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A Study on Financial Derivatives with Special Reference to Futures of I.T Sector

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Abstract: ***The present study has made an attempt to examine the growth and performance of Futures in I.T sector. The study has considered the major companies such as Infosys ,TCS and Wipro to evaluate the profit or loss position of Future's buyer and seller. To study and analyze the effectiveness of hedging in futures of IT sector.***
Keywords: Futures, hedging, I.T sector

I. INTRODUCTION

The emergence of the market for derivative products, most notably forwards, futures and options, can be traced back to the willingness of risk-averse economic agents to guard themselves against uncertainties arising out of fluctuations in asset prices. By their very nature, the financial markets are marked by a very high degree of volatility. Through the use of derivative products, it is possible to partially or fully transfer price risks by locking-in asset Prices. As instruments of risk management, these generally do not influence the Fluctuations in the underlying asset prices. However, by locking-in asset prices, Derivative products minimize the impact of fluctuations in asset prices on the Profitability and cash flow situation of risk-averse investors.

II. OBJECTIVES OF THE STUDY

A. To find the profit/loss position of futures buyer and seller with regard to Futures of IT sector.
B. To study and analyze the effectiveness of hedging in futures of IT sector.
C. To make suggestions to the investors regarding the effective usage of derivatives.

III. NEED FOR THE STUDY

In recent times, the Derivative markets have gained importance in terms of their vital role in the economy. The increasing investments in derivatives (domestic as well as overseas) have attracted my interest in this area. Through the use of derivative products, it is possible to partially or fully transfer price risks by locking-in asset prices. As the volume of trading is tremendously increasing in derivatives market, this analysis will be of immense help to the investors.

IV. SCOPE OF THE STUDY

The Study is limited to **"**Derivatives" with special reference to futures. The study can't be said as totally perfect. Any alteration may come. The study has only made a humble Attempt at evaluation derivatives market only in India context.

A. The scrip chosen for analysis is WIPRO, TCS, INFOSYS and the contract taken is June 2019 ending one – month contract.
B. The data collected is completely restricted to WIPRO, TCS, INFOSYS of June 2019, hence this analysis cannot be taken universal.

V. RESEARCH METHODOLOGY

1) *Sources of Information:* The study is based on the Secondary data. The Secondary data sources adopted from different Journals, Websites and Newspapers, Text books.
2) *Statistical Tools*
a) *Mean:* The arithmetic mean of a set of values is the ratio of their sum to the total numbers value in the set.
M= X1+X2+X3+…..+Xn/n.
b) *Standard Deviation:* the standard deviation of data set this measure of the magnitude of deviations between the values of the observations contain in the data set.

$$s = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}}$$

Variance (σ^2) = $\Sigma (x - \mu)^2 / N - 1$ x = Return; μ = Average Return

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VI. REVIEW OF LITERATURE

1) *Behavior of Stock Market Volatility after Derivatives By Golaka C Nath, Research Paper (NSE): Financial* market liberalization since early 1990s has brought about major changes in the financial markets in India. The creation and empowerment of Securities and Exchange Board of India (SEBI) has helped in providing higher level accountability in the market. New institutions like National Stock Exchange of India (NSEIL), National Securities Clearing Corporation (NSCCL), National Securities Depository (NSDL) have been the change agents and helped cleaning the system and provided safety to investing public at large. With modern technology in hand, these institutions did set benchmarks and standards for others to follow. Microstructure changes brought about reduction in transaction cost that helped investors to lock in a deal faster and cheaper.
2) *Dr. Premalata Shenbagaraman, Research Paper (NSE):* Numerous studies on the effects of futures and options listing on the underlying cash market volatility have been done in the developed markets. The empirical evidence is mixed and most suggest that the introduction of derivatives do not destabilize the underlying market. The development of the option pricing models by Black and Scholes (1973) and by Merton (1973) has made it possible for derivatives markets to develop and for these financial instruments to become a potentially important tool in risk management.
3) Derivatives are now an important part of the world economy, with a notional value of more than $200 trillion of these derivatives traded on organized and OTC markets in 2004 (Bank for International Settlements, 2005).
4) *An Overview of The Literature About Derivatives By Chiara Oldani:* A derivative is defined by the BIS (1995) as "a contract whose value depends on the price of underlying assets, but which does not require any investment of principal in those assets. As a contract between two counterparts to exchange payments based on underlying prices or yields, any transfer of ownership of the underlying asset and cash flows becomes unnecessary". This definition is strictly related to the ability of derivatives of replicating financial instruments.

