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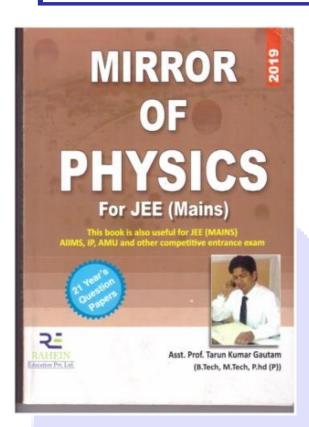
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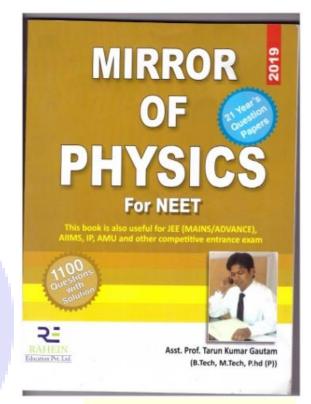
Asst. Prof. Tarun Kumar Gautam (B.Tech, M.Tech, PhD (P))

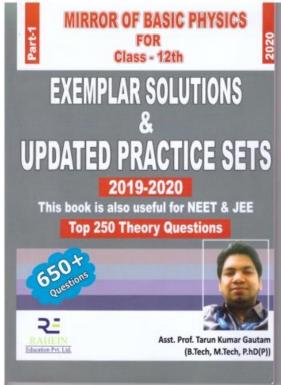
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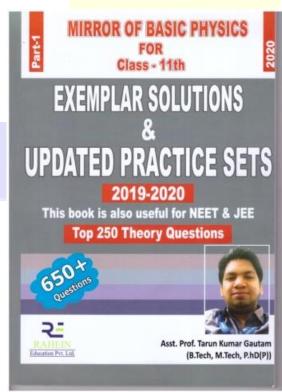
Ex-Faculty of Rajshree Institute of Management & Technology (RMIT), Braeilly, Uttar Prdesh Ex-Faculty of Assistant professor in Krishna Engineering Collage (KEC), Ghaziabad, Uttar Prdesh Member of Educational Project in University of Petroleum and Energy Studies (UPES), UK











	PAGE
)	Chapter-5
	(Magnetism)
	[10]
	Magnetic Field of Magnet
1	N S S
	which will be the state of the
	N - S
	The state of the s
	Magnetic Field Lines move from (N) to (S) &  Magnetic field Lines inside magnetic field move (S) to (N)
	L'Magnetic field lines inside magnetic field move (s) to (v)
	1/2 10 01 01
	Magnetic Pole Strength
	k 2d -
	[N S]
~	m, ma
	3003
	200 A 200 A 20 A 20 A 20 A 20 A 20 A 20
	my be the magnetic strength of pole of
	m, & m, be the magnetic strength of pole of magnet. They are separated by small distance (21)
	distance (21)
	Let (M) be the Magnetic dipole moment.

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Magnetic Pole Strength	
K 2l - y	44
m Pole strength of	(N) ((s)
mid - inc.	
$\frac{C-1}{M-m} \times 2l$	1 (2
C-2	1
$\leftarrow \chi \rightarrow$	
$m_1$ $m_2$	
$f = Km, m_2$ $\chi^2$ $\chi^2$ $\chi^2$ $\chi^2$ $\chi^2$	11/
The second secon	
$f = \mu_0 m, m_2$	
4π 2 <sup>2</sup>	
v) C-3 magneticno.2	
C-3 Magnett	San Caraca
Magnetno. 1	1
$f = \kappa m_1 m_2$ $\chi^2$	
The second of th	
	J. Land
$\int f = u_0 m_1 m_2$ $4\pi x^2$	
TI - O TO - TO - IT	
	V Physical
Note - Magnetic dipole moment = NITA	
M = magnetic dipole moment = NIA  M = mx2l	
The state of the s	
The Circle	
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Note:	_
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- 1) Magnetic Pole Strength (m) Dimension [AL] Unit - Am
- 2) Magnetic dipole Moment (M) Dimension [A12] Unit - Am2

# Types of Magnetic Field

Magnetic Field Upward Magnetic field downward

Dus Explain Magnetic dipole moment of revolving electron?

