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INSTRUCTIONS TO CANDIDATES

- Write your register number Correctly on the space provided on the Facing Sheet of the Answer book and the top left side of Additional answer sheets. Over writing should be attested by the Room Invigilator.
- Write answers in both sides of the sheet using BLUE/BLACK ink or ball point pen.
- 3. Obtain Additional Sheets, Graph Sheets. Mathematical table from the Invigilator if required. Enter the serial numbers of all the Additional sheets used.
- 4. Intimate disorders if any, in the Main Answer book/Additional sheets to the invigilator.
- Indicate the Correct question number in the margin.
- 6. Obtain the permission of the invigilator for change of PEN / INK.
- All rough work should be made on a particular page with the heading ROUGH WORK and cross it.
- 8. Do not write in the margin and leave any page UNUSED except at the end of answers.—
- No Candidate is permitted to eave the vexamination hall within 30 minutes from the commencement of the examination. Any candidate who leaves after 30 minutes will not be allowed again to the examination hall.
- If you want to make any request to the Room Invigilator, just stand up to attract his / her attention. Do not shout or leave your place. The invigilator will come to you.
- 11. During the examination if the candidate wants to go out, for urination etc., same may be informed to the invigilator. While going out, the Answer paper, Question paper etc., should be handed over to the Room Invigilator for safe custody.

- 12. After completion, just stand up & inform the same to the Room Invigilator who in turn will collect the papers and gets your signature on the diary maintained by the invigilator.
- 13. The following misdeeds will attract disciplinary actions and criminal prosecution.
 - a) Breach of silence.
 - b) Use of books, notes, manuscripts, etc., pertaining to the subject in the examination hall.
 - c) Talking or signalling to other Candidates.
 - d) Candidates copying from the answer books of the other candidates or from other source.
 - e) Sending of answer books or additional sheets or question paper out of the examination hall.
 - Impersonation.
 - g) Taking the answer books or additional sheets received for writing the answers out of the examination hall during or after the examination.
 - (h) Tearing or insertion to the answer books and the additional sheets.
 - i) Writing an appeal or request to the valuator in the answer book.
 - j) Mobile Phones. Pagers are strictly prohibited in the Examination Hall.
 - k) Simple calculators can be used.
 Scientific calculators allowed only for Statistics paper.
- 14. After completion of writing. Count the No. of pages used and fill the columns provided on the facing sheet of the main answer book.
- 15. Candidates suffering from infectious diseases are not allowed to sit in the examination hall.
 - 16. Candidates should strike off the subject which is not applicable

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1). Coulomb's law: It states that," The electrostation force of attraction or repulsion between two point charges is directly proportional to the product of magnitude of charges and inversely proportional to the equare of the distance between them acting along the line joining the two charges.

i.e. F. X. 9192 \$ F = 1 9192

2). Electrical resistivity of material of a conductor is defined as the opposition offered by the body (or numerically equal to resistance) of unit length per unit area.

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3). Expression job force acting on moving charge "
in a magnetic ifield, Fig Baysia.



