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Research Problems in Understanding Physics for NEET /JEE Students, Reasons and Remedies - A Systematic Approach

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Abstract: ***Today, in word of competition, especially for jr college student preparing 11 th std. and 12 th std for appearing NEET AND JEE, (OTHER EQUIVALENTS) Face a big challenge in understanding, Appling and ultimately scoring physics. majority of students face this problem. Physics is the subject known for enhancing analytical skills of learner but the education system is redirecting the subject to subject of memorization, therby a wrong approach ,suppressing the vary scientist in the student***
Majorities Teachers /educators has approach of getting formulas memorized, as a conventional approach which in turn harms the basic purpose of studing physics. This research paper study tries to indicate right way for student and educator through an exclusive survey of 3000+ student group who score high marks, low marks
Keywords: NEET /JEE PHYSICS

I. INTRODUCTION

1) ABOUT JEE -JEE stands for Joint Entrance Exam; this exam is conducted for providing admissions to eligible candidates in various engineering graduate programs like Bachelor in Engineering (B.E.) and Bachelor in Technology (B.Tech.). It serves as a Common Entrance Test for a total of 24 Indian Institutes of Technology campuses, 32 National Institute of Technology campuses, 18 Indian Institute of Information Technology campuses, and 19 other Government Funded Technical Institutes (GFTIs).j. In JEE Main 2020, a total of 6 lakh (6,49,612) students sat in the September session, while over 8 lakh (8,84,138) students attempted the January session. In 2019, over 10 lakh (10,25,128) students appeared in April session, and 10,19,855 students attempted the January session.
2) ABOUT NEET-NEET stands for National Eligibility cum Entrance Test is conducted for providing admissions in various undergraduate medical courses (MBBS) and dental courses (BDS) in government or private medical and dental colleges in India. NEET is a single entrance test for admissions to around 83,000 MBBS and 27,000 BDS seats across India. NEET has over 13 lakh (13,66,945) students in 2020, while 14 lakh (14,10,755) students appeared in 2019, as informed by the education minister in a written reply to Rajya Sabha
MAHARASHTRA @ 1.1 lakh JEE and 2.3 lakh NEET candidates, it has the highest number of student.
In, recent times

A. Exam Pattern

1) JEE-MAINS

Parameters	JEE Main 2021 – B.E./B. Tech
Mode of Examination	CBT Mode
Duration of exam	3 hours
Total subjects	Physics, Chemistry, and Mathematics
Number of questions asked	90 (30 questions from each subject)
Number of questions	75 (25 questions from each subject)
Type of Questions	60MCQs having four options, each with one correct option+ 30 Questions for which answer is a Numerical Value
Marking Scheme	For MCQs: +4 for each correct answer; -1 for each incorrect answer; Unattempted questions will not be marked .For Non- MCQs: +4 for each correct answer, no negative marking for incorrect answers or unattempted questions.
Maximum Marks	300 Marks

2) NEET

Frequency of NEET Exam	Once in a Year
Total Number of Questions in NEET	180 Questions
Total Marks	720 Marks
No. of questions in each section	Physics- 45, Chemistry- 45, Biology- 90 (Botany- 45, Zoology- 45)
Marking Scheme	+ 4 for a correct answer, -1 for an incorrect answer
Type of Questions	Multiple Choice Questions (MCQs)
Exam Mode	Offline (Pen and Paper Test)
Duration	3 hours
Language options	11 languages: English, Hindi, Urdu, Bengali, Oriya, Tamil, Kannada, Telugu, Marathi, Gujarati, and Assamese

B. Current Trend

According to the Situation Assessment Survey. Similarly, micro level studies provide strong evidence that Physics is becoming the most challenging amongst the all 4 subjects physics, chemistry, math, biology.

theory of unbalanced approach and inter linkages and also indicates that physics could not become interesting subject due to its weak backward linkages of study pattern. This subject significantly tougher over the last few years. Multiple factors like lack of teachers' student interaction, negligence of Mathematics, NO LAB study approach, students' interest, changed exam pattern facilitated fear of physics amongst large population group in students.

Rising "physics fear "provide a need of rational approach and a guideline for student. both strategies, gaining analytical skills and gaining marks in exams has to be hand in hand, hence this paper focuses the practical solution for both .

