DESIGN OF QUESTION PAPER

Questions are framed with 2 principles

1. No question will be asked beyond the syllabus.
2. Questions will be asked on the basis NCERT Book content.

Question wise break up

Type of question	Mark / Equation	Total No.of questions	Total Mark
VSA	1	5	05
SA I	2	5	10
SA II	3	12	36
VBQ	4	1	04
LA	5	3	15
	Total	26	70

Internal choice

- One question of 2 marks weightage
- One question of 3 marks weightage
- All the 3 questions of 5 marks weightage

Totally 20 marks come under internal choice.

CHANGES

Changes I

1. Chapter are clubbed - Explain, Why ? No unit specific weightage

2. Examiners have the freedom of distributing marks among the different units. E.g. 1) Electrostatics , current electricity may be

9 & 6

10 & 5

or 11 & 4 (very unlikely)

3. em waves and optics together 17 marks em waves need not be restricted to 3 marks. It may be 5 marks. Displacement current is an important concept so 3 marks there can be one more 2 marks or 3 marks.
4. Dual nature and Atoms, Nuclei together 10 marks. Previously if Davisson Germer is asked no other question can be asked from that unit now it is not so.

Changes II

No. of questions reduced from 29 to 26

Changes III

ADDITIONS AND DELETIONS CURRICULUM

Unit	Addition in 2015	Deletion in 2015
Unit I		Van de Graff Generator
Unit VI		Human eye, image formation and accommodation correction of eye defects (myopia, hypermertropia) using lenses.
Unit VIII		Atomic masses, isotopes isobars, isotones.

Unit	Addition in 2015	Deletion in 2015
Unit IX	Analog and Digital signals .	Transistors as an Oscillator, Transistor as a switch.
Unit X	Advantage of frequency modulation over amplitude modulation, Basic idea about internet, mobile telephone, Global Position system (GPS) and Satellite Communication.	Production and Detection of AM Waves

Changes IV

Typology of questions.

- According to Bloom's Taxonomy 6 basic thinking skills have to be tested.
- Knowledge,Comprehension,Application, Analysis, Synthesis, Evaluation – **H**igher **O**rder **T**hinking **S**kills
- Clear cut weightage is given in the given template,

S.No.	Typology of Questions	Very Short Answer (VSA) (1 mark)	Short Answer-I(SA-I) (2 marks)	Short Answer-II (SA-II) (3 marks)	Value Based Question (4 marks)	Long Answer (L.A.) (5 marks)	Total Marks	% Weightage
1	**Remembering** (Knowledge Based simple recall question, to know specific facts, terms, concepts, principles, or theories Identify, define, or recite, information	2	1	1	-	-	7	10%
2	**Understanding-Comprehension-** to be familiar with meaning and to understand conceptually, interpret, compare, contrast, explain, paraphrase information.	-	2	4	-	1	21	30%

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3	Application Use abstract information in concrete situation to apply knowledge to new situations/problems	-	2	4	-	1	21	30%
4	High Order Thinking Skills Analysis & Synthesis-Classify, compare, contrast, or differentiate between different pieces of information, Organize and /or integrate unique pieces of information from a variety of sources	2	-	1	-	1	10	14%

S.No.	Typology of Questions	Very Short Answer (VSA) (1 mark)	Short Answer-I(SA-I) (2 marks)	Short Answer-II (SA-II) (3 marks)	Value Based Question (4 marks)	Long Answer (L.A.) (5 marks)	Total Marks	% Weightage
5	Evaluation and Multi-Disciplinary- Appraise, judge, and /or justify the value or worth of a decision or outcome, or to predict outcomes based on values	1	-	2	1	-	11	16%
	Total	5x1=5	5 x 2=10	12 x 3 = 36	1 x 4 = 4	3 x 5 = 15	70 (26)	100%

Typology of Questions

Remembering (Knowledge Based)

- Simple Recall questions
- to know specific facts terms
- concepts
- principles
- theories
- identify
- define
- or recite
- information

Question	No.Of Question	Total Marks	
1 Mark	2	2	
2 Marks	1	2	
3 Marks	1	3	
		7	(10%)

Typology of Questions

Understanding (comprehension)

