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A Study on Problems of Teachers in Teaching Mathematics at Higher Secondary Level of Mayurbhanj District, Odisha

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Abstract: ***The key objectives of the research work are to find the problems of teachers in teaching mathematics at higher secondary level. This study was administered on 120 mathematics teachers teaching in different higher secondary schools of Mayurbhanj district, Odisha, India. A self developed questionnaire was used to collect data from higher secondary school mathematics teacher to investigate the problems of teaching mathematics. The finding of the study emphasized that there is a significant difference between high and low experienced mathematics teachers' attitude towards problems in teaching mathematics at higher secondary level. The outcome of research work revealed that there is no significant difference between male and female mathematics teacher's attitude towards problems in teaching mathematics at higher secondary level. In addition to this, there is a significant difference in attitude among rural and urban mathematics teachers towards the problems in teaching mathematics at higher secondary level. Further, recommendations were given on the basis of obtained finding of the study.***

Keywords: Problems, Teachers, Mathematics, Higher Secondary Level.

I. INTRODUCTION

According to National Policy of Education (1986), mathematics is regarded as a vehicle for developing creativity. Mathematics is a compulsory subject for the development of scientific knowledge, habit of self-confidence and self-reliance, logical reasoning, critical thinking, ability of generalization, habit of exactness, sense of appreciation and intellectual curiosity among the students. Mathematics knowledge is necessary for secondary school students; as it is very useful for higher education. So, the students of secondary as well as higher secondary schools should develop some systematic scientific knowledge and intellectual growth through teaching of mathematics. Therefore, mathematics is placed in central focus of the school curriculum. The knowledge of mathematics is critical determinant of post-secondary education and career options available for students. To fulfill objective of education, the effective teaching of mathematics is necessary. Also the trained and experienced teachers are required for this purpose. During the teaching-learning process mathematics teachers face many problems and this is meant to find out these problems and their remedies. Therefore, these problems should be overcome for an equitable, sustainable, adaptative and quality mathematics education for the students studying at higher secondary level of their schooling.

II. REVIEW OF RELATED LITERATURE

Chaulagai (2005) revealed that mathematics teachers faced many problems in teaching geometry due to background characteristics of students, curriculum and text evaluation technique and so on. A study on problem faced by lower secondary mathematics teacher in teaching geometry showed that both trained and untrained teachers faced problems like crowed no of students, lack of mathematics laboratory, poor evaluation process and negative attitude towards geometry (**Poudel, 2007**). A research on problems faced by teachers and students in teaching-learning of vectors showed that insufficient mathematics materials, lack of protection topics, lack of motivation and encouragement to the students were the causes of ineffective teaching-learning of vector (**Shah, 2008**). A study was administered on self-regulation, self-efficacy and attitude towards mathematics of higher secondary students in relation to academic achievement by **Saileela (2012)** and revealed that the self-efficacy of girls was significantly greater than boys in mathematics and there exists a positive and significant correlation between academic achievement and self-efficacy. **Lamichhane (2018)** [10] conducted a descriptive survey to investigate the problem faced by secondary level mathematics teacher in teaching mathematics and found several problems like inadequacy of textbooks and teacher's guide, lack of instructional materials, lack of teacher training, lack of supervision, lack of physical facilities and lack of motivation to learn mathematics.

Further**, Bhattarai (2015**) obtained that learning mathematics in secondary level was affected by so many factors such as lack of student's involvement in curriculum planning, differential and instructional facilities and aids, student with weak background in the subject matter and student's defective promotion. Another study on problems of teaching mathematics at secondary level in Bangladesh indicated that the lack of well trained, devoted and highly motivated mathematics teachers and no use of teaching-learning materials hampered teaching and learning in mathematics (**Khaleduzzaman, 2020**) [8]**.** A study conducted on problems in teaching mathematics at upper-primary level of Khurda district, Odisha and obtained that the mathematics teachers at the upper-primary level were facing problems in different areas like lack of time, lack of teacher training, pedagogy, ICT integrated concepts, lack of TLMs and lack of technical support (**Sethi, 2021**) [16].

