is equal to  8001.6 m  write my Name, Matric

# LADOKE AKINTOLA UNIVERSITY OF TECHNOLOGY, OGBOMOSO DEPARTMENT OF PURE AND APPLIED PHYSICS B. TECH. (PHYSICS) DEGREE EXAMINATION – 2<sup>ND</sup> SEMESTER 2010/2011 SESSION PHY 102 - GENERAL PHYSICS II (4 UNIT)

	DATE: Tuesday 15th November, 2011			TIME	ALLOWED: 45 minutes	
	INSTRUCTION: Answer ALL questions by SHAD	ING the correct	option; otherwise you	place yourself	at a grave disadvantage.	
	Name:	Matric No:	Del	partment:		
	1. waves are of conc (A) Water (B) Rope	(()	String	(D)	Electromagnetic Which of the	
	2. Some equations in Physics are true under all following is/are true under all conditions?  i. Equation for force: F = ma		ation: F = GMm/r <sup>2</sup>	iii.	Wave motion: v = 1λ	
	(A) i (B) ii The unit of electric field intensity is	(C)	Nm <sup>-1</sup>	(D) (D)	Vm <sup>-1</sup>	
	A sodium surface is illuminated with a light What is the maximum K.E of the ejected ele	ctrons and the cu	t-off wavelength for s	odium?	is 2.40eV. .06×10 <sup>13</sup> , 0.52μm	
	(A) 2.76×10 <sup>-19</sup> J, 0.52µm (B) 5.96×10 <sup>-19</sup> J, Which of the following properties is not asso (A) Diffraction (B) Interfere	ence (C)	d waves? Polarization		Refraction	
	A transformer connected to a 220V a c nowe	(C) er supply has 400	copper turns in its primary c	oil and 100 tur	nickel ns in its secondary coil.	
	The secondary is connected to a 100Ω light (A) 0.075A (B) 0.050A  Which of the following equations gives the control of the following equations gives given	bulb. How much	1.375A	(D)	0.375A	
	of an alternating current? $I_o = \sqrt{2}I_{rms}  \text{(PA)}  I_o = \frac{I_o}{\sqrt{2}}$					
	The apparent increase or decrease in frequence					
	known as (A) beats (B) resonance An object is placed 30cm from a converging				interference ect. The power of the lens	
1	(A) 1.67 dioptres (B) 0.0167 di 1. Calculate the energy stored in a 20µF capacit (A) 3.2×10 <sup>-2</sup> J (B) 1.2×10 <sup>-2</sup> J	or if the p.d betw	2.67 dioptres veen the plates is 40 V 8.0×10 <sup>-4</sup> J	(D)	0.167 dioptres	
	<ol> <li>Determine the half-life of Thorium-234 if a sa</li> </ol>	ample of 5 grain (C)	s is reduced to 4 gran 22 days	ns in one week (D)	22 weeks	
1.	(A) 7656 dis/sec (B) 7656 min	is (C)	7656 dis/min	(D)	7656 secs	
	(A) $\frac{214}{82}$ Pb $\leftarrow \frac{214}{83}$ Bi $+ \frac{0}{1}$ e		$\begin{array}{c} 83 \\ 214 \\ 82 \\ \end{array} \longrightarrow \begin{array}{c} 83 \\ 214 \\ 83 \\ \end{array}$			
	(C) $\frac{214}{82}$ Pb $\rightarrow \frac{214}{83}$ Bi + $\frac{0}{11}$ c	(D)	$^{214}_{82}Pb \rightarrow ^{214}_{83}$			
1	The results of decay measurements on a samp Decay measurements	ple are shown be	low.			
	and a second to the second					

Corrected	4.0
counts/minute 3613 3976 3136 3037 3387	1510

	A plane progressive v	wave is represen	ted by the eq	uation y =	$= 4 \sin(2000 \pi t - 1)$	U.SX). Calculat	0.1 (1117	
	(A) O.I.Hz	(B) 0	.1 MHz	(C)	0.1 kHz	(D)	0.1 GHz	m
-	Two thin converging	lenses A and B,	each having	a focal le	ngth of 6 cm, are pl	aced 10 cm apar	t. If an object is placed 10 c	
	to the left of lens A, t	he final image is						
	30				30 cm to the	laft of lens B		
	(A) _ cm to t	he left of lens B		(B)	10 cm to the	icit of icis b		
					20			-1963
	30	and the officer I		(D)	$\frac{30}{10}$ cm to the	right of lens B		
	(C) — cm to th	he right of lens I		(0)	10	. Bill of tono		
	Which of the followin			ic wave?				
18.	sound waves		ater waves	(C)	x-rays	(D)	heart beats	
	The ability of a wave							
	(A) polarization		spersion	(9)	diffraction	(D)	reflection	
	Select the false statem		opero.o.	7'				
	(A) electric charg	es at rest produc	ces electrosta	tic field				
	(B) electric charg	es in motion pro	oduces magne	etic field				
	(C) the product of	f area of loop an	d the current	is called	dipole moment			
	(D) none of these							
	Wind, tides and the sur		nergy are					
II.			n-renewable	(C)	renewable	(D)	thermal in nature	
-	(A) nuclear in nat in a solar cell, the corre			(0)		(0)		
2	(A) chamian'	lectromagnetic	Community is	(B)	electrical cher	mical		
	(A) chemical → c	le - chamical		(D)	chemical → elec			
	(C) electromagnet What is the electrostati	tic chemical	two alastes					
			two electron		ou by a distance to	1111		
	(A) 2.88×10 <sup>-10</sup> N a			(B)	2.30×10 <sup>-10</sup> N repu	isive		
	(C) 1.44×10 <sup>-10</sup> N re	epulsive		(D)	5.45×10 <sup>-10</sup> N attra	ctive	the day and	
4.	A charge of +Q Coulon	nbs is placed on	the x-axis at	x = -1  m	and a charge of -2	Q Coulombs is	placed at x = +1 m.	
	At what position on the	x-axis will a te	st charge of +	rq Coulor	nbs experience zer	o net force?		
