



DELHI SCHOOL OF BUSINESS

By Vivekananda Institute of Professional Studies - TC

PGDM / PGDM (FINTECH) Program

TRIMESTER - V (Batch: 2023-25)

END-TERM EXAMINATION, DECEMBER 2024

Course Name	FINTECH – REGULATION AND COMPLIANCES	Course Code	
Duration	Three Hours	Max. Marks	60

Instructions:

1. Read the case studies and answer the questions below in the context of the material.
2. All questions are compulsory to attempt.
3. Give reference to relevant laws and examples to support your answer.

Q1. FinTech Innovations Inc., a leading global financial technology company, has achieved significant success in North America by offering cutting-edge solutions in digital payments, blockchain technology, and AI-driven financial analytics. Now, they are looking to tap Europe and Asia as both offers vast opportunities for growth, but they also come with diverse and complex regulatory landscapes. As the company prepares for this expansion, its leadership team is tasked with understanding the regulatory requirements in these regions, identifying potential challenges, and formulating strategies to address them effectively

(a) Assess how the differences in regulatory harmonization between Europe and Asia might impact the scalability of fintech operations for FinTech Innovations Inc. (4 marks)

(b) Identify indirect risks associated with regulatory non-compliance in Europe and Asia that could hinder the company's market entry strategy. (4 marks)

(c) Propose advanced approaches the leadership team can adopt to ensure seamless regulatory alignment while maintaining operational efficiency across regions. (4 marks) (12 Marks) (CO:1)

Q2. LendTech Solutions, a rapidly growing digital lending platform, has been revolutionizing the way individuals and businesses access credit. By leveraging advanced algorithms and data analytics, the platform offers instant loan approvals and personalized financial solutions. However, as the platform expands its operations, it faces increasing scrutiny from regulatory authorities to ensure compliance with Know Your Customer (KYC) and Anti-Money Laundering (AML) regulations. These procedures are critical in preventing financial crimes, such as identity theft, fraud, and money laundering, which can compromise the integrity of the financial system. LendTech Solutions is committed to implementing robust KYC and AML measures to build trust with customers, meet regulatory requirements, and maintain its reputation as a responsible fintech provider.

(a) Explain the importance of KYC and AML in fintech compliance. (4 marks)

(b) Identify the consequences of non-compliance with KYC/AML regulations. (4 marks)

(c) Discuss how technology can streamline these processes for the platform. (4 marks) (12 marks) (CO: 2)



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Q.3 SecurePay Solutions, a fintech company specializing in digital payment systems and financial analytics, is planning to expand its operations into Europe. With the expansion, the company must comply with the General Data Protection Regulation (GDPR), a comprehensive data protection framework implemented by the European Union. GDPR is designed to protect the personal data of EU citizens and ensure their privacy in an increasingly digital world. For SecurePay Solutions, adhering to GDPR is not only a legal requirement but also an opportunity to demonstrate its commitment to data protection and build trust with its European customer base. The company's leadership recognizes the need to understand the regulation's requirements, address potential risks of non-compliance, and establish robust mechanisms to safeguard customer data.

- (a) Analyze the critical provisions of GDPR that SecurePay Solutions must incorporate into its operational framework to meet compliance standards. (4 marks)
- (b) Evaluate the legal, financial, and reputational risks associated with failing to adhere to GDPR requirements. (4 marks)
- (c) Propose a comprehensive strategy for SecurePay Solutions to proactively address data protection and privacy concerns in alignment with GDPR principles. (4 marks) (12 marks) (CO: 3)

Q4. AlphaPay is in the process of developing a comprehensive compliance program. This initiative aims to ensure adherence to relevant laws and regulations, foster a culture of integrity, and protect the company from legal, financial, and reputational risks. The leadership team is focused on identifying the critical components of the program, leveraging technology to streamline compliance processes, and implementing mechanisms such as regular audits to maintain ongoing compliance.