III. RESEARCH PROBLEM

There are various issues in today's education system starting from lack of infrastructure, lack of TLMs, inadequate numbers of efficient teachers, lack of teacher training programs, lack of motivation and encouragement to time management. To know the actual problems of mathematics teachers that they face during curriculum transaction in the mathematics classes is very important so that the solutions to those problems can be brought into action. Similarly, the teachers related to various categories like urban-rural teachers; high-low experienced teachers; male-female teachers also may have some specific problems in teaching-learning process of mathematics. For sorting out these problems is essential for the better and meaningful learning of mathematics of students at higher secondary level. The purpose of this study is an attempt to find out all these problems and to think out its solution by analyzing those problems faced by higher secondary school mathematics teachers. Hence, the investigator has undertaken to study this topic. It is hoped that the findings would be utilized by scholars, teachers, students, teacher-educators, researchers and educationists in future.

IV. OBJECTIVES OF THE STUDY

The objectives of the research work are; 1) To study the significant difference among high and low experienced mathematics teachers in relation to their attitude towards the problems of teaching mathematics at higher secondary level, 2) To study the significant difference among male and female mathematics teachers in relation to their attitude towards the problems of teaching mathematics at higher secondary level, 3) To study the significant difference between rural and urban higher secondary mathematics teachers regarding the problems in teaching mathematics.

V. HYPOTHESES OF THE STUDY

The hypotheses of the research work are; 1) There exist a significant difference among high and low experienced mathematics teachers in relation to their attitude towards the problems of teaching mathematics at higher secondary level, 2) There exist is no significant difference among male and female mathematics teachers in relation to their attitude towards the problems of teaching mathematics at higher secondary level, 3) There exist a significant difference between rural and urban higher secondary mathematics teachers regarding the problems in teaching mathematics.

VI. DELIMITATION OF THE STUDY

The population of the study delimited to higher secondary mathematics teachers only. The study delimited to **120** mathematics teachers as sample. The present study has been confined to the higher secondary schools of **Mayurbhanj** district, **Odisha, India**.

VII. METHODOLOGY

According the nature of study the investigator adopted the **descriptive survey method** to explore the facts related to the study regarding the teaching of mathematics in higher secondary schools with its problems and remedies. In the present study, the population constituted out of higher secondary school mathematics teachers of **Mayurbhanj** district, **Odisha**, **India**. For the collection of sample for this study **simple random sampling** technique was used. For the present study a total number of **120** higher secondary mathematics teachers were selected as sample by aforesaid sampling technique.

VIII. TOOLS AND TECHNIQUES

Tools and techniques are key components of research work as they play significant role in collection, analysis and interpretation of data. The investigator developed one questionnaire for the higher secondary school mathematics teachers for collection of data. Reliability of the test was calculated by **Product Moment Correlation Method**.

The co-efficient of reliability came out to be **0.80**. Hence the tool was highly reliable. The content of the tool were checked by the language and subject expert to find out the content validity of the tools.

IX. ANALYSIS AND INTERPRETATION

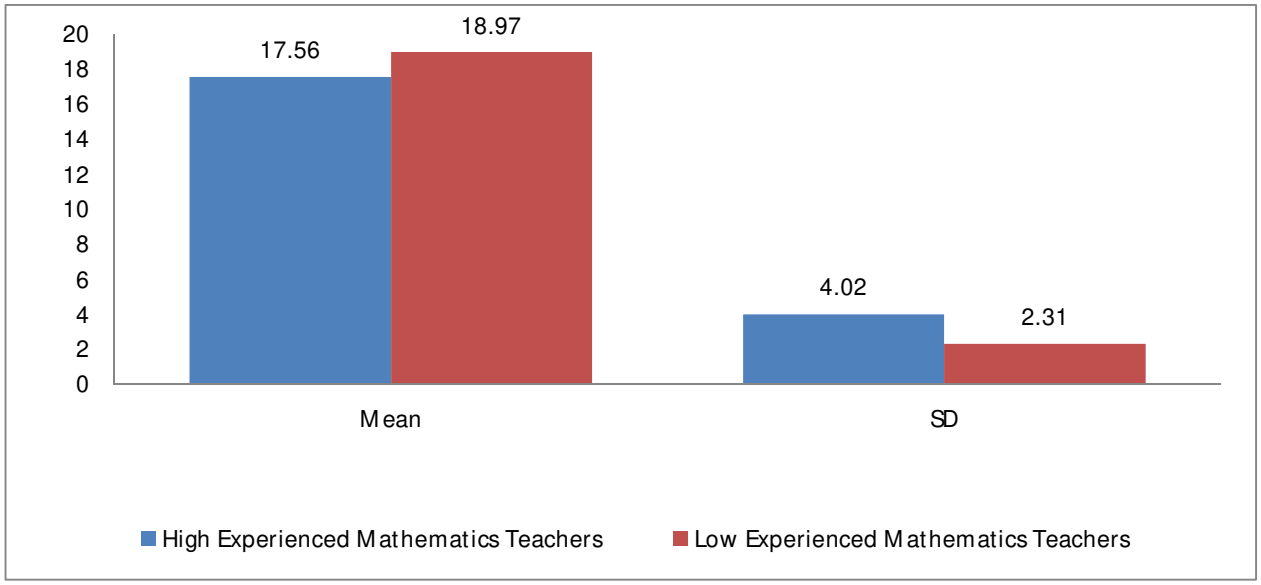
It is revealed from Table-1 that the mean score of high and low experienced mathematics teachers' attitude towards problems in teaching mathematics at higher secondary level are 17.56 and 18.97 with SDs 4.02 and 2.31 respectively. The t-ratio came out to be 2.38, which is significant at 0.05 level of significance. It indicates that there exists a significant difference in attitude of high and low experienced mathematics teachers towards problems in teaching mathematics at higher secondary level. Moreover, the average scores of low experienced mathematics teachers are higher than the high experienced mathematics teachers, i.e. low experienced mathematics teachers have more attitudes towards problems in teaching mathematics at higher secondary level.