VII. DATA ANALYSIS AND INTERPRETATION

A. *Objective 1*

To find the profit/loss position of futures buyer and seller with regard to Futures of IT sector.

Table no.:1-Future prices of TCS for June 2019

DATE	SPOT PRICE	FUTURE PRICE	RETURNS(X)
2-Jun-19	1308.35	1305.5	-0.22
3-Jun-19	1308.45	1304	-0.34
4-Jun-19	1298.4	1297.8	-0.05
5-Jun-19	1282.8	1281.5	-0.10
6-Jun-19	1261	1260.7	-0.02
7-Jun-19	1190.2	1193.45	0.27
10-Jun-19	1176.7	1174.8	-0.16
11-Jun-19	1158.05	1158.1	0.00
12-Jun-19	1218	1213.65	-0.36
13-Jun-19	1236.7	1223.75	-1.05
14-Jun-19	1182.4	1173.25	-0.77
17-Jun-19	1178.85	1170.1	-0.74
18-Jun-19	1199.55	1195.8	-0.31
19-Jun-19	1192.75	1180.3	-1.04
20-Jun-19	1194.7	1191.55	-0.26
21-Jun-19	1187.4	1187.7	0.03
24-Jun-19	1188.3	1185.15	-0.27
25-Jun-19	1166	1159.85	-0.53
27-Jun-19	1195.85	1195.8	0.00

Return (%) = Current Price (P_1) – Previous Price (P_0) * 100
Previous Price (P_0)

Average Return (μ) = $\Sigma x / N$

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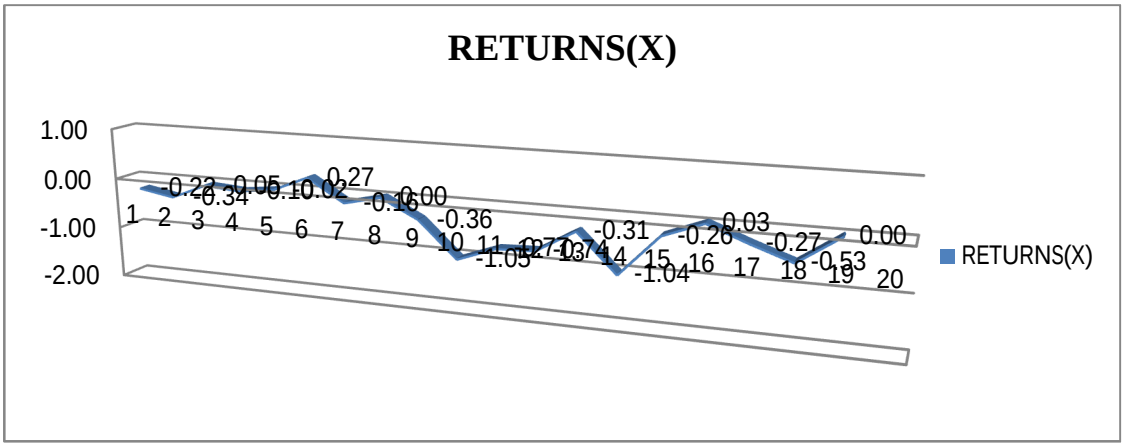
DESCRIPTIVE STATISTICS	
Mean	-0.31
Standard Deviation	0.37
Sample Variance	0.13

Variance (σ^2) = $\Sigma (x - \mu)^2 / N - 1$ x = Return; μ = Average Return Standard Deviation (σ) = $\sqrt{\sigma^2}$

Figure no.1: Graphical representation of TCS Future prices.



1) Interpretation: The closing price of TCS at the end of the contract period 23124/- and this is considered as settlement price.

Table no. 2: Future prices of WIPRO for June 2019

Date	SPOT price	FUTURE PRICES	RETURNS(X)
1-JUNE-19	1228.75	1223.21	-0.45
2-JUNE-19	1267.25	1243.75	-1.85
3-JUNE-19	1228.95	1257.25	2.30
4-JUNE-19	1286.3	1211.95	-5.78
7-JUNE-19	1362.55	1216.3	-10.73
8-JUNE-19	1339.95	1342.55	0.19
9-JUNE-19	1311.95	1321.95	0.76
10-JUNE-19	1356.15	1311.95	-3.26
11-JUNE-19	1435	1421.15	-0.97
14-JUNE-19	1410	1435	1.77
15-JUNE-19	1352.2	1410	4.27
16-JUNE-19	1368.3	1352.2	-1.18
17-JUNE-19	1322.1	1368.3	3.49
18-JUNE-19	1248.85	1322.1	5.87
21-JUNE-19	1173.2	1248.85	6.45
22-JUNE-19	1124.95	1173.2	4.29
23-JUNE-19	1151.45	1124.95	-2.30
24-JUNE-19	1131.85	1151.45	1.73
25-JUNE-19	1261.3	1131.85	-10.26
28-JUNE-19	1273.95	1261.3	-0.99