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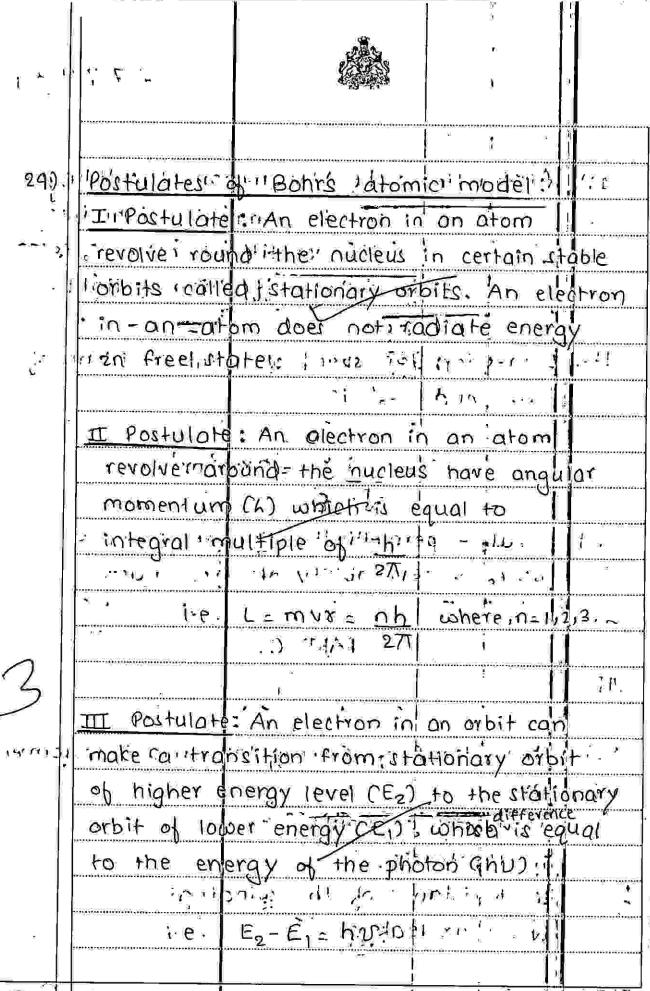
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3	iii). Resistance of the	windings.
<u> </u>	(v), flux leakage.	<u> </u>
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Register No. of the Candidate 7 3 7 9 3 7

Differences between i wio and Ferro magnetic 21). materials: Diamagnetic materials Ferromagnetic materials. Diamagnetic materials are Ferromagnetic materials are the materials which the moterials which move from strong move from weak magnet field to strong magnetic magnetic field to field. weak magnetic field: the magnetic susceptibility The magnetic susceptibility of siamagnetic moterials of terromagnetic materials small and negative is large & positive the magnetict permeabilit the magnetic permeability of the materials is of imaterials is much greater than one. less 'than one (The ferromagnetic matrials The Diamagnetic materials varies inversely to are Lindependent of temperature. temperature. The materials are strongly The materials are weally *" attracted by Magnetic field attracted / repel bach other. ಪ್ರತಿ ಮಟದ ಒಟ್ಟು ಅಂಕಗಳು 🎺 ದ್ವಿತೀಯ ಪಿಯುಸಿ ಪರೀಕ್ಷೆ - ಮಾರ್ಚ್ನ್ 2019

CV: Tron M

Ex: Cold, Silver etc.



Band theory with respect to semiconductors 25). In Semiconductors, Conduction band small energy gap. (Eg) less than 3eV Ge (3eV). Malence band * In semiconductors, there is a small energy gap (Eg) of less than 3ey ie (3eV) in between Conduction band and valence band. a. the destrons one portrally little * Conduction band is partially filled with electrons. *. Their electrical properties lies in between metals and semi-conductors * Valence band contains valence electrons. For Ex, For pure siffe valence electrons are 4

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23).	Experimental Observ	rations of Photoelectric
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	Process	
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	electric emission o	
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Consider a uniformly charged spherical
shell of radius IR'. Let P be a point at
a distance 'r' from the centre of spherical
shell, where electric field / intensity is
calculated.
. 11
Electric flux, dø = Eds cos O.
dO,= 0,, cos 0 = 1
: dØ = Eds (1).
flux through Gaussian surface
saø = Esds.
- Ø = ES
where, s = 4712 Csurface arealog sphere
Ø = E 47182 - (2)
from Gauss's law, we have,
Ø=(1)g(3).
(80)
From (2) & (3),
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-16) (*	√i °					
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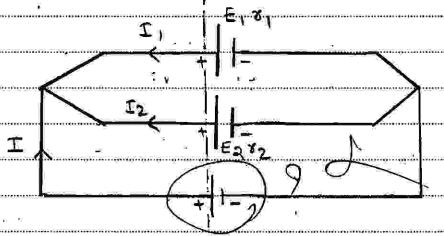
.. ***



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28).

Expression for Equivalent resistance and equivalent emb of the parallel combination.



consider two cells of emfs Ei & Ez having internal viesistances 1, & 12, connected in parallel.

In parallel combination, voltage remains same, current branches.