(Table-1, Significant difference between high and low experienced mathematics teachers attitude towards problems in teaching mathematics at higher secondary level)

Variable	Groups	N	Mean	SD	SED	t-ratio	Level of Significance
Attitude of higher secondary mathematics teachers towards teaching mathematics	High Experienced Mathematics Teacher	60	17.56	4.02	0.59	2.38	Significant at 0.05 level only
	Low Experienced Mathematics Teacher	60	18.97	2.31			

(Degree of Freedom = 118, at 0.05 level = 1.97 and at 0.01 level = 2.62)

The mean and Standard Deviation (SD) of high and low experienced mathematics teachers attitude towards problems in teaching mathematics at higher secondary level as depicted in the above table is represented by the bar diagram.



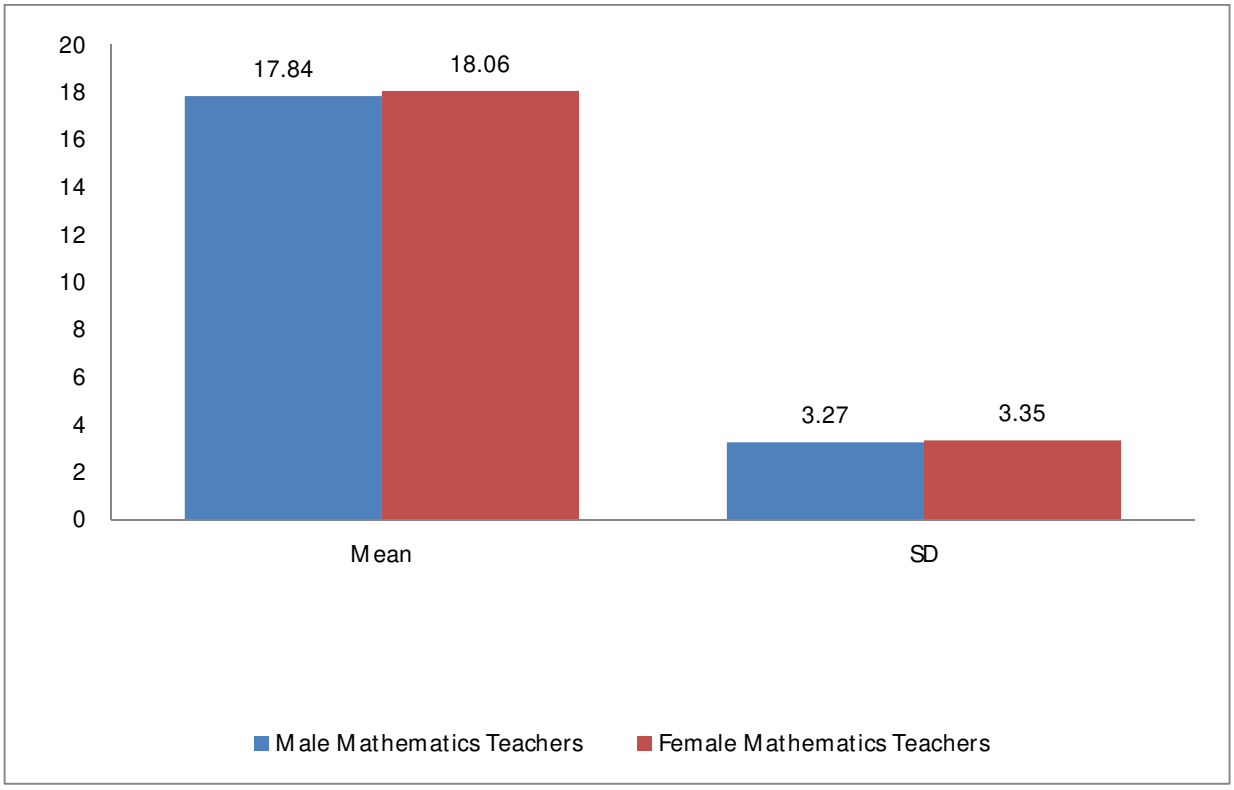
(Fig.1, Mean and SD of high and low experienced mathematics teachers'attitude towards problems in teaching mathematics at higher secondary level)