- to be familiar with meaning and to understand conceptually
- interpret
- compare
- contrast
- explain
- paraphrase information

Question	No.Of Question	Total Marks	
2 Marks	2	4	
3 Marks	4	12	
5 Marks	1	5	
		21	(30%)

Typology of Questions

Applications

- Use abstract information in concrete situations
- to apply Knowledgeto new situations
- use given content to intrepret a situations
- Provide a example or solve a problem

Question	No.Of Question	Total Marks	
2 Marks	2	4	
3 Marks	4	12	
5 Marks	1	5	
		21	(30%)

Typology of Questions

High order thinking skill (Analysis & Synthesis)

- Classify compare
- contrast or differentiate between different pieces of information
- organize and / or integrate unique piece of information from variety of sources.

Question	No.Of Question	Total Marks	
1 Mark	2	2	
3 Marks	1	3	
5 Marks	1	5	
		10	(14%)

Typology of Questions

Evaluation and Multi - Disciplinary

- Appraise
- judge ,and / or justify the value or worth of a decision or outcome
- to predict outcomes based on values

Question	No.Of Question	Total Marks	
1 Mark	1	1	
3 Marks	2	6	
4 Marks	1	4	
		11	(16%)

The above template is only a sample. Suitable internal variations may be made for generating similar templates keeping the overall weightage to different form of questions and topology of questions same.

A) REMEMBERING - (Knowledge based)

Eg. 1. Draw V – I Graph -

the law associated with the graph

Define Henry.

Weightage is reduced only 10% i.e 7 marks

All 1 mark will not be simple.

a) Examiners is not bound by this distribution.
Examiners can have his / her own distribution.

2 - 1 marks	1 x 2	= 2
1 - 2 marks	2 x 1	= 2
1 – 3 marks	3 x 1	= 3

		7

B) Understanding (comprehension)

30% i.e. 21 marks

SA I	- 2	2 X 2 = 4
SA II	- 4	4 X 3 = 12
LA	- 1	1 X 5 = 5

		21

Derivation of result $1/f = 1/v - 1/u$

C_s and C_p

Usually 5 marks will be under this domain

Derivation + 1 Numerical.

Category of questions is not rigid.

C) Applications

Numerical / apply concepts to little deviations from normal questions.

SA I	- 2	2 X 2 = 4
SA II	- 4	4 X 3 = 12
LA	- 1	1 X 5 = 5

		21
		---

3 marks and 2 marks for application oriented questions more unlikely in 5 marks

D) High Order Thinking Skills (Analysis & Synthesis)

Classify, compare, contrast differentiate between different pieces. It need not be difficult one. But clear cut conceptual understanding.

E.g. Coulomb's law. Vector Form Unit vector r (we normally don't emphasis)

Vector r – position of test charge w. r. to source change.

Direction of force on the test charge ?

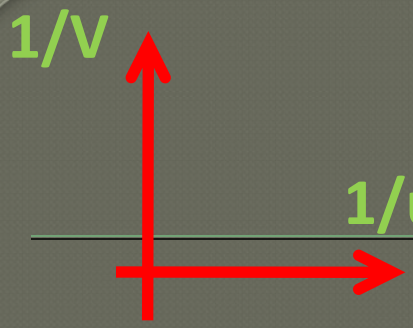
$(x_2 - x_1) + (y_2 - y_1) + (z_2 - z_1)\ k$

It is not difficult but students should synthesis the concept from std XI.

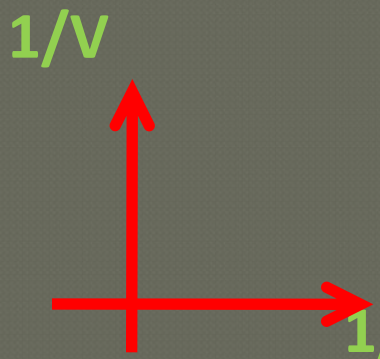
3. Write a mathematical equation each symbol has its own physical meaning. μ_0 = ?

Graphs – Interpretation of graph. Each graph has a voice. Slope of the curve, intercept of the curve etc.

Graph between 1/v & 1/u ---- straight lines slope gives power of lens.