Return (%) = Current Price (P_1) – Previous Price (P_0) * 100
Previous Price (P_0)

Average Return (μ) = $\Sigma x / N$

Variance (σ^2) = $\Sigma (x - \mu)^2 / N - 1$ x = Return; μ = Average Return

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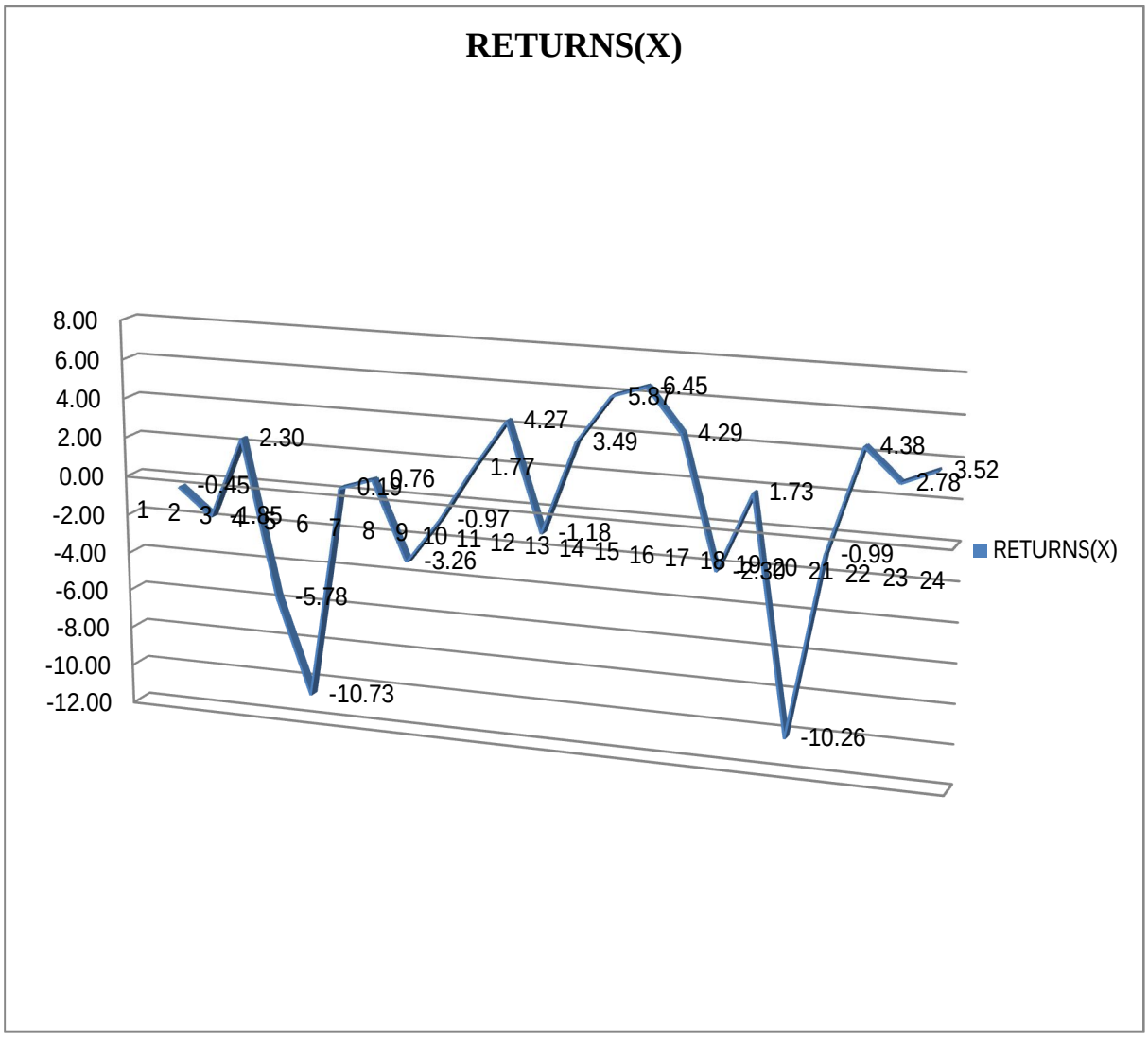
DESCRIPTIVE STATISTICS	
Mean	0.18
Standard Deviation	4.53
Sample Variance	20.56

Figure no.2: Graphical representation of WIPRO Future prices.