		(D)	1	(0)	$-\left(3+\sqrt{8}\right)$ m	(D)	$(3+\sqrt{8})$ m	
	(A) 0 m	(B) ±	3 111	(C)	-(3+vo)m	(D)	(3+48)111	
	The image of an object of	on the retina of	a human eve	is				
	(A) erect and magn	ified (B) inve	erted and virt	ual (C)	inverted and real	(D)	virtual and diminished	
	A diverging mirror is use	ed as a driving	mirror because	se it				
100	(A) produces a real				(B) has only	one focus		
	(C) reflects more th				(O) bas a wi		· Control of the cont	
	A voltmeter of resistance	e 1 kΩ is conne	eted across a	resistor ;	and the combinatio	in is connected i	n series with an ammeter.	
	(A) 0.4 Ω	(B) 4Ω		(C)	0.4 kΩ		4 kΩ .	1
	Ohm's law relates the cu	urrent density J	with field in	tensity E	45			
	(A) $\vec{J} = \sigma^2 \vec{E}$	(B) $J$ :	= =	(C)	$J = \frac{L}{L}$	(D)	$\vec{J} = \sigma \vec{F}$	
			0		σ			
	An AC generator consis	ts of 10 turns of	wire of area	A = 0.08	m2 with a total re-	sistance of 16.0	Ω. The loop rotates in a	
	magnetic field of 0.600	Tat a constant	frequency of	50.0 Hz.	What is the maxim	um induced cu	rent?	
	(A) 9.4 mA		цА	(C)	94 A	(D)	9.4 A	
	A transformer connected	d to a 120 V AC	nower line	has 200 to	irns in its primary	winding and 50	J.+ A	
	winding. The secondary	is connected to	a 100 O Hal	of hulls Li	ow much current !	winding and 50	turns in its secondar/	
	(A) 75 kA	(B) 75	A TOO ME HE	(C)	ow much current i	s drawn from th	e 120 V power line?	
		(B) (D)	,	(C)	75 mA	(D)	7.5 m A	
	emitted light is	sed on a Lia-As	sel, semicouq	nctor p-n	junction whose en	ergy gap is 2.4	eV. The wavelength of the	
	CHHINCH HERE IS ALMANDED							
	(A) 517 nm	(B) 560	um	(C)	226 nm	(D)	258 nm	
	res maximum waveleng	in of the light t	hat will excit	te un elec	tron in the valence	band of diamor	nd to the conduction band	
	me ener Pl. Pab 12 C	10 CA 12 *******					The state of the s	
	(A) 188 nm	(B) 376	nm	(C)	226 nm	(D)	230 nm	
	A pure semiconductor is	called				(0)	250 11111	
	(A) extrinsic	(R) hole	mobility	(C)	electron mobility	(D)	none of the	
	In an extrinsic semicond	uctor, the holes	and electron	s concen	tration are	(D)	none of the options	
		(15) pour	95	100	mark and a second	100		
	If the progion of a luncti	ion diade is con	nected to the	nagativ	not equal	(D)	reutral .	
	it is called	2000	to the	negative	rerminal of a batte	ery and n region	reutral - to the positive terminal,	
	A) forward blas	(B) exponent						
		en, salvanem			potential barrier	(D)	reverse bias .	
	eat this examination re-	dot will be as to	etad and	we				
/ se 61	y and Sign in the special	ript will be reje	eted and nu	illified if	I fail to write my	Name, Matric	Number and Departmen	+
/ se 61	eat this examination ser Y and Sign in the space	ript will be reje provided.	cted and nu	illified if	I fail to write my	Name, Mat ic	Number and Departmen	it.
ree () (181,	vat this examination ser Y and Sign in the space Signature & Oute:		ected and nu	illified if	I fail to write my	Name, Matric	Number and Departmen	it.

## LADOKE AKINTOLA UNIVERSITY OF TECHNOLOGY, OGBOMOSO DEPARTMENT OF PURE AND APPLIED PHYSICS 2009/2010 PHY 102 RAIN SEMESTER EXAMINATION

INSTRUCTION: Answer ALL	questions by SHA	DING the correct o	ption. TIM	E: 45 minutes
Matrie No:	D	partment:		
<ol> <li>A transverse wave is transportin         <ul> <li>(A) North to South only</li> <li>(B) both N</li> </ul> </li> <li>A lamp is suspended from a high         <ul> <li>(A) 6.95 seconds</li> <li>(B)</li> </ul> </li> <li>If the peak of a wave measures 3         <ul> <li>(A) 1.50 m</li> <li>(B)</li> </ul> </li> <li>A 100 level LAUTECH student completed in 36 seconds. What is (A) 200 Hz</li> <li>(B)</li> <li>The equation of a wave is y = 0.4 Find the velocity of the wave.</li> <li>(A) 0.4 cm/s</li> <li>(B)</li> </ol>	Mechanical genergy from East Northward and Southward and Southward and Southward ceiling with a cord 6.95 minutes 100 cm above the st 3.00 cm found out from a sit is the period of oscil 200 seconds $4\sin\left[\pi\left(0.5x-200\right)\right]$	(C) Longitudinal to West. The particle ward (C) East to West 12 ft long. Find its process of the control of the particle ward (C) 3.85 second ill water mark in the from the pendulum expertlation of the pendulum (C) 2 Hz (C) 3.00 m (C) 2 Hz (C) 4), where x and y are	(D) To soft the medium we only (D) both East eriod of oscillation (D) harbor, the amplitude (D) iment that 18 oscillan?	ill move
-7. Consider a simple harmonic moti	on, say as describe			of the mass will
be minimum when the:  (A) displacement of the mass is n  (C) P.E. is minimum  8. Which of the following is NOT th  (A) Erect image (B)  9. A magnifying glass of focal length of the glass close to the eye, determine  (A) 4.84 cm, 5.2  (B) 2  10. A 70° prism is made of glass whos minimum deviation occur?	naximum  e property of the in Virtual image  5.0cm is used to view the best position of	(C) K.E. is maximage formed by a con (C) Real image  v an object by a persor  the object and the line (C) 840 cm 52	cave lens? (D) [ I whose near point ar magnification pr	Diminished image is 25cm. If he holds oduced by the lens.