T = charge
time

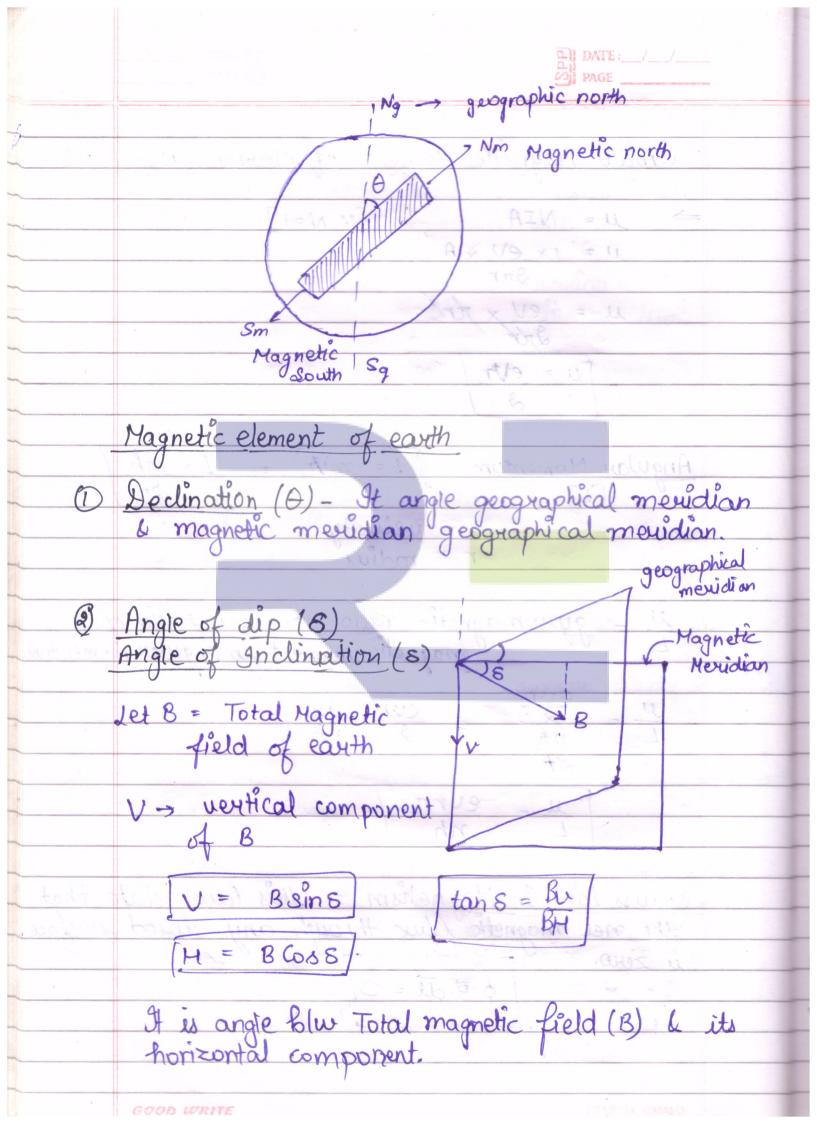
$$I = q = ne = e \quad [n=1]$$

$$t \quad t$$

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	PAGE
	Orbital Magnetic Moment of electron (u)
	⇒ u = NIA [: N=1]
	u= 1x ev x A
	2nr
	$u = eV \times \pi r^{\alpha}$
-	u = etr
	Angular Momentum ] L= m/r =   L= nh   212
Late	r = velocity
re bu	r = radius
	U - auxomagnetia votio - It is grational
1 - S-3 X	U = gyromagnetic ratio > It is ratio of magnetic moment to angular moment um
The state of the s	The months of the same of the
	$\frac{u}{L} = \frac{evr}{nh}$
-	24
-	u = eura la constitución de la c
1	L nh
	Gauss Law in Magnetism: This Caw state that the net magnetic flux through any closed surface is zero.
	the net magnetic flux through any closed surface
	4 200.
	$ \oint \vec{B} \cdot \vec{a} = 0 $
A.	tara va see la la constanda
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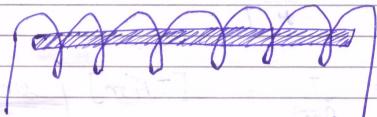
	PAGE
3	Horizontal Component — Its horizontal component of total magnetic field of earth.
	H = Bcos 8 / (D)
-	12 - WI
	$V = B \sin S$
	$\frac{V - B\sin 8}{H} = \tan 8$ $\frac{V}{H} = \tan 8$
	Roman Roman Company of the Company o
	$H^{2} + V^{2} = B^{2} \cos^{2} S + B^{2} \sin^{2} S$ $H^{2} + V^{2} = B^{2} (\cos^{2} S + \sin^{2} S)$
Harris Halls	$H^* + V^2 = B^* \left(\cos^2 8 + \sin^2 8\right)$
	$H^2 + V^2 = B^2$
100	B3 JoH2+ v2 In tox Also Stongary
Ques:	$V = \frac{1}{\sqrt{3}}$ , $H = \sqrt{3}$ , find angle of Sip
An	V = tan8
ALWAN .	17
in de	$\sqrt{3}\times\sqrt{3}$
	13138 S= tan/1) 10
K	primage planotar to the firm of pomore.
	to produce a given branch of sing of
Oue:	V=5, H=6 find total Magnetic field.
ans	
	$B = \sqrt{25+36}$
	$B = \sqrt{61}$ $[ma] \cdot c \cdot H = H(1)$



		PAGE
4		
4	tow to	at pole at equator
-		8 = 90 to 00 H offener 8 = 10 to
		$H = B \cos 8 = B \times 0 = D$ $H = B \cos 8 = B$ $H = D$ $H = B$
		$V = B \sin 8 = B$ $8 \sin 8 = 0$
		V=B $V=0$
	127	2004 2768 1
		2 1 9
-		Explain terms
		Magnetising lodd - The magnetic field that muste
		Magnetising field - The magnetic field that exists in vacuum & include magnetism is called "Magnetising field"