1) Interpretation

a) The closing price of WIPRO at the end of the contract period is Rs. 2624.2 and this is considered as settlement price.

b) If the selling price of the future is less than the settlement price than the seller incurs losses.

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Table no.3: Future prices of INFOSYS- June 201

Date	SPOT Price	FUTURE PRICE	RETURNS(X)
1-JUNE-19	2383.5	2391.15	0.32
2-JUNE-19	2423.35	2445.35	0.91
3-JUNE-19	2395.25	2311.25	-3.51
4-JUNE-19	2388.8	2398.18	0.39
7-JUNE-19	2402.9	2414.1	0.47
8-JUNE-19	2464.55	2476.57	0.49
9-JUNE-19	2454.5	2463.25	0.36
10-JUNE-19	2409.6	2412.14	0.11
11-JUNE-19	2434.8	2438.78	0.16
14-JUNE-19	2463.1	2478.23	0.61
15-JUNE-19	2423.45	2432.42	0.37
16-JUNE-19	2415.55	2421.57	0.25
17-JUNE-19	2416.35	2419.32	0.12
18-JUNE-19	2362.35	2383.36	0.89
21-JUNE-19	2196.15	2113.15	-3.78
22-JUNE-19	2137.4	2142.14	0.22
23-JUNE-19	2323.75	2334.75	0.47
24-JUNE-19	2343.15	2343.15	0.00
25-JUNE-19	2411.4	2413.4	0.08
28-JUNE-19	2313.35	2316.35	0.13
29-JUNE-19	2230.7	2232.7	0.09
30-JUNE-19	2223.95	2231.45	0.34
31-JUNE-19	2167.35	2187.35	0.92

Return (%) = $\frac{\text{Current Price } (P_1) - \text{Previous Price } (P_0)}{\text{Previous Price } (P_0)} * 100$

Average Return (μ) = $\Sigma x / N$

Variance (σ^2) = $\Sigma (x - \mu)^2 / N - 1$ x = Return; μ = Average Return

Standard Deviation (σ) = $\sqrt{\sigma^2}$

DESCRIPTIVE STUDY	
Mean	0.018161
Standard Deviation	1.185684
Sample Variance	1.405847

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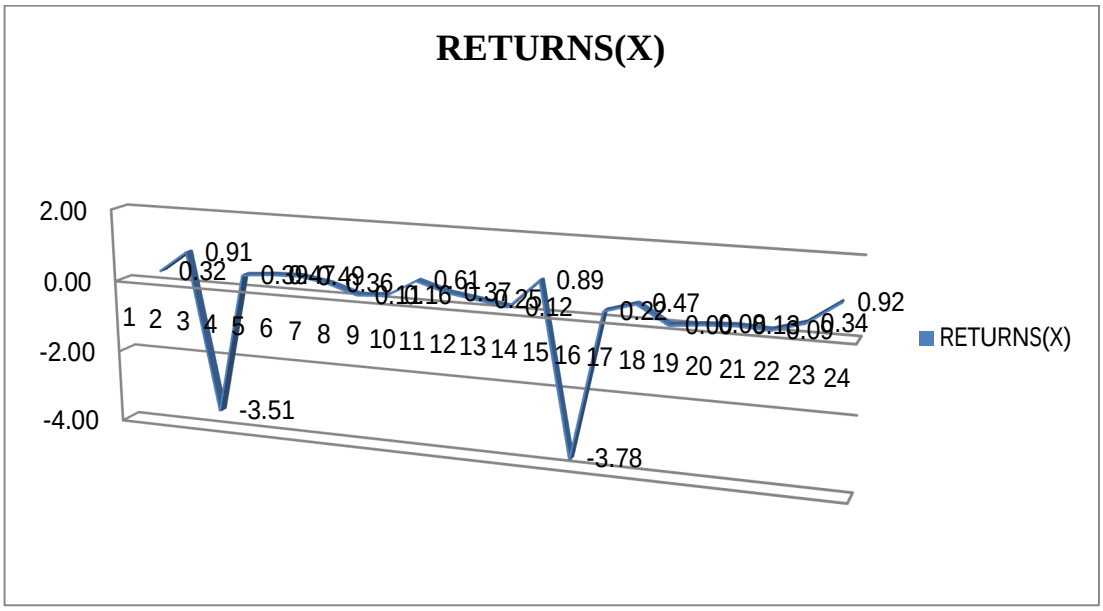
Figure no.3: Graphical representation of INFOSYS Future prices.



