Practice paper term 1

Class xii

Marking Scheme

Physics

Section A		
Q. No.	**Correct option**	**Hint/main points**
1	a	Decreases K times
2	d	no work is done
3	a	25×10^{-2} J Hint: $U = (1/2)CV^2$ $= (1/2)(50 \times 10^{-6}) \times 100 \times 100$ $= 25 \times 10^{-2}$ J
4	c	1:1 Hint: $B_A = \mu_0 I / 2R$ and $B_B = \mu_0 (2I) / 2 (2R)$ $= \mu_0 I / 2R$ Therefore $B_A / B_B = 1:1$
5	b	Very weak temperature dependent resistivity
6	a	3.1×10^{-4} T Hint: $B = \mu_o NI/2r = 4\pi \times 10^{-7} \times 100 \times 0.40/(2 \times 0.08) = 3.1 \times 10^{-4}$ T
7	a	$\tan^{-1} 1.7272$ Hint: $\tan \varepsilon = Bv/B_H = 0.38/0.22$ $= 1.7272$; $\varepsilon = \tan^{-1} 1.7272$
8	a	Scalar Quantity
9	a	Gauss's law

10	c	1.6×10^{-19} C
11	d	$E_{axial} = 1/4\pi\varepsilon_0 (2p/r^3)$
12	d	All of the above
13	a	Parallel planes perpendicular to the direction of electric field.
14	c	$Q \propto V$
15	b	The magnetic field lines of a magnet do not form continuous closed loops.
16	a	m = NIA
17	d	$e = - d\phi/dt$
18	b	(i) b c d a b ; (ii) b a c b
19	d	6.28×10^{-5} V Solution: $e = Bvl = B(1/2 rw)l = B \frac{1}{2} r (2 \pi f) l$ $= 0.4 \times 10^{-4} \times 0.5 \times (22/7) \times (2rps) \times 0.5$ $= 6.28 \times 10^{-5}$ volts here v = av. linear velocity = ½(velocity at rim+ velocity at axil) = ½ (rw+0) =1/2 r w
20	a	Alternating voltage
21	a	Current I lags behind the voltage by $\pi/2$
22	c	$L\, dI/dt + IR + q/C = V$
23	d	Relates with L-C-R circuit.

24	b	$I_{rms} = I_m / \sqrt{2}$
25	a	Transformer
		Section B
26	c	6×10^{-3} N Hint:Use formula $F = k q_1 q_2 / r^2$
27	b	+1.6 C Hint: use q=ne
28	a	Increases
29	a	4 μF Hint: As circuit is satisfying Wheatstone bridge condition $C_{AC} = (4x4)/(4+4) + (4x4)/(4+4)$ $=2 + 2 = 4$ μF
30	a	Decreases Explanation: The net field between the plates decreases as an electric field is induced in the opposite direction of the applied field.
31	c	4×10^3 V/m $E = V/d = 12/3x\ 10^{-3} = 4 \times 10^3$ v/m

32	b	30 A Imax = E/r+R = 12/0.4+0= 30 A here R=0 for max. Current
33	d	2.25 V Hint: Use $E_2/E_1 = l_2/l_1$
34	b	gets doubled Hint; Use Drift velovity formula Vd=eET/m
35	a	(i) CD; (ii) AB
36	c	resistance of 60 watt bulb is greater than resistance of 100 watt bulb Hint: Use $P = V^2/R$
37	c	Both a and b
38	a	$R_A < R_g < R_v$
39	d	0.96 Nm
40	b	Clockwise
41	a	Maximum in situation (i)
42	c	Four times

		Hint; $L=\mu_o n^2 A$ I; $L \propto n^2$
43	d	Pure resistor
44	d	Energy
45	d	A is false and R is also false Explanation: A stationary charge produces only an electric field .A moving charge is associated both with electric and magnetic field
46	a	Both A and R are true and R is the correct explanation of A. Explanation: A stationary charge produces only an electric field .A moving charge is associated both with electric and magnetic field.
47	a	Both A and R are true and R is the correct explanation of A.
48	a	Both A and R are true and R is the correct explanation of A. Explanation: Repulsion between opposite pairs increase area enclosed by the irregular loop.
49	a	Both A and R are true and R is the correct explanation of A. hint: As $T=2\pi$ m/qB therefore $T \propto$ m/q

50	d	Zero
51	d	2mC; hint: torque =P E sin 30^0 4 =q x 2a E sin 30^0 q = 2 m C
52	a	Zero
53	d	Unknown resistance
54	c	Meter bridge
55	d	Galvanometer