(A) 35° 11. The unit of illumination is (B)	59"	(C) 48°	(D)	45°
12. Two positive point charges of 12 a	lux and 8 µC respective	(C) candela per mete ely are 10 cm apart. F	er square (D) Find the work done	candela in bringing them
4 cm closer so they are 6 cm apart	. (Assume $\frac{1}{4\pi\varepsilon_a}$ =	$9 \times 10^9  mF^{-1}$ ).		
(A) 8.5.1 (B)  13. If any surface of conductors appea (A) 60° (B)  14. A potential difference of 3.6V is n field intensity between the plates.	5.8 J ( r in an electric field 90° ( naintained between	two plates which are	(D) lways be drawn to (D) 2 30cm apart. Ca.c	3.5 J meet them at 0° ulate the electric
(A) 1.8 Vm <sup>-1</sup> (B) (S) A lamp bulb is rated 60 W for a 24	12.0 Vm <sup>-1</sup> (0 V supply, what i			4.0 Vm <sup>-1</sup> , 960.00 Ω
6. The unit of magnetic induction is (A) Farad (B)	Tesla (	C) Henry	(D)	Ampere Ampere

17. Two 240 Ω light bulbs	are connec	ted in series wil	th a 120	V power source. The c	(D)	25 000 A
(A) 0.025 A	(B)	0.250 A	(C)	2.500 A	(0)	oppose the field in
TE 10 TE Caliannand a stac are it	nointain an	at a nd of ikV	the Work	none in taking a crime	C OI GOOD	Services tree treated to
TAN DOI			COLUMN TO SERVICE STATE OF THE PARTY OF THE			
19. A 240V A.C. supply is	supplied to	operate electric	c kettle t	hat has a resistance of	30 Ohms.	Calculate the
maximum instantaneous	s current pa	assing through t	he electr	ic kellle.		
(A) 800 A	(B)	1131A	(C)	0.80 A .	(D)	1.13 A .
20. Calculate the inductance	e of a sole	noid containing	250 turi	ns if the length of the s	olenoid is	20cm and
its cross-sectional area	is 1 0×10-4	m <sup>2</sup>	250 1011			
(A) 0.75 mH	(D)	0.57 -11	(C)	0.1 mH	(D)	0.157 mH
(A) 0.75 mm	(B)	0.57 mm	(C)	boolth physics are valo	amma rav	s alpha particles
21. The 4 main types of rad			with in	nearm physics are Arg	difficulty	o, copia particies,
neutrons and	(7)		(0)	Late moutining	(D)	hydronen
(A) laser radiation	(B)	sound waves	()	beta particles	a also avit	s in the nucleus?
22. It is known that a neutro	on exists ir	a light atomic	nucleus,	which of the following	g also exit	s in the nucleus?
(A) an electron	(B)	an x-ray	9	a proton	(D)	an atom
23. If a sample of a radioad	ctive substa	ance weighed 10	0 N 20 d	ays ago, what would b	e its mass	now?
(Take $t_{1/2} = 10$ days, $g = (A)$ 2.00 kg	10m/s <sup>2</sup> )					
(A) 2.00 kg	(B)	2.00 g	(C)	0.25 kg	(D)	0.25g
Calculate the binding er	nergy of 20	Ne if its atomic	c mass is	19 9924 a.m.u.		
					021 14-14	
(Mass of proton = 1.007						
(A) 160.6 a.m.u.	(B)	160.6 J	(C)	160.6 meV	(1)	160.6 MeV
25. Find the activity of a sar	mple at 4:1	8pm when it; a	ctivity w	vas 103, disintegrations,	min at 10	:18am ( $\lambda$ =0.2/day)
(A) 951 dis/sec						
26, 1 g of the radioactive rad						
(A) 1942 years	(B)	2802 years	(C)	1942 year-1	(D)	2802 vaar-1
		7	(-)	1012 1011	(0)	2002 year
Thick of the following is	a pair of i	sotones?				
of the following is	a pair of i	sotopes?				