Table 1 – analysis approximation of survey for NEET student

Periods	No of student securing less than 50 (%) of marks
2019	86%
2020	92%
2021	87%

Source: sample size analysis data.

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C. Significance of Physics

Physics, is known for experimentation and analysis and research wing of majority of all modern research in engineering and medical, agricultural field

Mechanics, theory of machines, fluid, thermal, electronics, sound engineering, electrical, magnetism, nuclear power, are some of important wings of physics .

Physics, has main intension to create and ANALYTICAL SKILLS and research tool for further studies.

D. Challenges, Policies and Strategies for NEET Exam

1) Negligence Mathematics -The Major Problem: Mathematics is the major neglected area without mathematics ,it is nearly impossible to understand physics .however it is seems ,students choose biology group ,just to get rid of math ,which is illogical .even parents and teachers also support ,leaving /neglecting /underestimating mathematics. Further when you go for NEET ,math is again Main tools for Physics and even for physical chemistry part also .following ar important areas of mathematics

a) Trigonometry: The major part of physics are occupied with trigonometry .Motion in 1d ,2d analysis ,circular motion ,electricity magnetism, mechanics, almost all part involves Trigonometry. Without trigonometry ,it is nearly impossible to handle physics seamlessly .

b) Differential and Integration: Again a major Tool for almost all physics .major derivations ,variable analysis needs immigration and diffractions .more than 80% topics are full with differentials and integrations in one or another way

c) Graphs: The graphs are tools with which a complex relationship is been understood in just minutes, which otherwise becomes a complex literature to understand whole process .it is said popularly ,A graph explain 10 pages description in 2 minutes

d) Others -you need to know logriths, exponents, conics also

2) Teachers/Coaching Institute Approach

Another major problem -Teacher, unfortunately, unknowingly seen that they convert physics as analytical in to a memorizing subject. The vary essence is to spend more time in experiment analysis of each concept, followed by mathematical analysis relationship analysis ,mixing concepts with each other .

So called' 'Tricks ''again are most dangerous part. Teacher need to rethink the shortcut part ,survey shows student following trick do score to less to qualify .Rather teacher should interact systematically and effectively ,with simulations ,e experiments and make points clear in research way .

Large size population mass teaching is becoming fetal for the student as individual. student has missing an opportunity to mix and interact with teacher ,exchanges doubts and ideas ,thereby missing out a major sector of improvement.

Survey shown high scorer student major belonging to small size batch ,in tune of les than 100 students ,interacting with teachers. Other hand ,even brilliant student has got failure in mass classes due to fact ,teachers are unavailable to interact personally .Govt should restrict mass teaching even in private coaching unless an assurance of effectiveness .

E. Remedies Suggested

Yield of physics is much lower in India in comparison to other subject of the exams. a rational and primal approach is been suggest as below.

1) Integrated Subject Management

a) Development of physical and institutional infrastructure in terms of e labs and simulations availability.

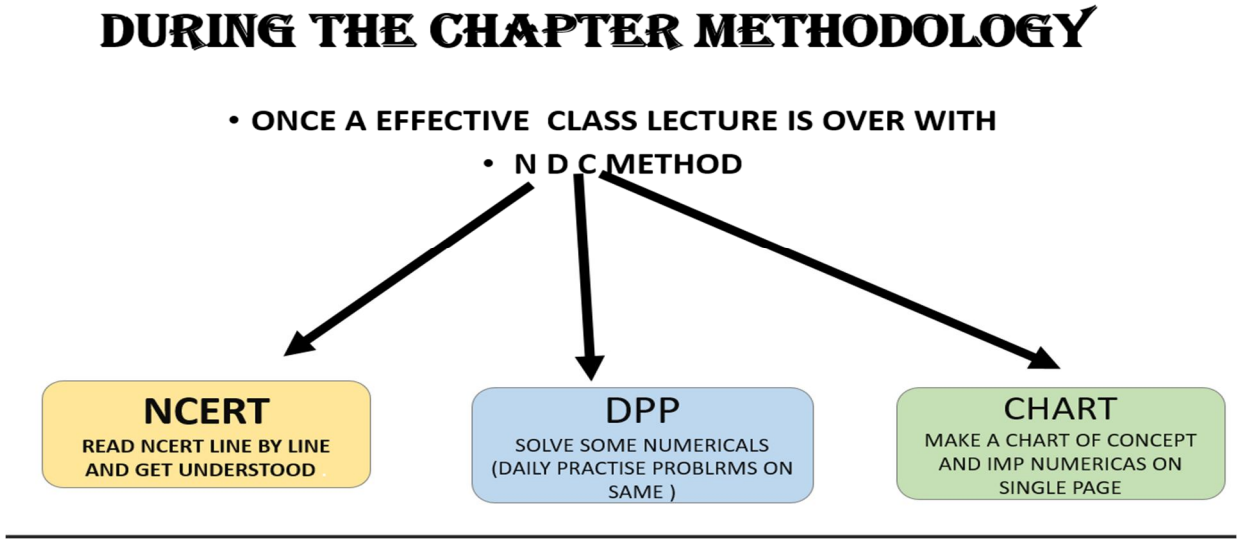
b) Development of improvised teacher skills