It is obtained from Table-2 that the mean score of male and female mathematics teacher's attitude towards problems in teaching mathematics at higher secondary level are 17.84 and 18.06 with SDs 4.02 and 3.35 respectively. The t-ratio came out to be 0.36, which is less than standard table value at both levels of significance. So the t-ratio is not significant at both levels. It concludes that there is no significant difference in attitude among male and female mathematics teachers towards problems in teaching mathematics at higher secondary level. In addition to this, the mean score of female mathematics teachers is higher than that of male mathematics teachers; it implies that the female mathematics teachers have more attitudes towards problems in teaching mathematics at higher secondary level.

(Table-2, Significant difference between male and female mathematics teacher's attitude towards problems in teaching mathematics at higher secondary level)

Variable	Groups	N	Mean	SD	SED	t-ratio	Level of Significance
Attitude of higher secondary mathematics teachers towards teaching mathematics	Male Mathematics Teachers	60	17.84	3.27	0.60	0.36	Not Significant
	Female Mathematics Teachers	60	18.06	3.35			

The mean and SD of male and female mathematics teachers' attitude towards problems in teaching mathematics at higher secondary level as depicted in the above table is represented by the bar diagram.



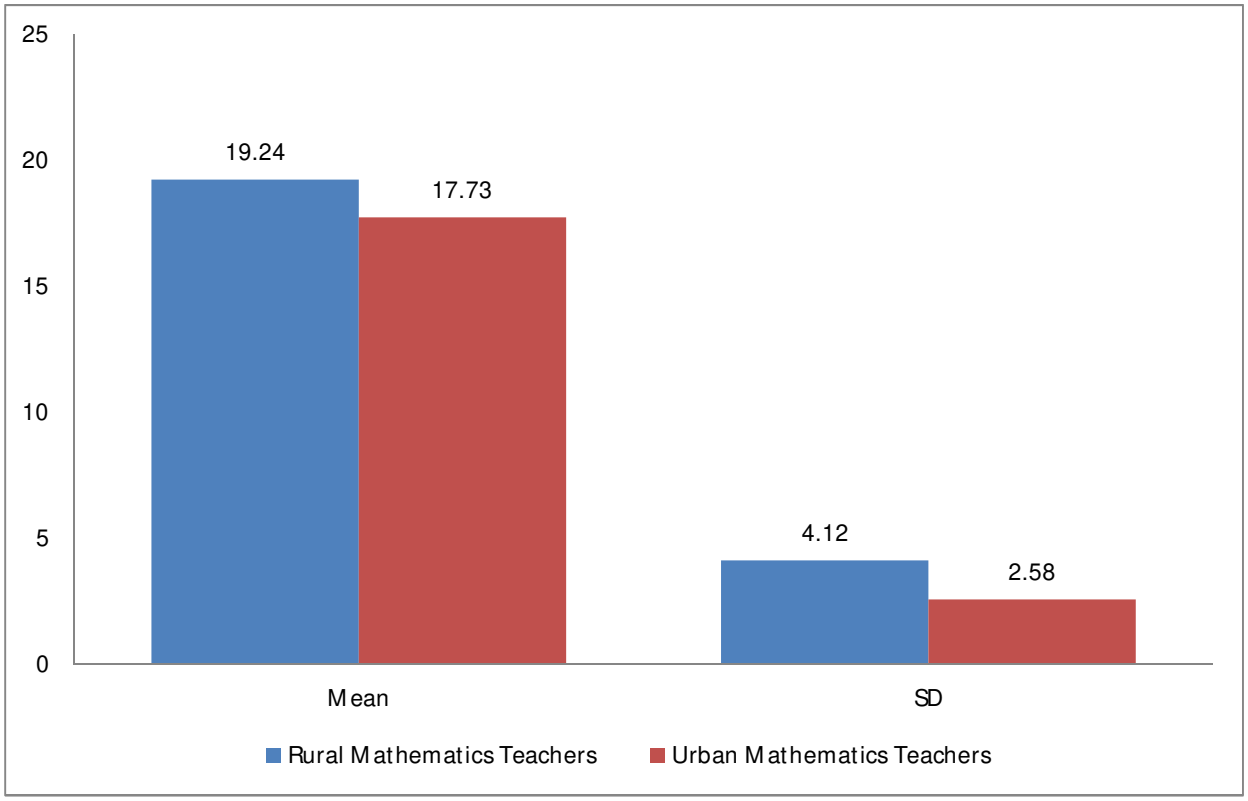
(Fig.2, Mean and SD of male and female mathematics teachers' attitude towards problems in teaching mathematics at higher secondary level)