(A) 34, 35	(B)	sotopes?	(C)	13C 14N .	(D)	14C, 14N
(A) 33 Ar, 35 C 28. An atom is excited to an e	(B)	sotopes?  SCI, 37CI  Fi from its g.o.	(C)	13 C, 14 N	(D)	14C, 14N
(A) 33 Ar, 35 C 28. An atom is excited to an e	(B)	sotopes?  SCI, 37CI  Fi from its g.o.	(C)	13 C, 14 N	vavelength	14 C, 14 N of the radiation is
(A) 33 Ar, 35 C 28. An atom is excited to an e	(B)	sotopes?  SCI, 37CI  Fi from its g.o.	(C)	13 C, 14 N	vavelength	of the radiation is
(A) $\frac{33}{11}Ar$ , $\frac{35}{16}S$ 28. As atom is excited to an expectation $\frac{E_1 - E_0}{hc}$	(B)	sotopes? ${}_{2}^{15}CI, {}_{17}^{37}CI$ $E_{1}$ from its g of $\frac{hc}{E_{1}-E_{0}}$	(C) and state (C)	$E_0 - E_1$ $E_0 - E_1$	ravelength (D)	of the radiation is  he
(A) $\frac{33}{16}Ar$ , $\frac{35}{16}S$ 28. An atom is excited to an expectation $\frac{E_1 - E_0}{hc}$ 29. Light of wavelength 450	(B) 3 nergy level	sotopes? ${}_{2}^{15}CI, {}_{17}^{37}CI$ $E_{1}$ from its g. of $hc$ $E_{1} - E_{0}$ the on to the sur	(C) and state (C)	$E_0 - E_1$ $E_0 - E_1$	ravelength (D)	of the radiation is  he
(A) $\frac{33}{16}A$ , $\frac{35}{16}S$ 28. As atom is excited to an experimental $\frac{E_1 - E_0}{hc}$ 29. Light of wavelength 450 energy of the emitted elemental $\frac{E_1 - E_0}{hc}$	(B)  nergy level  (B)  nm is sho	sotopes? ${}^{15}_{\circ}\text{CI}, {}^{37}_{17}\text{CI}$ ${}^{16}_{\circ}\text{CI}, {}^{17}_{17}\text{CI}$ ${}^{16}_{\circ}\text{E}_{1} - E_{0}$ The on to the sur	(C) (C) face of a	$E_0$	(D)	of the radiation is $hC$ $E_{u} - E_{l}$ J. The maximum
28. An atom is excited to an excited $\frac{E_4 - E_0}{hc}$ 29. Light of wavelength 450 energy of the emitted electric (A) 1.2	(B)  Onm is shoectrons in 1  (B)	sotopes? ${}_{2}^{15}CI, {}_{17}^{37}CI$ ${}_{17}^{15}CI, {}_{17}^{17}CI$ ${}_{17}^{15}CI, {}_{17}^{17}CI$ ${}_{18}^{15}CI, {}_{18}^{17}CI$ ${}_{19}^{15}CI, {}_{19}^{17}CI$ ${}_{19}^{15}CI, {}_{19}^{17}CI$ ${}_{19}^{15}CI, {}_{19}^{17}CI$ ${}_{19}^{17}CI$ ${}_$	(C) face of a	$E_0$ $E_1$ $E_0$ $E_0$ . The way $E_0$ $E_1$ $E_0$ $E_1$ $E_1$ $E_2$ $E_1$ $E_2$ $E_2$ $E_2$ $E_1$ $E_2$ $E_2$ $E_2$ $E_1$ $E_2$ $E_2$ $E_2$ $E_2$ $E_2$ $E_2$ $E_2$ $E_1$ $E_2$ $E_2$ $E_2$ $E_2$ $E_2$ $E_1$ $E_2$ $E_2$ $E_2$ $E_2$ $E_2$ $E_2$ $E_2$ $E_1$ $E_2$ $E$	on 3x10 <sup>-19</sup>	of the radiation is $\frac{hc}{E_0 - E_1}$ J. The maximum
28. As atom is excited to an experience of the following is $\frac{33}{16}A$ , $\frac{35}{16}S$ 28. As atom is excited to an experience $\frac{E_1 - E_0}{hc}$ 29. Light of wavelength 450 energy of the emitted electric (A) 1.2  30. A sodium surface is illumination.	(B) Onm is shoectrons in 1 (B)	sotopes? ${}_{2}^{15}CI, {}_{17}^{37}CI$ ${}_{12}^{15}CI, {}_{17}^{17}CI$ ${}_{12}^{15}CI, {}_{17}^{17}CI$ ${}_{12}^{15}CI, {}_{17}^{17}CI$ ${}_{12}^{15}CI, {}_{17}^{17}CI$ ${}_{15}^{15}CI, {}_{17}^{17}CI$ ${}_{15}^{15}CI, {}_{17}^{17}CI$ ${}_{15}^{15}CI, {}_{17}^{17}CI$ ${}_{15}^{15}CI, {}_{17}^{17}CI$ ${}_{15}^{15}CI, {}_{17}^{17}CI$ ${}_{15}^{15}CI, {}_{17}^{17}CI$ ${}_{17}^{17}CI$ ${}_{17}$	(C) face of a	energy level $E_0$ . The way $E_0 - E_1$ hic a metal of work function $E_0 = E_1$	(D) on 3x10 <sup>-19</sup> (D)	of the radiation is $\frac{hc}{E_0 + E_1}$ J. The maximum $3.2$
28. As atom is excited to an experience of the following is $A$ :  (A) $\frac{E_1 - E_0}{hc}$ 29. Light of wavelength 450 energy of the emitted elements	(B) Onm is sho ectrons in 1 (B) minated w	sotopes? ${}^{15}_{2}\text{Cl}, {}^{37}_{17}\text{Cl}$ ${}^{15}_{2}\text{Cl}, {}^{17}_{17}\text{Cl}$ ${}^{15}_{2}\text{Cl}, {}^{17}_{17}\text{Cl}$ ${}^{15}_{2}\text{Cl}, {}^{17}_{17}\text{Cl}$ ${}^{15}_{2}\text{Cl}, {}^{17}_{27}\text{Cl}$ ${}^{15}_{27}\text{Cl}, {}^{17}_{27}\text{Cl}$ ${}^{15}_{27}\text{Cl}, {}^{17}_{27}\text{Cl}$ ${}^{15}_{27}\text{Cl}, {}^{17}_{27}\text{Cl}$ ${}^{17}_{27}\text{Cl}, {}^{17}_{27}\text{Cl}$ ${}^{17}_{27}$	(C) face of a	energy level $E_0$ . The war $E_0 - E_1$ hc a metal of work function $E_0 = E_1$ and $E_0 = E_1$ and $E_0 = E_1$ he work function $E_0 = E_1$	(D) (D) (D) unction fo	of the radiation is $\frac{hc}{E_0 + E_1}$ J. The maximum $3.2$ r sodium is 2.40eV