		"Magnething field"
		Magnetic field set up in Solenoid XXXXXXX
-	-	B= uonI) J= == ==
		unit of Magnetic field is Tesla (T)
	,	and of ragnetic field in rate (1)
		(+1)
-	(2)	Magnetising field Intermity or magnetic Intensity
-		o stract
		It is number of ampere turns (nI) flowing round the unit length of solenoid required to produce a given magnetising field.
		to moduce a owen magnetising field.
		to produce a grant magnificating the season with
		B = MonI : H = nI]
-		B= uoH
-		H = B $H = B$ $H =$
-	-	unit of 'H' =) [Am']

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Magnetic Induction
when the interior of solenoid is filled with
magnetic material, field inside the solenoid
becomes greater than B.



Bo -> Magnetic field

Bm -> magneticing field

Bo = uoH - vaccum

BH = UH

ur = Relative magnetic permeability

u → vaccum

	Si Mile
	Note
	B = UXH u - magnetic permeability
	It's ratio of magnetic field to
-	It's ratio of magnetic field to magnetising field Intensity
	de de mare au su
	u = B
	H
	u= T = [TA'm] unit
	Am'
	De March Commission of the Com
	bla calling of ing
*	Permanent magnets-
	The material wind for making permanent
	The material used for making permanent magnets must be characteristics.
mil	ni e all :
1, Diu	Reason -
	(i) high resistivity - which anduce there mornetic hild
	(ii) thigh coexcitation that it made the intime is
	(i) high resistivity - which produce strong magnetic field. (ii) high coexcivity - that its magnetisation is not destroyed by strong magnetic field, Temp. (iii) high Permeability
	high Poumeability
	and rugh re-intensising
	villansmyer stement extension = su
×	Electromagnati-
	Electromagnets -  (1) high initial Permeability  ii) Low retentivity
	(ii) love robantivity
	w 20w retentioning
<b>×</b>	Transfer cores - characterial of material and for
	Transfer cores - characterics of material used for transform coil.
(	high initial roum as hilite
0	1000 resistinity to made as I and a district
(9	10 1 hustourie Part
Ų	transform coil.  Thigh initial permeability  Low resistivity to reduce losses due to eddy awrent  Low hystereris loss  GOOD WRITE

