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Common Quarterly Examination - 2024 21-07-2024 Standard 12				
K1-0	1-2024	Standard 1	.2	
Time Allow	wed: 3.00 Hours	PHYSICS	Max	kimum Marks: 70
PART - I Note: i) Answer all questions 15×1=15				
Note: i) Answer all questions. 15×1=15 ii) Choose the most appropriate answer from the given four alternatives				
and write the option code and the corresponding answer.				
1) Two identical conducting balls having positive charges q_1 and q_2 are separated				
by a centre to centre distance 'r'. If they are made to touch each other and				
then separated to the same distance, the between them will be a) less then before b) same as before				
	c) more then before	9	d) zero	
2)	A parallel plate cap	acitor stores a cha	rge 'Q' at a volume	e 'V' suppose the
area of the parallel plate capacitor and the distance between the plates are each doubled then which is the quantity that will change?				
	a) Canacitance	b) Charge	c) Voltage	d) Energy density
3)	In Joule's heating l	aw, when 'R' and 'I	' are constant. If the	he heat produced
	 (H) is taken along t a) Straight line 	the y-axis and I ² ald	c) Circle	d) Elipse
4)	A metallic wire of t	enoth 'l' has resista	ance of 10Ω . The w	ire is bent in the
	form of a semicircle	e of radius 1m. The	resistance between	n the two ends of
	the semi-circular w	ire is	10	d) $\frac{11}{10}\Omega$
	a) 10πΩ	b) 10Ω	·	
5)	The temperature	co-efficient of resis	stance of a wire is	0.00125 perºC.
	a) 800°C	ance is 1Ω. The residue b) 700°C	c) 850°C	d) 820°C
6)	The vertical compo	nent of Earth's ma	anetic field at a pla	ce is equal to the
-	horizontal compone	ent. What is the val b) 45°	ue of angle of dip a c) 60º	d) 90°
7)	a) 30º A circular coil havi	ng 'N' turns and rac	lius 'R' carries a cui	rrent 'Q'? At what
	distance from the centre of the coil along its axis, the magnetic field is 1/2/			
	of its value at the	centre?		
0)	a) $X = 8R$	b) $X = \sqrt{2R}$ C circuit, the maxin	c) $X = \sqrt{3R}$	
8)	The charge on the	capacitor when the	energy is stored eq	ually between the
	electric field and m	agnetic field is		
	a) $\frac{Q}{2}$	b) $\frac{Q}{\sqrt{3}}$	c) $\frac{Q}{\sqrt{2}}$	d) Q
		former reduces the	-V Z	
9)	increases the curr	ent from 6A to 1004	A. Then is efficiency	IS
	a) 1.2	b) 0.83	c) 0.12	d) 0.9
10)	The unit joule	(JA ⁻²) is equivalen	t to the unit	
10)	ampere ²	b) ohm	c) farad	d) ampere
		wing is false for elec	tro magnetic waves	5?
)	a) transverse		b) non-mechanica	al waves
(0)	c) longitudinal	ting in a medium wit	a) produced by a a velocity $\vec{V} = V\hat{K}$.	cclerating charges
12)	An e.m. is propaga	field of this e.m. wa	ve is along +y axis,	then the direction
	of oscillating mag	netic field of the e.m	 wave will be along 	g
	a) -y direction	b) -x direction wing is an electroma	c) +z direction	d) -z direction
13)	a) α rays	b) β rays	c) positive rays	d)γrays
	u) u. 2/-			•

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- 14) The speed of light in an isotropic medium depends on a) its intensity
 - b) its wavelength
- c) the nature of propagation d) the motion of the source wirt medium 15) Stars twinkle due to

2

b) total internal reflection c) refraction d) polarisation a) reflection PART - II 6×2=12

Note: i) Answer any six questions.

- ii) Question Number 24 is compulsory.
 - 16) Define Electric flux and give its unit.
 - 17) What are the properties of an equipotential surface?
 - 18) Mention any two applications of seeback effect.
 - 19) Define: Ampere
 - 20) The self inductance of an air-core solenoid is 4.8 mH. If its core is replaced by Iron core, then its self inductance becomes 1.8H. Find out the relative permeability of Iron.
 - 21) When does power factor of a series RLC circuit become maximum?
 - 22) Define: Displacement current
 - 23) State Snell's Law of refraction.
 - 24) A copper wire of cross-sectional area 0.5 mm² carries a current of 0.2A. If the free electron density of copper is 8.4×10^{28} m⁻³ then compute the drift velocity of free electrons. SIVAKUMAR.M,
 - PART-III Soi Ram matoic Has

Note: i) Answer any six questions.

- i) Answer any six questions. ii) Question Number 33 is compulsory. Vallann- 627807 6×3=18 Tenkws Dist.
- 25) Obtain the expression of energy stored in the parallel plate capacitor.
- 26) How will you determine the internal resistance of a cell using voltmeter?
- 27) a) State (Macroscopic form of) Ohm's law.
 - b) State Kirchoff's current law and Voltage law.
- 28) List out the properties of dia and para magnetic materials.
- 29) Calculate the magnetic field at the centre of a square loop which carries a current of 1.5A, length of each side being 50 cm.
- 30) Mention any six properties of electromagnetic waves.
- 31) Explain the various Energy Losses in a Transformer.
- 32) Obtain the relation between the focal length and radius of curvature of a spherical mirror.
- 33) Consider a point charge +q placed at the origin and another point charge -2q placed at a distance of qm from the charge +q. Determine the point between the two charges at which the electric potential is zero.

PART - IV

Note: Answer all questions.

5×5=25

- 34) a) Derive an expression for electrostatic potential at a point due to an electric dipole. (OR)
 - b) Describe Maxwall's equations in integral form.
- 35) a) Derive the mirror equation. (OR)
 - Compute the speed of the electromagnetic waves in a medium if the b) i) amplitude of electric and magnetic fields are 3×10^4 NC⁻¹ and 2×10^{-4} T. ii) Explain in the types of Emission spectrum.
 - 36) a) Explain in detail the principle, construction and working of a Van de Graff (OR) generator.
 - What are the methods of production of induced emf in a circuit? b) i)
 - Explain how will an emf be induced by changing the area enclosed by ii) the coil.
- 37) a) Explain the working of a single phase AC generator with necessary diagram. (OR)
 - b) Obtain the condition for bridge blance in Wheatstone's Network.
- 38) a) How the emf of two cells are compared using potentiometer?

(OR)

b) Obtain the expression for magnetic field at point on the axial line of a bar magnet.

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