28. As atom is excited to an experience of the following is $A$ :  (A) $\frac{E_1 - E_0}{hc}$ 29. Light of wavelength 450 energy of the emitted elements	(B) Onm is sho ectrons in 1 (B) minated w	sotopes? ${}^{15}_{2}\text{Cl}, {}^{37}_{17}\text{Cl}$ ${}^{15}_{2}\text{Cl}, {}^{17}_{17}\text{Cl}$ ${}^{15}_{2}\text{Cl}, {}^{17}_{17}\text{Cl}$ ${}^{15}_{2}\text{Cl}, {}^{17}_{17}\text{Cl}$ ${}^{15}_{2}\text{Cl}, {}^{17}_{27}\text{Cl}$ ${}^{15}_{27}\text{Cl}, {}^{17}_{27}\text{Cl}$ ${}^{15}_{27}\text{Cl}, {}^{17}_{27}\text{Cl}$ ${}^{15}_{27}\text{Cl}, {}^{17}_{27}\text{Cl}$ ${}^{17}_{27}\text{Cl}, {}^{17}_{27}\text{Cl}$ ${}^{17}_{27}$	(C) face of a	energy level $E_0$ . The war $E_0 - E_1$ hc a metal of work function $E_0 = E_1$ and $E_0 = E_1$ and $E_0 = E_1$ he work function $E_0 = E_1$	(D) (D) (D) unction fo	of the radiation is $\frac{hc}{E_0 + E_1}$ J. The maximum $3.2$ r sodium is 2.40eV
28. As atom is excited to an experiment of the following is  28. As atom is excited to an experiment of the energy of the emitted electric (A) 1.2  30. A sodium surface is illumination what is the maximum K  (A) 2.76x10 <sup>-19</sup> J, 0.52um	(B) Onm is shoectrons in 1 (B) minated w L.E. of the case (B) 5 96	sotopes? ${}^{15}_{\circ}\text{CI}, {}^{37}_{17}\text{CI}$ ${}^{15}_{\circ}\text{CI}, {}^{37}_{17}\text{CI}$ ${}^{16}_{\circ}\text{L}, {}^{17}_{\circ}\text{CI}$ ${}^{16}_{\circ}\text{L}, {}^{17}_{\circ}\text{L}, {}$	(C)  face of a  (C)  velength is and the	energy level $E_0$ . The ware a metal of work function 2.4 in 0.30 $\mu$ m. The work function $E_0 = E_1$	(D)	of the radiation is $hc$ $E_0 - E_1$ J. The maximum $3.2$ It sodium is 2.40eV ?
28. As atom is excited to an experiment of the following is $(A)$ $\frac{33}{11}AV$ , $\frac{32}{16}S$ 28. As atom is excited to an experiment $(A)$ $\frac{E_1 - E_0}{hc}$ 29. Light of wavelength 450 energy of the emitted element $(A)$ 1.2  30. A sodium surface is illumwhat is the maximum K  (A) 2.76x10 <sup>-19</sup> J, 0.52µm  31. The concentration of hole	(B) one is shown in the certain in t	sotopes? ${}_{2}^{15}CI, {}_{17}^{37}CI$ ${}_{2}^{15}CI, {}_{17}^{37}CI$ ${}_{3}^{17}CI$ ${}_{4}^{17}CI$ ${}_{5}^{17}CI$ ${}_{19}^{17}CI$ ${}_{19}^{19}CI$ ${}$	(C)  face of a  (C)  velength is and the in (C)	energy level $E_0$ . The way $E_0 - E_1$ he a metal of work function $E_0 - E_1$ and $E_0 - E_1$ he a metal of work function $E_0 - E_1$ he cut-off wavelength for $E_0 - E_1$ he cut-off wavelength for $E_0 - E_1$ $E_0 - E_$	(D)	ef the radiation is $hc$ $E_0 - E_1$ J. The maximum  3.2  r sodium is 2.40eV ? $06x10^{-19}$ J, $0.52\mu$ m
28. As atom is excited to an excited excited to an excited excited	(B) one gy level (B) one is sho ectrons in 1 (B) minated w a.E. of the case of	sotopes? ${}_{2}^{15}CI, {}_{17}^{37}CI$ ${}_{2}^{15}CI, {}_{17}^{37}CI$ ${}_{3}^{17}CI$ ${}_{4}^{17}CI$ ${}_{5}^{17}CI$ ${}_{18}^{17}CI$ ${}_{19}^{19}J$ ${}$	(C) face of a (C) velength s and the (C) insic gen	energy level $E_0$ . The way $E_0 - E_1$ hc a metal of work function $E_0 - E_1$ hc a	(D)	ef the radiation is $hc$ $E_0 - E_1$ J. The maximum  3.2  r sodium is 2.40eV ? $06 \times 10^{-19} \text{J}$ , 0.52 $\mu$ m cm <sup>-3</sup> . If the holes
28. As atom is excited to an excited excited to an excited excited an excited excited to an excited excited an excited excited an excited excited an excited	(B)  Onm is sho ectrons in 1 (B) minated w (E. of the case of the	sotopes? ${}^{15}_{2}$ CI, ${}^{37}_{17}$ CI  1E <sub>1</sub> from its g. of ${}^{16}_{2}$ CI, ${}^{17}_{17}$ CI  1E <sub>1</sub> from its g. of ${}^{16}_{2}$ CI, ${}^{18}_{2}$ CI, ${}$	(C)  face of a  (C)  velength and the control of th	energy level $E_0$ . The way $E_0 - E_1$ have a metal of work function $E_0 - E_1$ have $E_$	(D) on 3x10 <sup>-19</sup> (D) unction for sodium (D) 1. 5.40x10 <sup>13</sup> pecimen, t	ef the radiation is $hc$ $E_0 + E_1$ J. The maximum  3.2  r sodium is 2.40eV ? $06 \times 10^{-19} \text{J}$ , $0.52 \mu \text{m}$ cm <sup>-3</sup> . If the holes he conductivity is
28. As atom is excited to an excited the excited to an excited the excited the excited that is the maximum K (A) $2.76 \times 10^{-19} \text{J}$ , $0.52 \mu \text{m}$ 31. The concentration of hole and electron mobilities a (A) $2.650  (\Omega \text{m})^{-1}$ 32. A light emitting diode is	(B) Onm is sho ectrons in 1 (B) minated w L.E. of the of 1 (B) 5.96 e-electron are respectif (B) constructe	sotopes?  Solve In S	(C)  face of a  (C)  velength and the control of th	energy level $E_0$ . The way $E_0 - E_1$ have a metal of work function $E_0 - E_1$ have $E_$	(D) on 3x10 <sup>-19</sup> (D) unction for sodium (D) 1. 5.40x10 <sup>13</sup> pecimen, t	ef the radiation is $hc$ $E_0 + E_1$ J. The maximum  3.2  r sodium is 2.40eV ? $06 \times 10^{-19} \text{J}$ , $0.52 \mu \text{m}$ cm <sup>-3</sup> . If the holes he conductivity is