c) Time effective study pattern

d) Enhanced study methodology for students

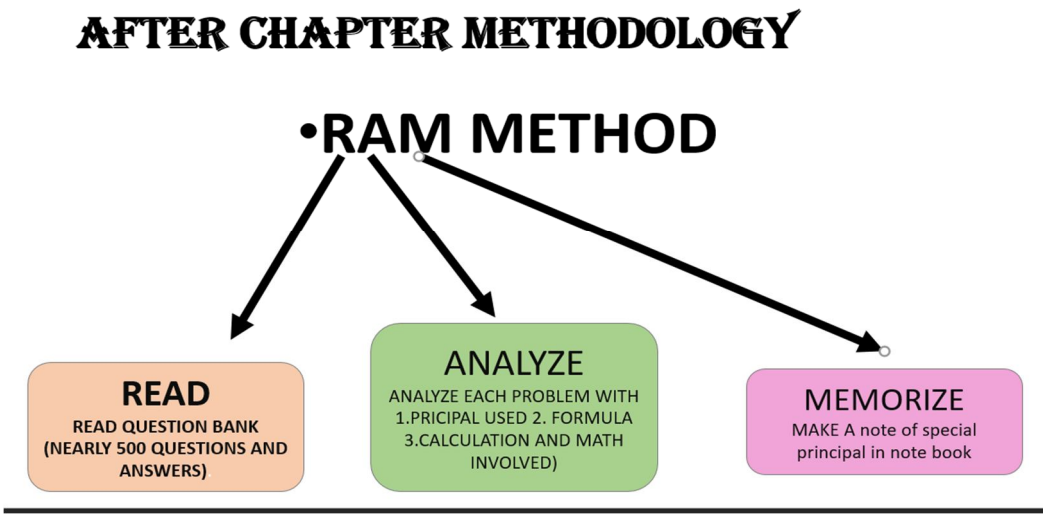
2) NDC Method for Daily Implementation: What effective way student should follow? A systematic research indicates, less time, more effective approach as follows . When chapter is going on, say MOTION IN PLANE , teacher should follow a academic calendar ,making nearly **100 minutes** lecture a day involving teaching ,analyzing ,discussing a concept for one concept a day and numerical on next day .

Now student should follow time effective following philosophy, for daily self-studies



a) *NCERT Reading:* After concept is over read and understand NCERT, Underline points and note it in notebook
b) *DPP (DAILY PRACTISE PROBLEM):* Student are suggested to solve DPP after NCERT readout, Teacher shall responsibly supply DPP s in a comprehensive manner.
c) *Chart Making:* Make a single point chart every day so that revision can be in 5 minutes ,use diagrams ,bar chart in it

3) *RAM Method after Chapter Completion:* What effective way student should follow after chapter ends? a systematic research indicates, less time, more effective approach as follows



a) *Read Question Bank:* After chapter is over, teacher shall provide a question bank of nearly 500 questions (general value but not restricted) with detailed solution, encompassing all aspects of that chapter and interlinkages. Student should read all question on eby one and analyze each question in step by step
b) *Analyze:* each problem with 1. principal used 2. formula 3. calculation and math involved.
c) Memorize all concepts and types and give tests based on question bank

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II. CONCLUSION

The systematic efforts by coaching institutes /teacher and methodology will improve the research aptitude and score of physics .The NDC and RAM methodologies will save time and improve effectiveness .Besides teacher has to redefine new was of making physics more interesting ,practical and easy digestible to student.