Me have, V= E-17, . - (1)

Current through first cell,

Current through second cell,

$$\Gamma_2 = E_2 - V$$



,	3	
y 0	I: E	1~Y = E2'-Y
ng ng	· **	181. 82
ali a	I z	(E1-N) 82 + (E2-N) 81
		<u> የነ</u> ጀ2
	ALTONOMORIO MATERIALISMO	$E_1 \sigma_2 - \sqrt{\sigma_2 + E_2 \sigma_1 - \sqrt{\sigma_1}}$
J. ¥	***************************************	×182
ř	Î,	= E182+ E281 - V(81+82)
4\\ .j		7,82
a a		2) = E182+ E281 -V(81+82)
*y - '	191,000,000,000,000,000,000,000,000,000,	+ x2) = E1 x2 + E2x1 - I (x1x2)
• 1	· V =	$\frac{\mathcal{E}_1 \mathcal{S}_2 + \mathcal{E}_1 \mathcal{S}_1}{\mathcal{X}_1 + \mathcal{X}_2} - \mathbf{I} \left(\mathcal{S}_1 \mathcal{S}_2 \right) - C_2 \right)$
3	3	x14x2 (814x2/
f [*]	n	paring with eqn (1). V= E-Ix
j d	/ We get	N.
з.	O F	$E_1 v_2 + E_2 v_1 $ and
21	E _{eq} +	$\frac{E_182+E_281}{81+82}$ and
r N	Yeq.	8,82
ļ		181482
a	Also, I= E	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$
1	RA	
ļ.		\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
3	ಪ್ರತಿ ಮಟದ ಒಟ್ಟು ಅಂಕಗಳು	- 14 - ದ್ವಿತೀಯ ಪಿಯುಸಿ ಪರೀಕ್ಷೆ – ಮಾರ್ಚ್ 2019
k =	Ķ.	₹ t



Register No. of the Candidate 7 7 7 9 3 7

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又). 30). Consider a series LCR combination of Inductor Capacitor and Resistance. Let RL, Ros R be thei effective + oresistance offered by LCR. Let XL, Xc, and XR be the effective apposition offered by them I will The individual phator digorams are shown below, phasorldiagram is (VL-Vc) = OD= YL-VC = AP 0 I ٧c

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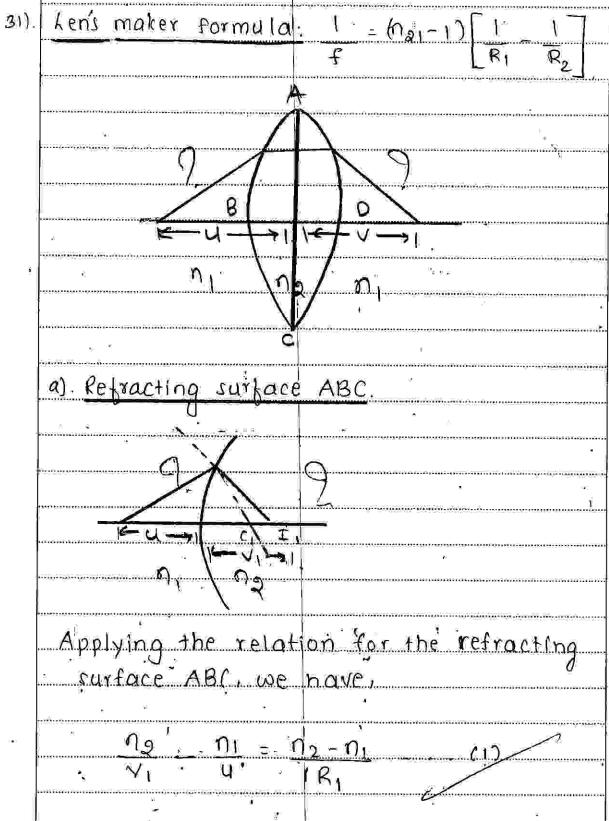