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28. As atom is excited to an excited the excited to an excited the excited that is the maximum K (A) $2.76 \times 10^{-19} \text{J}$ , $0.52 \mu \text{m}$ 31. The concentration of hole and electron mobilities at (A) $2.650  (\Omega \text{m})^{-1}$ 32. A light emitting diode is $2.95  \text{eV}$ . The wavelength (A) $421  \text{nm}$	(B) Onm is sho ectrons in 1 (B) minated w i.E. of the of the celectron are respective (B) constructed of the emission of the emission (B)	sotopes?  SCI, $^{37}$ CI  E <sub>1</sub> from its g or he  he $E_1 - E_0$ one on to the sur $10^{-19}$ J is 2.8  ith a light of was ejected electron $\times 10^{-19}$ J, $0.5^{\circ}$ µm pairs in the intrively $1700 \text{ cm}^2/0.026 (\Omega \text{m})^{-1}$ d based on a Guitted light is  560 nm	(C) face of a (C) avelength is and the (C) insic gen V/s and (C) a-As-P s	energy level $E_0$ . The way $E_0 - E_1$ have a metal of work function $E_0 - E_1$ and $E_0 - E_1$ have a metal of work function $E_0 - E_1$ have $E_0 - E_1$ h	(D)	of the radiation is $hc$ $E_0 + E_1$ J. The maximum  3.2  r sodium is 2.40eV ? $0.06 \times 10^{-19} \text{J}$ , 0.52 $\mu$ m cm <sup>-3</sup> . If the holes the conductivity is 4.030 $(\Omega \text{m})^{-1}$ se energy gap is
28. An atom is excited to an excited the excited to an excited the excited to an excited the ex	(B) Onm is sho ectrons in 1 (B) Minergy level (B) Onm is sho ectrons in 1 (B) Minated w M.E. of the (B) Ce-electron are respectif (B) constructe of the em (B)	sotopes?  Solve In S	(C)  face of a  (C)  velength and the control of th	energy level $E_0$ . The way $E_0 - E_1$ have a metal of work function $E_0 - E_1$ have $E_$	(D)	ef the radiation is $hc$ $E_0 + E_1$ J. The maximum  3.2  r sodium is 2.40eV ? $06 \times 10^{-19} \text{J}$ , $0.52 \mu \text{m}$ cm <sup>-3</sup> . If the holes he conductivity is
28. An atom is excited to an excited the excited to an excited the excited to an excited the ex	(B) Onm is sho ectrons in 1 (B) Minergy level (B) Onm is sho ectrons in 1 (B) Minated w M.E. of the (B) Ce-electron are respectif (B) constructe of the em (B)	sotopes?  Solve In S	(C) face of a (C) avelength is and the (C) insic gen V/s and (C) a-As-P s	energy level $E_0$ . The way $E_0 - E_1$ have a metal of work function $E_0 - E_1$ and $E_0 - E_1$ have $E_0$	(D) on 3x10 <sup>-19</sup> (D) unction for sodium (D) 1. 5.40x10 <sup>13</sup> pecimen, t (D) ction who	of the radiation is $hc$ $E_u + E_1$ J. The maximum  3.2  r sodium is 2.40eV ? $0.06 \times 10^{-19} \text{J}$ , 0.52 µm cm <sup>-3</sup> . If the holes he conductivity is 4.030 $(\Omega \text{m})^{-1}$ se energy gap is 260 nm
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28. An atom is excited to an excited the excited to an excited the excited to an excited the ex	(B) Onm is sho ectrons in 1 (B) Minergy level (B) Onm is sho ectrons in 1 (B) Minergy level (B) Constructed in (B) 5.96 e-electron are respectif (B) constructed in of the em (B)	sotopes?  Solve In S	(C) face of a (C) welengths and the (C) insic ger V/s and (C) a-As-P s (C)	energy level $E_0$ . The way $E_0 - E_1$ hc a metal of work function $E_0 - E_1$ hc a metal of work function $E_0 - E_1$ hc a metal of work function $E_0 - E_1$ hc a metal of work function $E_0 - E_1$ hc a metal of work function $E_0 - E_1$ hc a metal of work function $E_0 - E_1$ hc and $E_0 - E_1$	(D)  on 3x10 <sup>-19</sup> (D)  unction for sodium  (D) 1. 5.40x10 <sup>13</sup> pecimen, 1  (D)  ction whose	of the radiation is $hc$ $E_0 = E_1$ J. The maximum  3.2  r sodium is 2.40eV ? $06x10^{-19}$ J, 0.52µm cm <sup>-3</sup> . If the holes he conductivity is 4.030 $(\Omega m)^{-1}$ se energy gap is  260 nm oncentrations
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28. As atom is excited to an experimental experimental experiments and the second experiments of the experi	(B)  One is sho ectrons in 1 (B)  minated w  E. of the can (B) 5.96 e-electron are respectiful (B)  constructed to of the em  (B)  respective to the em  (B)	sotopes? ${}^{5}_{2}$ Cl, ${}^{37}_{17}$ Cl ${}^{12}_{2}$ Cl, ${}^{17}_{2}$ Cl ${}^{12}_{2}$ Cl, ${}^{17}_{2}$ Cl ${}^{12}_{2}$ Cl, ${}^{17}_{2}$ Cl ${}^{12}_{2}$ Cl	(C)  face of a  (C)  velength is and the in (C) insic gen V/s and (C) a-As-P s  (C)	energy level E <sub>0</sub> . The weak function is a metal of work function is cut-off wavelength for 0.56x10 <sup>-19</sup> J, 0.05μm rmanium specimen is common is common in the specimen in the spe	(D) and the following the foll	of the radiation is $hc$ $E_u + b_1$ J. The maximum  3.2  r sodium is 2.40eV ? $0.06 \times 10^{-19} \text{J}$ , 0.52 $\mu$ m cm <sup>-3</sup> . If the holes he conductivity is  4.030 $(\Omega \text{m})^{-1}$ se energy gap is  260 nm  oncentrations auctor