- (a) What foundational elements should AlphaPay prioritize to design a compliance program that mitigates legal, financial, and reputational risks? (4 marks)
- (b) Assess how leveraging regulatory technology (RegTech) can transform and streamline AlphaPay's compliance management processes. (4 marks)
- (c) Evaluate the significance of periodic compliance audits in identifying vulnerabilities and reinforcing adherence to regulatory standards. (4 marks) (12 marks) (CO: 4)

Q5. ChainPay Innovations, a fintech startup specializing in cross-border payment solutions, is exploring the integration of blockchain technology into its compliance framework. Blockchain, with its decentralized and immutable nature, holds the potential to transform how financial institutions approach regulatory compliance. The technology offers enhanced transparency, traceability, and security, which are critical for meeting stringent regulatory requirements. As ChainPay Innovations navigates this innovative path, the company is also considering participation in regulatory sandboxes to test its blockchain-based solutions in a controlled environment. The leadership team is keen to understand the broader implications of blockchain on compliance, its role in fostering ethical fintech operations, and the opportunities regulatory sandboxes provide for innovation.

- (a) Describe the potential impact of blockchain on regulatory compliance. (4 marks)
- (b) Discuss the role of regulatory sandboxes in fostering innovation in blockchain applications. (4 marks)
- (c) Explain how blockchain can contribute to ethical fintech operations. (4 marks) (12 marks) (CO: 5)



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Course Name	Entrepreneurship and Family Business Management	Course Code	
Duration	Three Hours	Max. Marks	60

Instructions:

1. First question is compulsory. Attempt any five questions from Q.2 – 7.
2. Extra credits will be given for applying “Entrepreneurship” and “Family Business” concepts and theories, practical examples, and anecdotal evidence from case studies discussed in the class.

Q.1 Write short notes on (any five):

- a. Start Up India scheme
- ✓ b. Bird in hand principle in effectuation
- ✓ c. Sustainable entrepreneurship
- ✓ d. Business Model Canvas
- ✓ e. Affordable loss principle in effectuation
- ✓ f. Agency cost

(10 Marks) CO 1-4

Q.2 How does the process of establishing a new enterprise unfold? Utilizing the TBL (Triple Bottom Line) model, describe the dilemma confronting Anjali Singh in the "Jute for Life" case study. Among the 17 UN Sustainable Development Goals (SDGs), discuss in detail which ones 'Jute for Life' is helping to achieve.

(10 Marks) CO1,3

Q.3 How can one define the circular economy? In what ways does the circular economy framework connect to sustainable entrepreneurship (also known as eco-preneurship)? Provide an explanation of the various exit strategies accessible to entrepreneurs. Additionally, recommend which exit option would be most appropriate for Jheel, considering the Odds and Edge case study.

OR



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From the insights obtained from your "Go to Market" assignment done in the class elaborate on how can sustainable tourism entrepreneurs balance economic profitability with environmental and social responsibility? What are the potential challenges entrepreneurs face when trying to develop a sustainable tourism business in a highly commercialized market? What are some ways a tourism entrepreneur can engage and empower local communities in sustainable tourism initiatives?

(10 Marks) CO2

3) ~~Q.4. a.~~ How do the operations of a family-run enterprise, like Bikanervala (as described in the Bikanervala case study), contrast with those of a typical corporation managed by non-family professionals?

~~b.~~ What criteria would you use to describe the process of professionalizing a family-owned enterprise? Has Bikanervala undergone professionalization throughout its history? If so, in what aspects?

(10 Marks) CO4

4) ~~Q.5~~ Explain the relevance of business model pivoting in case of Biziga's future growth and profit (from the case study - Decision dilemma at Biziga). What part of the business should they focus for pivoting? Use the business model canvas to explain the same.

(10 Marks) CO 1-3

5) ~~Q.6~~ With the emergence of the third and fourth generations and the retirement of the second-generation Zamil siblings, how would each party reconcile the group's requirements with those of individual family members? Is the Zamil organization guided by a "family-centric" or "business-centric" approach? Provide a detailed explanation of the Zamil group's succession planning strategy based on the information presented in the case study.

(10 Marks) CO 4

~~Q.7~~ The Business Model (BMC) Canvas by Alexander Osterwalder is, simply said, a way of visually depicting business models. It is a broad tool that can also be used for already existing business models. What is interesting about this tool in particular is that it can be used both by startups and major enterprises. Create a BMC for Amazon, one of the largest E-commerce companies in the world. Amazon was founded by Jeff Bezos from his garage in Bellevue, Washington, on July 5, 1994. Initially an online marketplace for books, it has expanded into a multitude of product categories. You may choose, Amazon (E Commerce) or Amazon Prime (Subscription based OTT platform), for your BMC.

