TENKASI DISTRI

Time Allowed: 3.00 Hrs.

PHYSICS

Maximum Marks: 70

			PART - A	C vi			
I.	Cho	ose the correct ar	iswer:		15×1=15		
	1)	A plane glass is place	ced over a various col	oured letters (violet, o	green, yellow, red).		
,		The letter which a	ppears to be raised	more is			
		a) red	b) yellow	c) violet	d) green		
	2)	The energy require	ed to charge a paralle	el plate condenser of	plate separation d		
		and plate area of c	ross section 'A' such	that the uniform ele	ctric field between		
		the plate is					
		a) $\in {}_{0}A^{2}Ed$	b) $\in {}_0E^2Ad$	c) 1/2c E ² /Ad	$d = E^2/\Lambda d$		
	3)	A wire to recistant	co 2 obms per metro	is boot to form a c	irela of radius 2m		
	٥,	A wire fo resistance 2 ohms per metre is bent to form a circle of radius 2m. The equivalent resistance between its two diametrically opposite points A					
		and B as shown in	the figure is	5 two diametrically	opposite points A		
		and b as shown in	the rigure is	—· ()			
				A () B			
		a) $\pi\Omega$	b) $\frac{\pi}{2}\Omega$	c) 2πΩ	d) $\frac{\pi}{4}\Omega$		
		d) 1622	2 2	C) 21132	$\frac{1}{4}$ $\frac{1}{4}$		
	4)	The magnitude of	magnetic field of a le	ong, straight wire ca	arrying a current of		
		2A at a distance of	of 1m from it is	·			
		a) 1×10 ⁻⁷ T	b) 2×10 ⁻⁷ T	c) 4×10^{-7} T	d) 3×10 ⁻⁷ T		
	5)		ant RLC circuit, the				
	, ,	The resonant free	quency w is 250 rac	d/s. If the value of	c is 4NF, then the		
		voltage across 'L'	is .		o is many anom and		
		a) 600V	b) 4000V	c) 1V	d) 400V		
	6)	unit of $(\lambda_0 \epsilon_0)^{-1/2}$ is	-		4) .55.		
	٠,	a) Pascal	b) Nm ⁻¹	c) ms ⁻¹	d) Kgm ⁻¹		
-	71	•	acted, which of the				
	/)						
	6/	-	b) Frequency	c) Velocity	d) Amplitude		
	0)		waves are	h) Longitudinal			
			dinal nor transverse		nal and tunnal case		
	0)	c) Transverse	voltage and gurn	a) Both longitudi	nal and transverse		
	9)		voltage and curr				
			+π/3)A. The power of b) 2.5 kw				
	10)	a) 1.25 kw		c) 5 kw	d) 500 w		
	10)		ot accelerate		d) a marticles		
		a) electrons	b) protons	c) deutrons	α) α-particles		
	11\	The current in thi	ic circuit ic	$\frac{1}{\pi}$ $\begin{cases} 15\Omega \\ 1 \end{cases}$	50 150		
	11)	The current in th	is circuit is	15V \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \			
		7) 11	b) 1A	c) 2A	4) 34		
	40)	a) 4A			d) 3A		
	12)				radius of a hollow		
					ulate the maximum		
,			ce created by this \				
		a) 1.6 million volt	•	c) 0.6 mV	d) 3.6 mV		
	13)				e its original length		
			ice of stretched wire	e			
		a) 90Ω	b) 70Ω	c) 50Ω	d) 30Ω		
	14)		netic length and ged		•		
		a) 0.633	b) 0.733	c) 0.833	d) 0.933		

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15) When the current changes from 2A to −2A in 0.05s, an emf of 8V is induced

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Common Quarterly Examination - September 2022



TENKASI DISTRICT Standard 12

Time Allowed: 3.00 Hrs.