Note: This a general guideline result may vary from student to student ,however student are free to experiment new methodologies ,for individual

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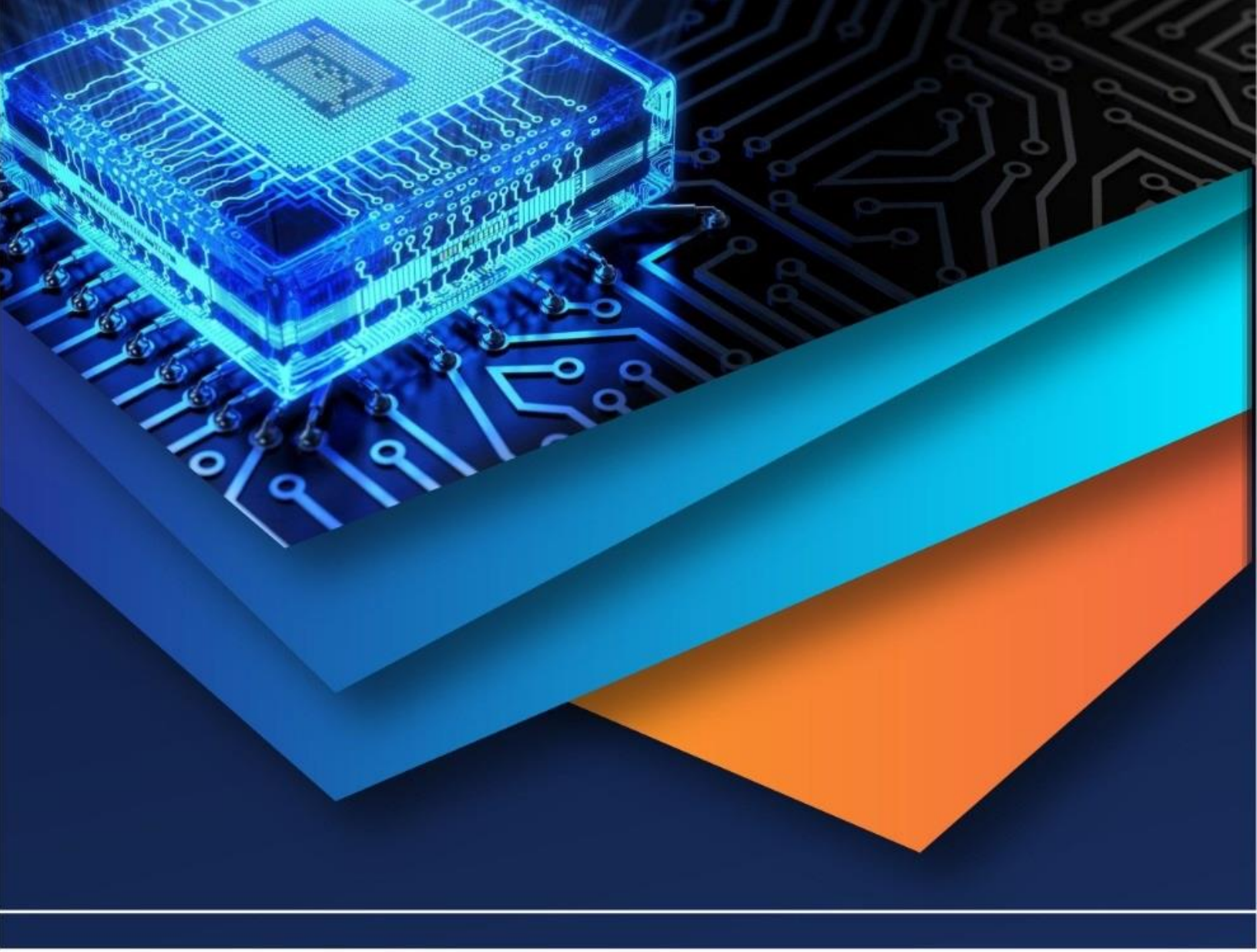

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