(10 Marks) CO 3



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END-TERM EXAMINATION, DECEMBER 2024

Course Name	Corporate Financial Modelling	Course Code	
Duration	Three Hours	Max. Marks	60

Instructions:

1. Present all formulas and calculations clearly for each problem.
2. Mention any assumptions made and provide a brief explanation to support your decisions.
3. Show all the workings properly.

Q.1 (a)

(14 Marks) (CO:3)

Ajay Ltd. operates as a facility management company. Please find below the key figures about the company

	2019E	2020E	2021E	2022E	2023E
Free cash flow to firm	14,000	16,500	18,000	19,000	25,000
Net debt	13,000				
WACC	8.50%				
LTGR (Growth rate)	4.00%				
Shares outstanding	4,000				

i) Calculate terminal value

ii) Calculate price per share (implied)

iii) Perform a sensitivity analysis to evaluate how the implied price per share changes when the Long-Term Growth Rate (LTGR) varies by $\pm 1\%$.

Q.1 (b) A company, Green Tech Corp., is being evaluated using the EV/EBITDA multiple approach. You have been provided with data on comparable companies and Green Tech Corp.

Comparable Company Data



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- Company A: Enterprise Value = ₹3,000 crores; EBITDA = ₹500 crores
- Company B: Enterprise Value = ₹4,000 crores; EBITDA = ₹800 crores
- Company C: Enterprise Value = ₹2,500 crores; EBITDA = ₹500 crores

GreenTech Corp. Data

- Projected EBITDA for the upcoming year = ₹600 crores
- Cash = ₹200 crores
- Debt = ₹500 crores

Questions

- I. Using this average multiple, estimate the Enterprise Value (EV) of GreenTech Corp.
- II. Determine the Equity Value of GreenTech Corp.

Q.2 (a)

(11 marks) (CO: 2)

(A). Current cash flow details of the company are as provided:

- Net Income for the company is 550, Tax rate is 35% and there is a debt on the books of the company worth 5000 at 8% interest rate.
- Depreciation charged during the current period is 125 and the capex done by the company is 225
- Working capital decreased by 50 during the current year
- No additional borrowings or repayment was done by the company
- The company's total shareholders' equity is 12000 and the cost of equity is 15%

Use these assumptions to estimate the FCFF

Q.2 (b) ABC Ltd., a diversified manufacturing company, is planning an expansion project and needs to calculate its Weighted Average Cost of Capital (WACC). The company has a mix of equity, debt, and preferred stock in its capital structure. Here are the details provided for ABC Ltd.:

Company Financial Data:

- Market Value of Equity (E): Rs. 100,00,000
- Market Value of Debt (D): Rs. 50,00,000
- Market Value of Preferred Stock (P): Rs. 10,00,000
- Risk-Free Rate (R_f): 7%
- Market Return (R_m): 14%
- Beta (β) of the company's equity: 1.4
- Corporate Tax Rate : 30%



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- Debt Structure Details:
 - The company has long-term bonds with a credit rating of BBB.
 - The risk premium for bonds with a BBB rating is 3% over the risk-free rate.
 - The company plans to issue new debt at the same rate (for simplicity).
- Preferred Stock Details:
 - The company plans to issue preferred stock paying an annual dividend of Rs. 12 per share.
 - The market price per preferred stock share is Rs. 100.

- i. Calculate the cost of equity.
- ii. Calculate the cost of debt based on the company's BBB rating using the ratings-based approach.
- iii. Using the cost of equity, cost of debt, and cost of preferred stock, calculate the Weighted Average Cost of Capital (WACC) for ABC Ltd.

Q.3

(15 marks) (CO: 3)

An entrepreneur is evaluating a business plan to open a coffee shop.

Revenue Projections:

- The entrepreneur expects to sell 25,000 cups of regular coffee annually at an average gross margin of Rs.50 per cup.
- Additionally, they expect to sell 15,000 cups of premium coffee annually at an average gross margin of Rs.80 per cup.
- Both, sales quantity and gross margin, are expected to grow at 6% annually for both types of coffee.

Operating Costs:

- To operate the coffee shop, a 1000 sq.ft. space is required with a lease rental of Rs.200 per sq.ft. per annum. The rental contract will be for 5 years, and a security deposit of Rs.10,00,000 must be made at the start.
- The deposit will be refunded to the entrepreneur at the end of 5 years.
- A one-time renovation cost of Rs.20,00,000 will also be incurred at the start.
- The coffee shop will employ staff with an annual personnel cost of Rs.15,00,000. Wages are expected to grow at 7% annually.
- Other operational expenses are expected to be 25% of the gross profits generated each year.