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In the magnetic meridian of a certain place, horizontal component of earth's magnetic field is 0.26 or 8 dip angle is 60° what is magnetic field of earth in this location? H = 0.26 8 = 60° An H= Bcoss cos 8 00060° 1/2 0.86x2 JB = 0.52 T) The electron in hydrogen atom is moving with a speed of 2-3 × 106 ms' in an orbit of radius 0.53 A. Calculate the magnetic moment of revolving electron. e = 1.6 × 10-13 v = 2.3 × 106, 8 = 0.53 × 10 m u = 1.6×10'8 × 2.3×106 × 0.53×10'0 U = 1.9504 x 10-23  $u = 0.9752 \times 10^{-23}$ A magnetised needle of magnetic moment 4.8 × 10° JT' is placed at 30°. with direction

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	PAGE
	of wriform magnetic field of magnitude 3x10? what is Torque acting an needle?  M = 4.8 x 10-2 JT-1
	What is Torque acting an needle?
Ans	M = 4.8 x 10-2 J f-1
	0=30°
	B = 3x103 - 2 28.0 = H 1 WA
	3 M = NIA ]
	T = MBSin 0
	3 860
. e x	7 2 (4.8 x 10-2) (3x 10-2) Sin 30°
	$T = 7.2 \times 10^{-4}$
77	Note was well and a second will
2	T = NIBASing D = 90°
	T= NIBA
	The second secon
	1 Restoring Torque = Deflection Torque
	KO = NIBA
Ser 0	T= NIBA - D
	$\sim$ $\sim$ $\sim$ $\sim$ $\sim$ $\sim$ $\sim$
	JAKEZIO T-OKO KARANI
	K = Moment of restoring couple per unit
	K = Moment of restoring couple per unit angular twist or Torsional Constant
	<u>\$</u>
	0 = angular twist.
	W= 0:3753 × 10 - 13
	T= KO
	from egn O CD
-	Annual Company of the
21/2	KO = NIBA

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I = KO NBA

(i) Current Benstivity (Is) - deflection per unit current

Is = NBA

List Voltage senstivity (Vs) - deflection per unit voltage.

NBA

Vs = Is (9t not follow ohm law)

unit of Is - Is = 0 = grad. [grad.A-1]

unit of Vs - Vs = 0 = vad. = [vad.volt]



Lus A rectangular coil of Area 5 x 10 m² & 60 towns is pivoted about one of its vertical sides.

The coil is in radian horizontal field of 90 Gr. what is the Torsional constant of how spring constant constant of none spring produce an angular deflection of 180°. A = 5x104m2 dus [1 G = 10 47] N = 60 B = 90G = 90 x 10 4 7 K = ? ,  $T = 0.20 \times 10^{-3} A$  ,  $\Theta = 180^{\circ}$ W flow non mit KO = NIBA with me a spotlar lil K = NIBA K = 60 x 0 8x 10 -3 x 90 x 10 - x 5 x 10 - 4 By 50% Its resistance so that new resistance become twice its initial resistance By what factor due voltage senstituity change?

W= 9, Is = Is + Is x 50 = 3 15 R'= 2R  $\frac{3}{4}$  x  $\left| \frac{Is}{R} \right|$ Vs = 3 Vs 75%

ws Compare the current Denstivity and voltage senstivity Meter A N = 30, A = 1.5 x 10-3 m2 B = 0.25T , R = 2012 N = 35, A = 2.0 x 10-3 m2 Meters B = 0.25T R = 30\_12 Current Denstivity N, B, A, (Is)A N, B, A, No Ba Az A moving wil meter has following particular

N=24, Area of wil = 20×10-3 m2 magnetic field B = 0.02T, Resistor of will, R = 142