(A) $\frac{13}{14}$ $\frac{16}{16}$ 28. As atom is excited to an excited the excited excited the excited excited the excited	(B) Onm is showed the certons in large respection (B) Constructed to fine concentration (C) Constructed to fine (C) Constructed to fine concentration (C) Constructed to fine conc	sotopes?  SCI, $^{37}$ CI  E <sub>1</sub> from its g. or $^{12}$ CI, $^{12}$ CI  E <sub>1</sub> from its g. or $^{12}$ CI  E <sub>1</sub> from its g. or $^{12}$ CI  E <sub>1</sub> - E <sub>0</sub> one on to the sur $^{10^{-19}}$ J is 2.8  ith a light of was ejected electron $\times 10^{-19}$ J, $0.5^{\circ}$ µm pairs in the intrively $1700 \text{ cm}^2$ / $0.026 (\Omega \text{m})^{-1}$ d based on a Gritted light is  560 nm  trations be at equilibrium oles and electron equal application of sequal	(C)  face of a  (C)  velength is and the in (C) insic gen V/s and (C) a-As-P s  (C)	energy level E <sub>0</sub> . The weak function is a metal of work function is cut-off wavelength for 0.56x10 <sup>-19</sup> J, 0.05μm rmanium specimen is common is common in the specimen in the spe	(D)  on 3x10 <sup>-19</sup> (D)  unction for sodium  (D) 1. 5.40x10 <sup>13</sup> pecimen, 1  (D)  ction whose	of the radiation is $hc$ $E_0 = E_1$ J. The maximum  3.2  r sodium is 2.40eV ? $06x10^{-19}$ J, 0.52µm cm <sup>-3</sup> . If the holes he conductivity is 4.030 $(\Omega m)^{-1}$ se energy gap is  260 nm oncentrations
28. As atom is excited to an experiment of the following is $(A)$ $\frac{E_1}{hc}$ $E_0$ $\frac{E_1}{hc}$ $E_0$ $\frac{E_1}{hc}$ $E_0$ $\frac{E_1}{hc}$ 29. Light of wavelength 450 energy of the emitted electron (A) 1.2 30. A sodium surface is illuminated with the maximum K $(A)$ 2.76x10 <sup>-19</sup> J, 0.52µm 31. The concentration of hole and electron mobilities at $(A)$ 2.650 $(\Omega m)^{-1}$ 32. A light emitting diode is 2.95 eV. The wavelength $(A)$ 421 nm 33. Doping of semiconductor $(A)$ increases the carrier $(C)$ makes the semiconductor $(A)$ in an intrinsic semiconductor $(A)$	(B) Onm is showed the certons in large respection (B) Constructed to fine concentration (C) Constructed to fine (C) Constructed to fine concentration (C) Constructed to fine conc	sotopes? ${}^{5}_{2}$ Cl, ${}^{37}_{17}$ Cl ${}^{12}_{2}$ Cl, ${}^{17}_{2}$ Cl ${}^{12}_{2}$ Cl, ${}^{17}_{2}$ Cl ${}^{12}_{2}$ Cl, ${}^{17}_{2}$ Cl ${}^{12}_{2}$ Cl	(C)  face of a  (C)  velength is and the in (C) insic gen V/s and (C) a-As-P s  (C)	energy level E <sub>0</sub> . The weak function is a metal of work function is cut-off wavelength for 0.56x10 <sup>-19</sup> J, 0.05μm rmanium specimen is common is common in the specimen in the spe	(D) and the following the foll	of the radiation is $hc$ $E_u + b_1$ J. The maximum  3.2  r sodium is 2.40eV ? $0.06 \times 10^{-19} \text{J}$ , 0.52 $\mu$ m cm <sup>-3</sup> . If the holes he conductivity is  4.030 $(\Omega \text{m})^{-1}$ se energy gap is  260 nm  oncentrations auctor

THIS MATERIAL IS FREE OF CHARGE (NOT FOR SALE)

PICK INTEREST in what you're being taught in P.D.S.

### 30 PRACTICE QUESTIONS (NOT TO BE SUBMITTED) (THESE 30 QUESTIONS ARE TO TEST WHETHER YOU UNDERSTAND THE 48 SOLUTIONS ABOVE)

A nurse counts 78 heartbeats in 1 minute. What are the period and frequency of the heart's oscillations?  A nurse counts 78 heartbeats in 1 minute. What are the period and frequency of the heart's oscillations?  The time required for 1 complete back and forth vibration (wave cycle) is called the	
of the back and forth motion.  11. A hypnotist swings a watch on a chain so as to make a pendulum that is 20cm long. Find the period of the watch pendulum.  12. A spider swings on a silk thread at a period of 0.60 sec. Determine the length of the silk thread.  13. A wrecking ball swing from a 10.0 m cable. Determine the period of the swing.	
14. A Physics teacher jumps on a bathroom scale whose spring constant is 222 N/m. The jump causes a needle to vibrate back and forth. If the Physics teacher's mass is 48kg, find the period of vibration.	