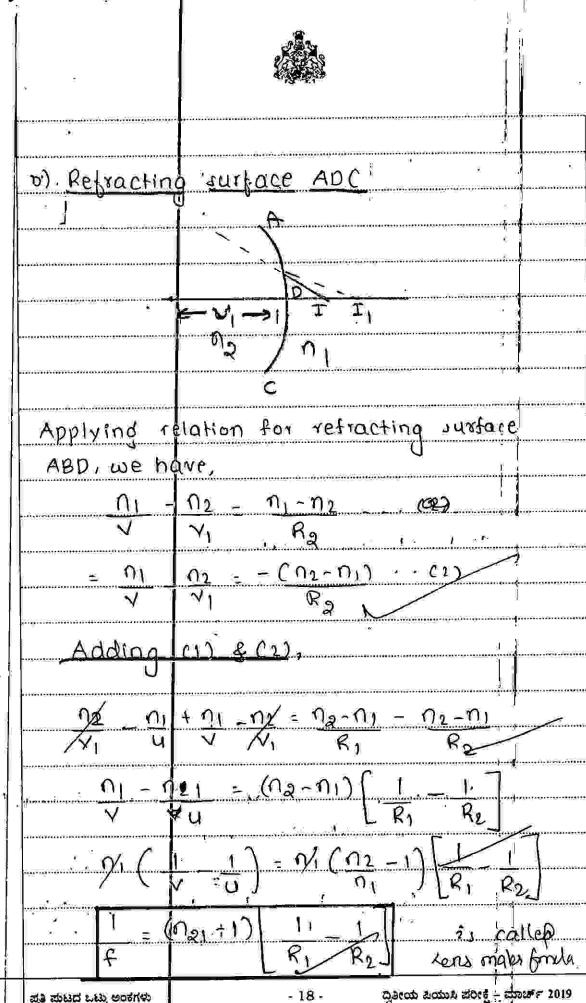
		y (
	consider ale	AOP,
	According to	Pythagoras theorem,
	OP 2=	$OA^2 + AP^2$
	Vm =	VR2 + (VL - VC)2
	· Ym = VR	$\frac{1}{2} + (\hat{i}_{m} \times_{L} - \hat{i}_{m} \times_{C})^{2}$
и	- 2,7	2 + 2m2 (XL-Xe)2
74	$\sqrt{m^2} = i$	m [R2+CXL-Xc)2]
	· · · \(\sqrt{m} =	Nim (R2+CXCXC)2]
5		
	· Ym	= 2m VR2+CXL-Xet
	Vm	= im Z
	***************************************	is called Impedence of LCR circuit
	1· e .	Z= \ R2 +(XL-Xc)2
1	INE have	
\mathcal{L}	tan Ø = A	2 - V _L -Yè
	0	† Ye
	mož., syciii. iikučyndanik min žiliilla.	= im XL-imVc
		imXR
	579.11.11.11.11.11.11.11.11.11.11.11.11.11	= 100 (XL-XC)
		2m K
		tan 0 = XL-XC
n		
	as agrantic sessor	16 Disch some was a rest 2010
re l	THE PROPERTY OF A 25 MACHINE	2 1 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2

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7	7	7	q	3	7







Regi	ster)	Vo, of	the C	Candi	date
7	7	7	9	3	7

-	$\tilde{}$	٠,
•	3	J
<u>×</u>	٠.	. /

33)

ı,		
٠	. × . ½	, , , , , , , , , , , , , , , , , , , ,
	, 1	
)	Given: 8=5cm=5X1	ნ ² ო
	d:=2mm-=/2x	lo³ m.
	C = ?	
	*U = ?	
	V=200 V.	*
ĺ.	\$ = 8.854 X 10	² Fm̂¹.
	We have	1)
	$C = \mathcal{E}_{\mathbf{a}} A'$	
	d. UT	
	Area, A = 7522 = 8	7 x (5 x102) = 78.57x 10.9.
,,,	9 /	•
	- 8-854-XIO.	× 78-5714,×109
	શ્રુપા	
	= 695.671	X10-16+3
ļ.,	, ২	
	C = 347.	835 X 10 ⁻¹³ F.
		35 X 10 13 F
	, 0 = 34-7	
	1	Ë. '
L UI	y	7, 11 11
		1 - 1