It is found from Table-3 that the mean score of rural and urban mathematics teacher's attitude towards problems in teaching mathematics at higher secondary level are 19.24 and 17.73 with SDs 4.12 and 2.58 respectively. The t-ratio came out to be 2.43, which is significant at 0.05 levels only. It is concluded that there is a significant difference in attitude among rural and urban mathematics teachers towards the problems in teaching mathematics at higher secondary level. Also, the mean score of rural mathematics teachers is higher than that of urban mathematics teachers; it implies that the rural mathematics teachers have more attitudes towards problems in teaching mathematics at higher secondary level.

(Table-3, Significant difference between rural and urban mathematics teachers' attitude towards problems in teaching mathematics at higher secondary level)

Variable	Groups	N	Mean	SD	SED	t-ratio	Level of Significance
Attitude of higher secondary mathematics teachers towards teaching mathematics	Rural Mathematics Teachers	60	19.24	4.12	0.62	2.43	Significant at 0.05 level only
	Urban Mathematics Teachers	60	17.73	2.58			

The mean and SD of urban and rural mathematics teachers attitude towards problems in teaching mathematics at higher secondary level as depicted in the above table is represented by the bar diagram.



(Fig-3, Mean and SD of urban and rural mathematics teachers' attitude towards problems in teaching mathematics at higher secondary level)

X. FINDINGS AND DISCUSSION OF THE RESULT

Every research work provides some meaningful information and knowledge to the related field and this research work also has some systematic, organized and meaningful information. The results of the research work revealed that there is a significant difference between high and low experienced mathematics teachers attitude towards problems in teaching mathematics at secondary level. Also, there is no significant difference between male and female mathematics teacher's attitude towards problems in teaching mathematics at secondary level. In addition to this, there is a significant difference in attitude among rural and urban mathematics teachers towards the problems in teaching mathematics at secondary level. There are several educational implications of this study which are as follows: This study can be helpful for the proper guidance of teacher, teacher-educator. Also the findings of the study can be used as an instrument of training of teachers by various institutes like DIETs, CTEs. It can help in improving the quality of mathematics teachers and hence quality of mathematics teaching. The orientation programmes of teachers about new methods, new information etc can be organized keeping in view the findings of this research study. Educational system can draw the attention of government towards this problems faced by teachers and may ask the government to take necessary action to sort out these problems. Both urban and rural higher secondary students can be benefitted indirectly by this study and will enjoy the learning of mathematics instead of thinking mathematics learning as a burden or difficult task. Future problems that may arise during course of teaching mathematics can be assumed and hence, at that time it will be easy to solve the future problems related to mathematics teaching.

XI. RECOMMENDATIONS

This research work was conducted on 120 higher secondary school mathematics teachers only. Then, similar type of study may be conducted on teachers related to other subjects like Physics, Chemistry, Botany, Zoology, Statistics etc. at higher secondary level. It is suggested that the identical research work may be conducted on primary, upper-primary and secondary mathematics teachers also. Further, study may be conducted at college and university level to know the problems of mathematics lecturers and professors to enhance the academic achievement of students. This type of study can also be tried upon students regarding their problems that they face during the curriculum transaction. Mathematics teachers should use exact instructional materials, teaching aids, TLMs, no-cost and low-cost materials to engage the students in the teaching-learning process. In addition to this, mathematics teachers should provide concrete instances of abstract concepts, facts, generalization to strengthen the understanding of students.