1) Interpretation

a) If a person buy 1 lot i.e. 500 future of INFOSYS on 01st June 2019 and sells on 31st June 2019 then he will get a profit of Rs 28550 i.e. Rs 57.1*500.

b) The closing price of INFOSYS at the end of the contract period is Rs. 983.3 and this is considered as settlement price.

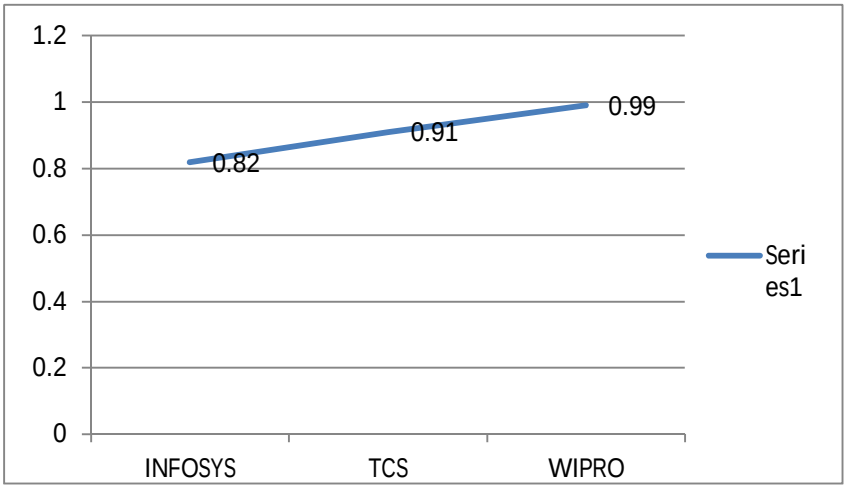
B. Objective 2

Analyzing the effectiveness of hedging in futures of IT sector

Table no- 4: The Value Of Beta And Alpha

COMPANY	BETA	ALPHA	REGRESSION
INFOSYS	0.82	0.12	Y=0.12+0.82X
TCS	0.91	-0.01	Y=-0.01+0.91X
WIPRO	0.99	0.26	Y=0.26+0.99X

Graph no-4: Chart Showing The Changes In Beta Value Of IT Sector



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1) Interpretation

a) The systematic risk of Infosys is 0.82, the stock and the market move in the same direction; however, the stock is relatively less risky. A move of 1% in the market influences the stock to move up by 0.82%. In order to hedge the risk, for an instance of 100 contracts, 82 contracts must be hedged. The unsystematic risk of INFOSYS is 0.12. The regression of the company is Y= 0.12+0.82X, for instance if the investor gets a return of 2% in the market then the investor would earn a return of 1.76% in the futures market.

b) The systematic risk of TCS is 0.91, the stock and the market move in the same direction; however, the stock is relatively less risky. A move of 1% in the market influences the stock to move up by 0.91%. In order to hedge the risk of TCS, for an instance of 100 contracts 91 contracts must be hedged. The regression of the company is Y= -0.01+0.91X, for instance if the investor gets a return of 2% in the market then the investor would earn a return of 1.81% in the futures market.

c) The systematic risk of WIPRO is 0.99 which is very close to the standard condition of β=1, which moves according to the market. A move of 1% in the market influences the stock to move up by 0.99%. In order to hedge the risk, for an instance of 100 contracts, 99 contracts must be hedged. The unsystematic risk of WIPRO is 0.26. The regression of the company is Y=0.26+0.99X, for instance if the investor gets 2% returns in the market then the investor would earn a return of 2.24% in the futures market.

VIII. FINDINGS AND CONCLUSION

A. Findings

1) The future price of TCS is moving along with the market price.
2) Derivatives are mostly used for hedging purpose.
3) The buy price of the future is less than the settlement price, and then the buyer of a future gets profit.
4) The selling price of the future is less than the settlement price, and then the seller incurs loss.