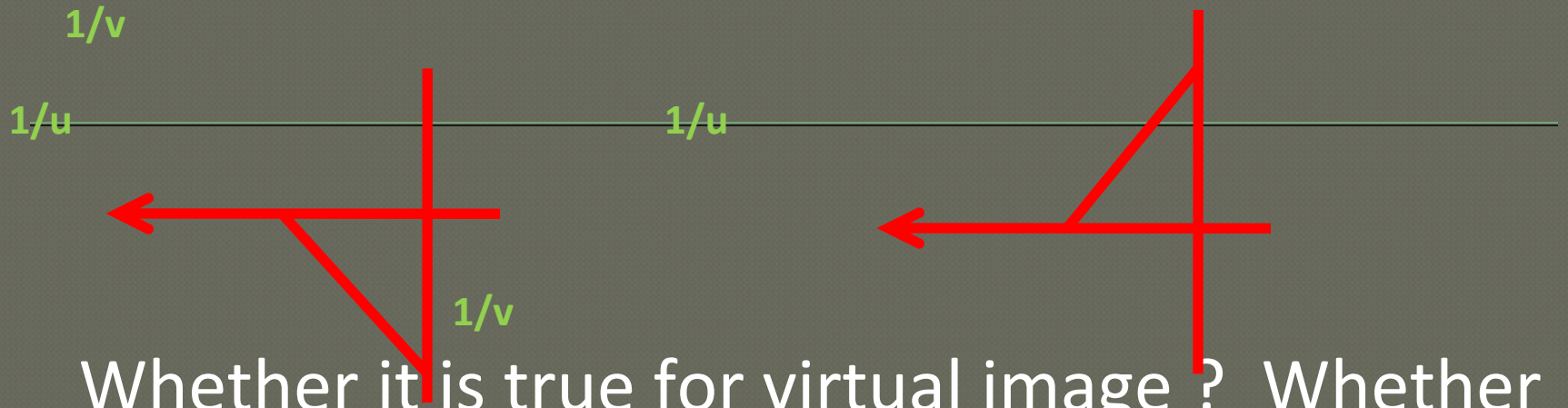
For Combination



For Single Lens

Power of the other lens can be found & nature of lens

Draw 1/v, 1/u for convex lens (real image)



Whether it is true for virtual image ? Whether It is true for concave lens?

Sign conventions are very important.

While derive we use sign conventions again using solving numerical why should we use sign convention ?

U & v have to come with sign.

Convex Lens

F = 30 cm

I case u = 10 cms

II case v = 15 cms

In which case image will be more magnefied ?

(simple analysis – questions) without calculation.

Similarly for concave lens.

VI Evaluation & Multidisciplinary

No question from Chemistry or Biology or Mathematics

Only Physics related questions.

Relation between one concept to other.

E.g. Theory of Cyclotron. Working based on important electric theory and magnetic theory are made use of.

Blocking out deceleration – no electric field inside hollow Dee.

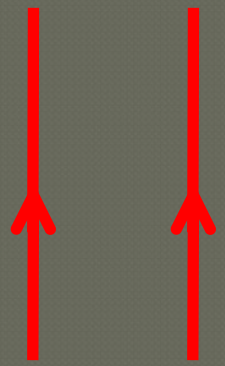
Circular motion ---- magnetic theory

2)

How do you justify the force is attractive. 1st 1 produces magnetic field.

2nd conductor experience force.

Justification



$$B = \frac{\mu_0 I \, d l * r l}{4 \pi r^2 \; 27}$$

$$j * l = -k$$

i.e magnetic field is long negative Z axis

Force I dl * B

$$j * (-k) = -l$$

i.e negative X axis

3) Current is due to drift of ens.

Instead of I, if en beam is moving, how do you explain ? wire is electrically neutral.

But en beam only electrical force

Electrical force > magnetic force.

4) n type SC - majority of ens why

All questions will be pretty simple.

It will be only from Physics.

Proper evaluation of data / diagram / graph

Eg. Two different materials A & B

	A	B
Voltage		
Current		
Length		
Diagram		

Evaluate which is better conductor?

Find the resistivity and compare.