XII. CONCLUSION

Mathematics is placed as a compulsory subject in the curriculum of secondary schools. Mathematics has been viewed as a tool of development for every nation. So the teaching of mathematics in higher secondary schools has an important role in this regard. The more effective the teaching mathematics, the greater will be the learning outcomes. The effective teaching strategies should be adopted by the mathematics teacher in order to earn a fruit full learning outcomes. Also teacher should be trained and must be able to use educational technology (ICT) in appropriate way to engage students in the teaching-learning process effectively. The teachings of mathematics develop the scientific knowledge and intellectual curiosity of higher secondary level students.

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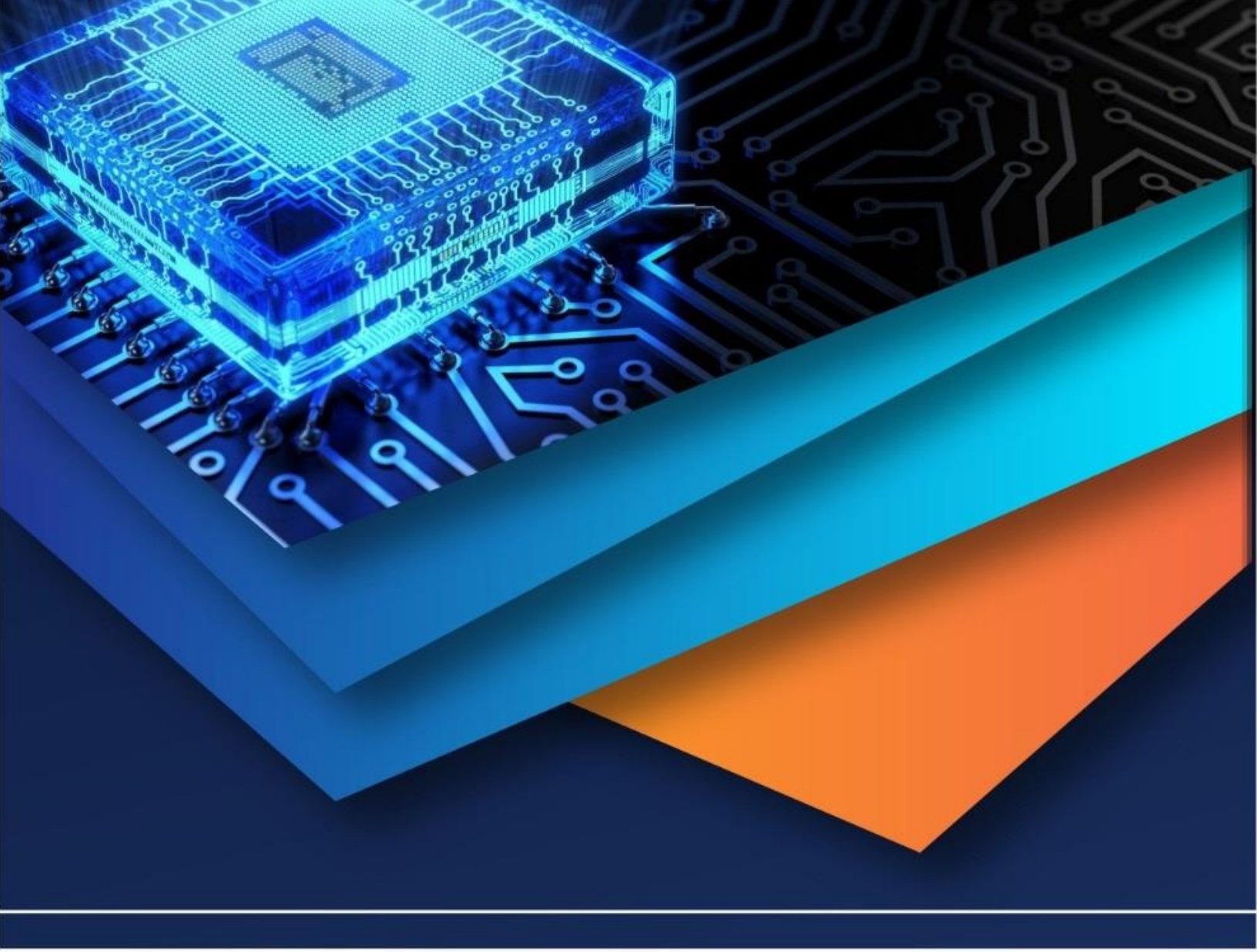

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