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	9	
22		
		t - the Congolitar
Ĺ.	•	in the capacitor,
ļ	LC	$\frac{1}{2}$ CV ²
		1
-		= 1 x 34.78 X 10 2 x (200) 2
	ž	
7		= 1 34.78 x 40000 x 10 12
		U = 69 5600 X 10 12 J.
-	2.	U = 695.6 X 10-9 J
-		U = 6.956 ×10 J
ŀ	£ :	
ŀ	Given: Lia h	ove, t= 2 = 2 = 2
		RATE ROR
ľ	Liben tu	o resistors are connected
Ì	in zerie	[v
		RITR2 , I = 2A. #8-5V.
ĺ		2 = 5 = 2 = 5
ĺ	*	Rs RARg
}	(R1+ R2)2=5. : R1+R2=5/20.
	When two	resistors are connected in
	parallel,	The state of the s
	i.P. Rp =	R_1R_2 , V_2 = V_3 A.
		R1+R2 3
~]	EVALUATION OF A SAME SAME AND A S	ರಿವಿ ದಿಸಿಕೆಯ ಸಿಂಗುಸಿ ಪರೀತೆ – ಪರ್ವಾಕ್ 2019

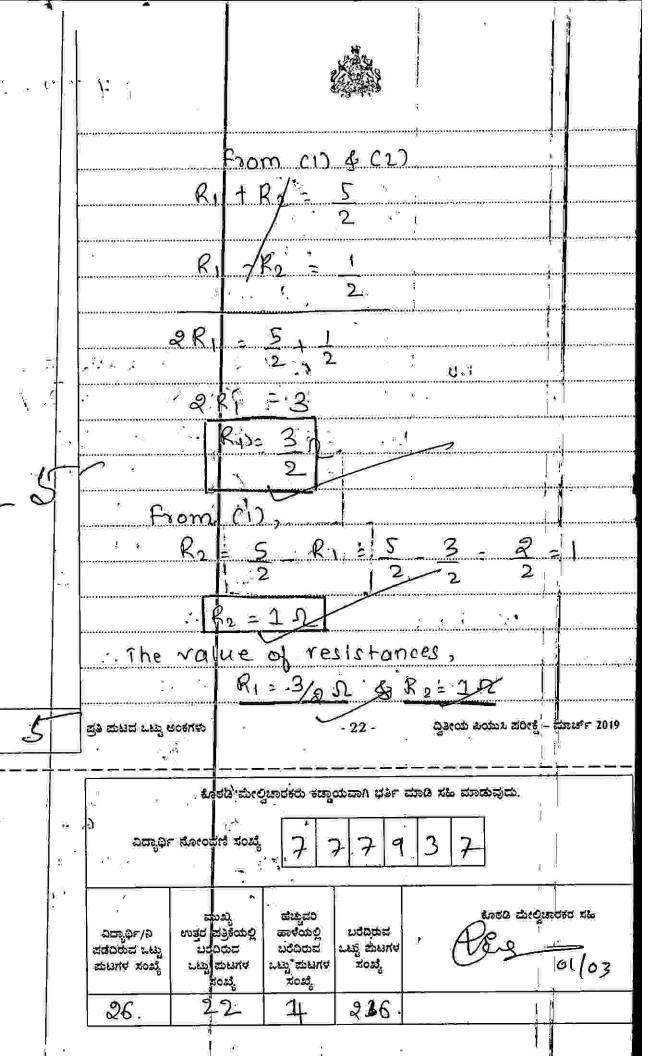
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7	7	7	9	3	7

A American and a management of the control of the c
· 25 - 0 5; L
3 , R1 R2
RIARZ.
25 = 50 (R1+R2)
3 . R.R.2
pu 25 - 125 × 5 /: R,+R2=5)
3 R1R2 12 2
42 (43) = 42 85 . 2 5
RIRO - 2 3 2RIR2
2
R17R2=5 1 R1R2=3
1 1 1 2 5 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2
hle have,
Me naver
$(R_1 - R_2)^2 = (R_1 + R_2)^2 - 4R_1R_2$
(B1-R2)2=(5/2-42-3)
= 25 _ 16 = 25-24
4 6 84
(Ri-Ro)2 = 100 - 20 = 1
8 . 4
1 0 0 - 1
$\frac{1}{2} - \frac{R_1 - R_2}{2} = \frac{1}{2} - \frac{C_2}{2}$
ಪ್ರತಿ ಮಟದ ಒಟ್ಟು ಅಂಕಗಳು <u>)</u> F 21 - ದ್ವಿತೀಯ ಪಿಯುಸ್ತಿಪೆರೀಕ್ಕೆ - ಮಾರ್ಚ್ 2019