15. A progressive wave is represented by the equation $y = 3\sin(66t - x)$ . Find the frequency (PHY001 2006/07 NO.21 11-S1	
16. What happens to the FREQUENCY if the length of a simple pendulum is INCREASED by a factor of NINE?  (A) it occreases by a factor of 3 (B) it increases by a factor of 3 (C) it remains constant (i.e. does not change)  (D) it increases by a factor of 9 (E) it decreases by a factor of 9	
WAVE TYPES	
17. Electromagnetic waves require no in which to propagate (transfer energy).	
<ul> <li>18. Mechanical waves require a medium in which to propagate (e.g is a mechanical wave).</li> <li>19. Does the medium in which a wave travels move along with the wave itself? Defend your answer.</li> <li>20. (i) How do electromagnetic and mechanical waves differ? (ii) Why can light travel in a vacuum while sound cannot?</li> </ul>	
WAVE FORMS	
71 1-1-14 11 1	
23. Distinguish between a Transverse wave and a Longitudinal wave.	
WAVE SPEED	
24. (i) The speed of a Mechanical wave depends upon the type of through which the wave pulse propagates (ii) Sound travels faster in solids than in liquids and faster in liquids than in gases (sound won't travel at all in a (A) 6.005 s (B) 0.02 s (C) 0.05 s (D) 200 s (LAUTECH PDS 2009 ENTRANCE EXAM QUESTION 136) 25. The 2 <sup>rd</sup> harmonic of a string 1.5m long and fixed at both ends is 80Hz. Find the speed of the transverse wave(PHY001 2001 in the string. Determine also the frequency of its fundamental note, first overtone and second overtone.	)
28. (i) When does the moving mass have the maximum kinetic energy? (ii) When is the kinetic energy minimum (0.0 Joule)? (ii) When is the elastic potential energy at a maximum value? (ii) When is the elastic potential energy a minimum (0.0 Joule)? (iii) When is the elastic potential energy a minimum (0.0 Joule)?	
30. Consider a simple harmonic motion say of the character potential energy a minimum(0.0 Joule)?	
MAXIMUM when the:	
(A) displacement of the mass is MAXIMUM (B) velocity of the mass will	
P.E. is MINIMUM (D) P.E. is MINIMUM	
E-mail address: tibiodist	
"Il be very much interested in real-life situations you apply this chapter to. It's more than just passing exam.  BIODUN AMUDA	-
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### LADOKE AKINTOLA UNIVERSITY OF TECHNOLOGY OGBOMOSO. DEPARTMENT OF PURE AND APPLIED PHYSICS. PHY001 2006/2007 MID-PROGRAMME TEST FOR PDSP.

	LHIOOTZO			idad
Instructions:	Time allowed:	lhour	alphabets on the answer sh	
density o of the	wave such that c =	kg Ap, where k is a dime	ration due to gravity g, wavensionless constant. The co	elength λ, and rrect equation for
the speed of the	ocean wave is	*******		$\mathbf{D}.\ \mathbf{c} = \mathbf{k}\mathbf{g}^2\lambda^2\rho^2$
Alc=	$k\sqrt{g\lambda}$	B. $c = \sqrt{kg\lambda\rho}$	10,	D.C-Kg N P
O2. The vector p	product of A = 7i	-4j + 10k and $B = 2i - 7j -$	- 3k is equal to	-34j + 10k
			radii, then the gravitationa	I field at the moon
in Nkg due to th	he earth is about			D. 0.032.
4 60		R 0 16	C. 0.0028.	
Q4. Which of the	e following staten	nents is true when a bullet s	strikes a block and become	V.
A. The	nechanical energy	he bullet is converted into	is no interchange of energy potential energy of the blo	ck.
D TL-1	insting angrow of t	he bullet is converted into	thermal energy of the bloc	k and bullet.
D. The	of Vouna's modu	lus 2 x 10 <sup>10</sup> Nm <sup>-2</sup> undergoe	s an elastic strain of 0.06%	6. The energy per
Q5. A metal rou	ed in Jm <sup>-3</sup> is	143 2 % 19 1		
A 2600		B 3600	C. 7200.	D. 10800.
Of Calmilate the	radius of a canil	lary tube if water rises to a	height of 12.5cm within it	t; assuming the
angle of contact	between the water	and glass is zero; and suri	face tension for water is 0.	0727. (Take g =
Toms <sup>2</sup> )				
	m.	B. 1.10mm.	C. 0.11mm.	D. 0.01mm.
Q7. A constant v	rolume gas therm	ometer indicates a pressure	of 250mmHg at the ice po	ont and / somming
at the steam poin	t. What temperat	ure will be read on this their	rmometer when it indicate	s a pressure or
500mmHg?				D. 60°C.
A. 40°C		B. 45°C.	late the new pressure whe	n it heats up to
Q8. A tyre is pun	nped to a pressure	of John at 14 C. Calcu	late the new pressure wife	
A. 26.91	no change in volu	B. 30.61Nm <sup>-2</sup>	C. 32.71Nm <sup>-2</sup>	D. 34.95Nm <sup>-2</sup>
00 A system ahs	orbs 15001 of her	of energy from its surround	lings. If the surrounding p	erforms 2200J of
work on the syste	m, the change in	the internal energy of the s	system is	
A. 3700J		B. 2200J.	C. 1500J.	D. 700J.
			of a stationary wave of war	velength λ is
VIO. THE distance	bottoen a noue			
A. 2/8.		B. λ/4.	C. λ/2.	D. A
	nenon where the f		cillating body is equal to i	ts natural frequency
is called			,	
		B. interference.	C. oscillation.	D. diffraction.
			$_1 = -6\mu C$ and $q_2 = 2\mu C$ se	parated by a distance
of 20cm is equal	to (Ta	$ke = 8.9 \times 10^{-12} Fm^{-1}$		
A. 2.7N.		B. 3.7N.	C. 4.7N.	D. 5.7N.
		ment is NOT true?		
	field intensity is		B. Electric potential is a	vector quantity.
	of electric charg		D. Dielectric material is	
Q14. Which of th	e following symb	ools represent capacitor?		
A		B0000-	C.H-	D
Q15. The equival	lent resistance of	three resistors $2\Omega$ , $3\Omega$ , and	d 5Ω arranged in parallel	is equal to
A. 0.170		Β. 0.69Ω.	C. 0.97\Omega.	D. 1.0Ω.
Q16. The angle h	etween A = 2i -	-k and B=i-j+k is ed	qual to	
A. 90°.		B. 75°.	C. 62°.	D. 45°.
				THE REAL PROPERTY.