PHYSICS

Maximum Marks: 70

PART - A

I.		ose the correct an			15×1=15		
	1)	A plane glass is place	ed over a various colo	ured letters (violet, gr	een, yellow, red).		
1		The letter which ap	pears to be raised r	nore is			
		a) red	b) yellow	c) violet	d) green		
	2)	The energy required	d to charge a paralle	l plate condenser of p	late separation d		
		and plate area of cr	oss section 'A' such t	that the uniform elec	tric field between		
		the plate is			2		
	2)	a) ∈ ₀ A-Ed	$b) \in {}_{0}E^{2}Ad$	c) $\frac{1}{2} \in {}_{0}E^{2}/Ad$	$d) \in {}_{0}E^{2}/Ad$		
	3)	A wire to resistance	e 2 ohms per metre	c) $\frac{1}{2} \in {}_{0}E^{2}/Ad$ is bent to form a cir	cle of radius 2m.		
		The equivalent res	istance between its	two diametrically of	pposite points A		
		and B as shown in	the figure is	-'			
			y for the	A () B			
r.;							
		a) $\pi\Omega$	b) $\frac{\pi}{2}\Omega$	c) 2πΩ	d) $\frac{\pi}{4}\Omega$		
	41	The magnitude of	-				
	 The magnitude of magnetic field of a long, straight wire carrying a curr 2A at a distance of 1m from it is 						
		a) 1×10 ⁻⁷ T		X 4 40=7 =	N 2 40-7 T		
	E)		D) ZXIU ' I	c) 4×10 ⁻⁷ T	a) 3×10 / 1		
	رد	The reconant fred	HERCY W is 250 rad	voltage across 1000 /s. If the value of c	resistor is 40V.		
		voltage across 'L' is	c	75. If the value of C	is 4NF, then the		
		a) 600V	b) 4000V	c) 1V	d) 400V		
	6)			C) 1V	u) 400 v		
	()	unit of $(\lambda_0 \varepsilon_0)^{-1/2}$ is a) Pascal	b) Nm-1	c) ms ⁻¹	d) Kgm ⁻¹		
٠.	7)	When light is refra	octed which of the f	ollowing does not ch			
		a) Wavelength		c) Velocity	d) Amplitude		
		Electromagnetic w		c) velocity	d) Amplitude		
	(, , ,		linal nor transverse	b) Longitudinal	e e e la		
		c) Transverse		d) Both longitudina	al and transverse		
	9)			ent are given by V	= 50t volt and		
				issipted in the circuit	will be		
		a) 1.25 kw	b) 2.5 kw	c) 5 kw	d) 500 w		
	10)	A cyclotorn can no	ot accelerate				
		a) electrons	b) protons	c) deutrons	a) α-particles		
	11	The current in this	s circuit is	$\frac{\perp}{2}$ $\begin{cases} 15\Omega \\ 15\Omega \end{cases}$	ນ≶15Ω		
	- 11	The current in this	s circuit is	15V			
		a) 4A	b) 1A	c) 2A	d) 3A		
	12) Dielectric strengt	h of air is 4×10^6 V	m ⁻¹ . Suppose the r	adius of a hollow		
				is $R = 0.4m$, calcula			
				ande Graff generator			
		a) 1.6 million volt		c) 0.6 mV	d) 3.6 mV		
	13			uniformly, to thrice	its original length		
			ce of stretched wire		4) 300		
	4.4	a) 90Ω	b) 70Ω	c) 50Ω	d) 30Ω		
	14) The ratio of magn	b) 0.733	c) 0.833	d) 0.933		
		a) 0.633	0,0.733	c) 0.033	4) 0.555		

15) When the current changes from 2A to -2A in 0.05s, an emf of 8V is induced TvI12P in a coil. The co-efficient of self-induction of the coil is ___ d) 0.1H c) 0.8H b) 0.4H a) 0.2H PART-II $6 \times 2 = 12$ II. Answer any six of the following. Question number 21 is compulsory. Define static potential. 17) What is Peltier effect? 18) Write the uses of mass spectrometer. 19) State Len's law. 20) Compute the speed of electromagnetic waves in a medium if the amplitudes of electric and magnetic fields in it are 3×10^4 NC⁻¹ and 2×10^{-4} T respectively. 21) An object is placed at a certain distances from a convex lens of focal length 20 cm. Find the object distance if the image obtained is magnitude 4 times. 22) State Malu's law. 23) Write the condition of Total internal reflection. 24) Why sky appears blue? PART-III $6 \times 3 = 18$ III. Answer any six of the following. Question number 27 is compulsory. 25) Write the application of capacitor. 26) When two resistors connected in series and parallel their equivalent resistances are 15Ω , $\frac{56}{15}\Omega$ respectively. Find the two resistors. 27) A wire of length ℓ carrying a current I along the y direction is kept in a magnetic field is given by $B = \frac{\beta}{\sqrt{3}}(\vec{i} + \vec{j} + \vec{k})T$. Calculate the magnitude of SIVAKUMAR M Sti Ram Matric H38 Lorentz force acting on the wire. 28) Obtain an expression for Q-factor. 30) What is optical path? Obtain the equation for optical path.
31) Differentiate between Fresnel and Frannhofer diffraction.
32) Obtain Gauss law form Columbia Issued. 29) Write short notes on Ampere's Maxwell law. 32) Obtain Gauss law form Columb's law. 33) Obtain the condition for bridge balance in Wheatston's bridge. PART-IV 5×5=25 IV. Answer all questions: 34) Explain in detail the effect of a dielectric placed in a parallel plate capacitor. (OR) Explain in detail about absorption spectra. 35) Describe the microscopic model of current and obtain general form of ohm's (OR) Explain Fizean's method to determine the speed or light. 36) Derive the expression for the force between two parallel, current carrying (OR) conductors. Obtain the equation for bandwidth in young's double slit experiment. 37) Explain the construction and working of transformer. (OR) Obtain len's maker's formula and mention its significance. 38) Write down Maxwell's equations in integral form. (OR) Discuss the working of cyclotron in detail.