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Name of	21st the voltage sensitivity of coil modified meter greater or less than original meter?  Vs. = NBA = 24 x 0.02 x 20 x 10 <sup>-3</sup> (1)  KR, KX 14
	meter greater or less than original meter?
etry	Vc = NBA _ 24 x 0.02 x 20 x 10-3 FD
	KR, KX14
_	
	Vs. = NBA - [24 x 0.02 x 20 x 103], 14
	Vs. = NBA [24 x 0.02 x 20 x 10 <sup>3</sup> ] x 14 KR2 [ K x 21 x 14
P	$\frac{V_{S_2}}{2l} = \frac{V_{S_1} \times 14}{2l}$ OF WHOME TO STORY OF THE POWER
	21
	Vs, = 14 Vs, = 66 % Vs
	128 M 21 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
0	Factors on which Covert Senstivity of M.C. Gr down
1 49	or so do a construit of the ordinary
0	No. of twens (N)   for Increasing (1) Is
(3)	No. of twens (N) for Increasing (1) Is  Magnetic Field (B) as, Is = NBA  Arrea (A)
(3)	Magnetic Field (B) as, Is = NBA Area (A)
(4)	Torsion constant (K) N(t), B(A), A(A), K(L)
	A A CAN
	The Market Market Read
	For Increasing 1/2
	For Increasing Vs $V_s = NIBA$
	E KR SE E
	/ F / S & S & F + 1
-	N(r), $B(r)$ , $A(r)$ , $K(l)$ , $R(l)$
	The state of the s
*	Moving coil Galvanometer convert Ammeter
	2) Voltmetter
	(a) Voirment



Moving Coil galvanometer convert into a fammeter.
S Ammeter
- Miles
I = Iq + Is
I I I I I I I I I I I I I I I I I I I
Is = I - Ig
S -> Shunt -> Low Resistance
Onaic Now Resident
Shunt connect in parallel to galvanometer
Shunt connect in parallel to galvanometer then galvanometer behaves as Ammeter.
The second position of the second sec
let To is componed in columnmeter
Let Ig is current in galvanometer  Is is current in Shunt
TS AS CONTROL OF CONTR
1/oltage same
Voltage Some S x Is = Ig x 67
SX Is = Ig \ Of
$S = I_0 \times G_1 \longrightarrow I_0 \times G_1$
$S = I_g \times G_1 \longrightarrow I_g \times G_1$ $I_S \longrightarrow I - I_g$
-5
Net Resistance Inquire open of our
Net Resistance Inguis open of one
Ry S G
-70
(33) To movease the same of untimoter.
$R_N = S \times G_1$
(s+a)



	Moving coil galvanometer into Voltmeter
	voltmeter - voltmeter
	R
	A > (C1) MM
3	ol tol a Tig
	A high resistance connect in series to galvanometer to convert galvanometer into voltmeter
	to convert galvanometer into voltmeter
	V = IR
	Shurt someth is sounded to something of
	Ig = Potential différence Is werent in
	Total Rejistance galvanometer
	Letter is unught in appropriation
	Jo = V R+Gru= V
	R+C1 Iq
	Visitoria de la companya della companya della companya de la companya de la companya della compa
	$R = V - G_1$
	Iq
	TO YOU TO WELL TO YOU TO YOU THE YOU THE TO YOU THE YOU THE TO YOU THE YOU THE TO YOU THE TO YOU THE YOU
	Use of Shunt
	OBC OF CONCE
(; )	To provent a adjugnometry from boing demand
. ,	To prevent a galvanometer from being damaged due to large current.
	me v savige avviere.
100	To convert columnister into relationator
(iii)	To convert galvanometer into voltmeter.
1000	To Indiana Has Maries of Mallimotor
(-111)	To increase the range of voltmeter.
	(1) +2)



### **CBSE RESULT 2020**



## Special Physics for NEET/JEE

Timing: 8:30a.m. to 10:30a.m. [Monday to Friday]

**Saturday: Test** 

Fees: Rs. 25,000 and Online Test Series Rs. 1,000

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