Keep the in between calculations as such

$$\frac{R_1 l_1}{A_1} \quad \frac{R_2 l_2}{A_2} \quad \text{Ratio} \quad \frac{R_1 l_1}{A_1} \times \frac{A_2}{R_2 l_2}$$

π gets cancelled

Calculations get reduced. Chances of error is small

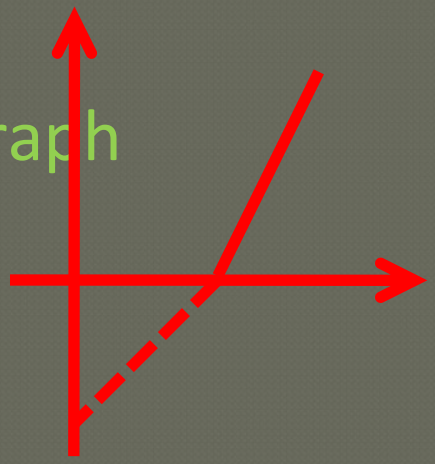
Which conductor obeys Ohm's law ?

V_0

Use this to find h and w

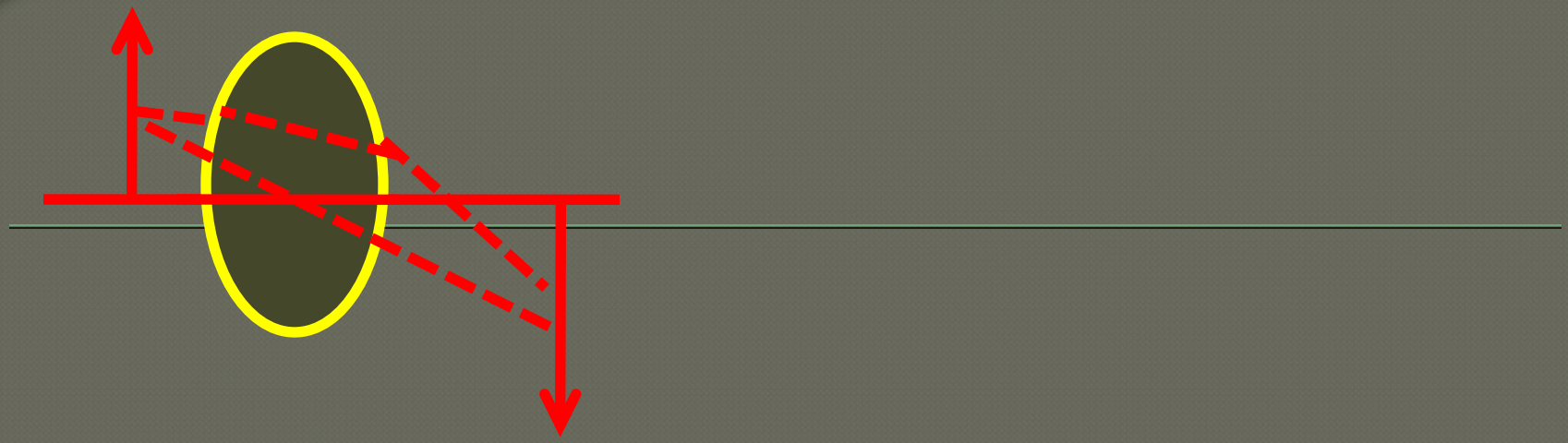
Assessment based on

graph



Diagram

Asses nature of lens, find the position of lens, focus of lens



Reverse Theory is challenging

Mathematical expression

$N = N_O e^{-\lambda T}$

Value of $\lambda / \prod 2$ is given evaluate the No. of atoms left undecayed ($N_0 - N$) after n (times half life) where n is not a whole number.

Eg. T ½ = 2 day after 3 day ?

$N/N^o = (½)^N = (½)^{t/T} = (½)^{3/2} = ½√2 + = √2/4$

Encourage students to do **Mental Calculation**.

Use of principle of proportionately for calculations.

Eg. Sin 52 sin 45 = 1/ = .707

Therefore sin 52 = 7.5 sin 60 = 3/2 = .8

$(8)^{1/3} = 2$ therefore $(17.5)^{1/3} = 2.5$

$(27)^{1/3} = 3$

4 Draw the graph between (F/l) & I_1 & II_2

Given attractive force is negative

Repulsive force is positive