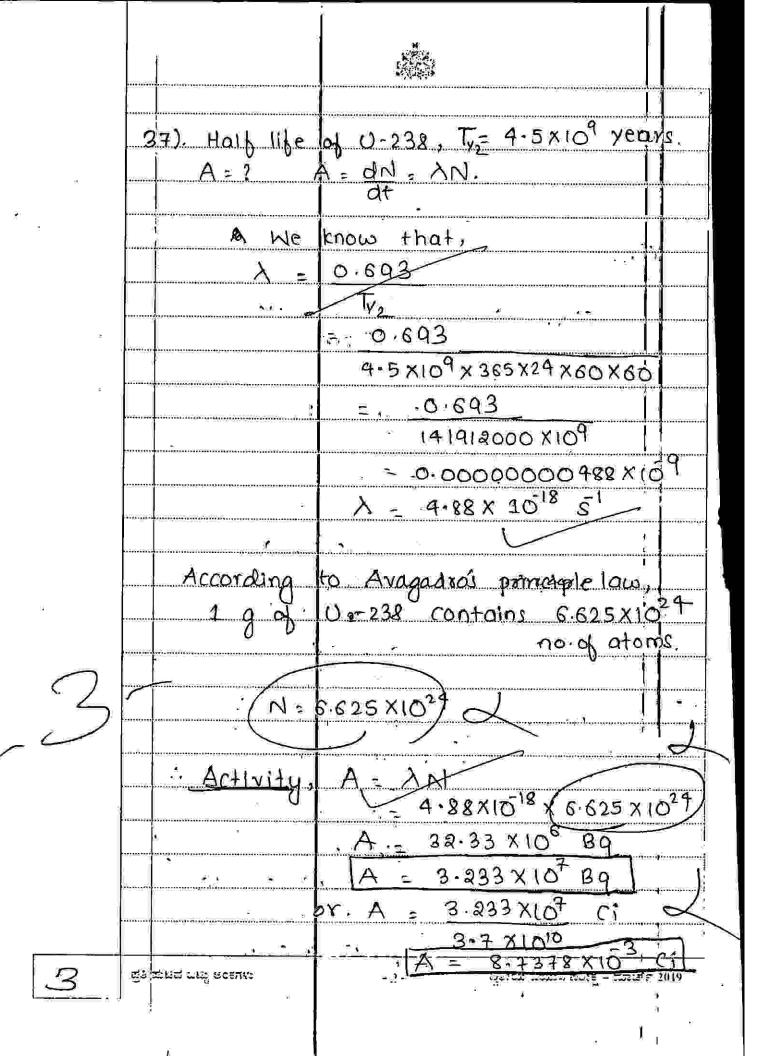


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13 x 5000 x 15¹⁰

65000 x 10 10

6.5 x 106 m





Experimental observations of photo electric effect. 23). According to Einstein's photoelectric equation, . we have, E = Ø + Fman hv = hyo + Kmay i) When, V=Vo, According to eqn, V=0. ... Thereis no kinetic energy and hence As) photoelectric emission occurs. ii) When VEVo, Brown According to eq (1), 16aca (V-Vo) will be negative & nence, kmax is negative. photoelectric effects does not occurs iii) When V>Vo, According to equal) Kmaa is positive Hence, photoelectific emissions occurs instantly, iv). Intensity of a phis the no. of photons emitted on the surface, Here, if the P.T.O.



photons is increased no of Will increased, then no of increased. Hence, increase in also be intensity will increase the photoclector effec Modulation: It is the process of 26). wich frequency wave to called modulated wave to high frequency of carrier wave Block diagram of the receiver. transmitted antenha Receiving Corrier signal (12)B= (00) T. aiven: 1=3m. d=70m. -30° 1). Position of the object should be beyond F ದ್ವಿತೀಯ ಪಿಯುಸಿ ಪರೀಕ್ಷೆ 🛊 ಮಾರ್ಚ್ 2019 ಪ್ರತಿ ಮಟದ ಒಟ್ಟು ಅಂಕಗಳು