The settlement price will be considered as the final price in calculating the future prices and the closing price of the equities will be considered as the spot price.

B. Conclusion

In my Analysis the entire future stock price are moving with the market value of underlying assets. From all companies I have chosen Wipro, TCS, and Infosys.

1) Infosys Future Prices are mostly more than underlying asset value so the investors mostly makes profits.
2) Where as compared to Wipro and TCS the value of future prices and value of underlying assets are almost same the investors are making normal profits.

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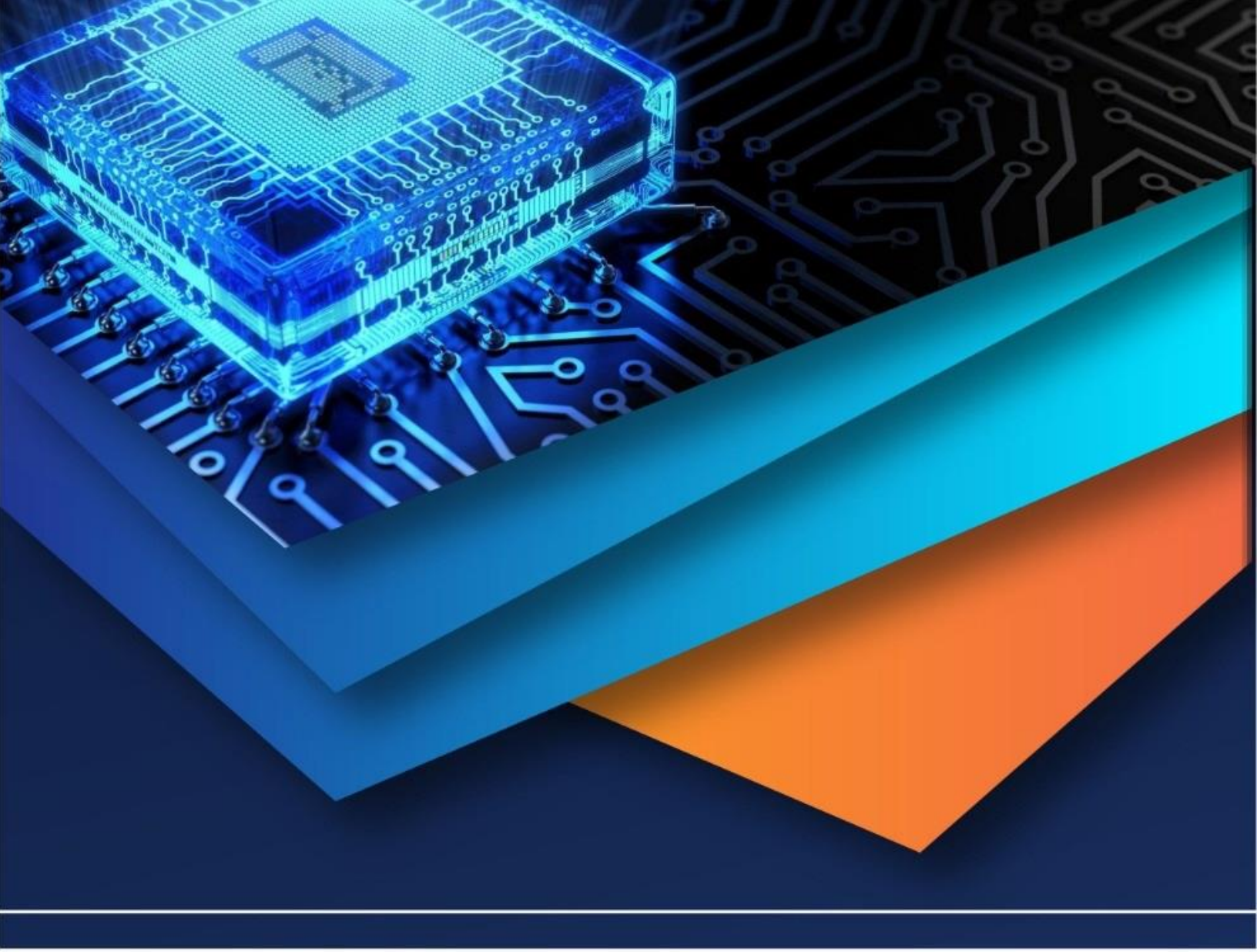

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