Financing:

- The initial investment (deposit + renovation) will be funded by 50% bank loan at an interest rate of 12%. The remaining amount will be funded using equity. The loan will be repaid in lump sum at the end of 5 years.

Tax Rate:

- The applicable tax rate is 30%, and tax losses cannot be carried forward.



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- I. A company plans to launch a new product line and forecasts annual revenues and costs over the next five years. Use the provided sales and cost projections to calculate the gross profits for each year. How do these figures inform the company's ability to sustain its operations?
- II. Analyze the company's projected operating costs and determine the taxable profits for each year over the 5-year period. How might changes in tax rates or unexpected cost overruns affect the company's profitability?
- III. The company requires an initial investment to fund the project. Using the provided capital structure, calculate the total initial investment, the loan amount, and the lump-sum repayment required at the end of Year 5. Discuss the potential risks associated with taking on this debt.
- IV. Considering the projected cash inflows and outflows, compute the net cash flows for each year of the project. What financial or operational strategies could the company employ to optimize these cash flows?
- V. Use a discount rate of 15% to evaluate the financial feasibility of the project by NPV method and suggest what additional factors the company should consider before proceeding.

Q.4

(12 marks) (CO: 4)

You have been asked to estimate the value of synergy in the merger of Vijom Com, a movie streaming firm, and Bolly Magic, an entertainment company and have been provided with the following information on the two companies:

	Vijom Com	Bolly Magic
Revenues	850.0	350.0
After-tax Operating Income next year	60.0	30.0
Cost of capital	8.0%	7.0%
Return on capital	7.5%	6.0%
Growth Rate	3%	3%
Net Debt	100.0	50.0
Number of shares (millions)	120	50

Requirements:

- i) Estimate the value per share of Vijom, prior to the merger.
- ii) Estimate the value per share of Bolly Magic, prior to the merger.
- iii) Now assume that combining the two firms will be able to cut annual operating expenses by Rs. 20 million (on an after-tax basis), though it will start after three years for these costs savings. Estimate the value of synergy in this merger.
- iv) Assume that both companies were fairly priced before the acquisition and that Vijom pays a 30% premium over market price to buy Bolly Magic. Estimate the value per share for Vijom



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after the acquisition.

Q.5

(08 marks) (CO: 1)

David is managing a business and seeks to determine the Total Liabilities and Shareholders' Equity for Year 3, based on the following actual and projected financial data:

Revenue and Expense Projections

- Revenue: Year 1 = 45,000; Year 2 = 60,000; Year 3 = 70,000
- COGS (Cost of Goods Sold): Year 1 = 30,000; Year 2 = 35,000; Year 3 = 42,000
- Depreciation: Year 1 = 7,000; Year 2 = 8,000; Year 3 = 9,000
- Tax: Year 1 = 1,000; Year 2 = 1,500; Year 3 = 1,800

Balance Sheet Information

- Cash: Year 1 = 12,800; Year 2 = 23,966.7; Year 3 = 38,366.7
- Accounts Receivable: Year 1 = 6,000
- Inventory: Year 1 = 5,000
- PPE (Property, Plant, and Equipment), Net: Year 1 = 15,000
- Accounts Payable: Year 1 = 3,000
- Debt: Year 1, Year 2, and Year 3 = 15,000
- Equity: Year 1, Year 2, and Year 3 = 15,000
- Retained Earnings: Year 1 = 5,800

Additional Assumptions

- Receivable days, inventory days, and payable days are expected to remain consistent across all years as in Year 1.
- Annual capital expenditures (Capex) are 10,000, occurring at the start of each year, and are already accounted for in the depreciation data provided.

David would like a detailed calculation and explanation of his business's Total Liabilities and Shareholders' Equity for Year 3.



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TRIMESTER - V (Batch: 2023-25)

END-TERM EXAMINATION, DECEMBER 2024

Course Name	Cryptocurrencies/Digital Assets	Course Code	
Duration	Three Hours	Max. Marks	60

Instructions:

1. All the questions are compulsory.
2. Start each answer on a fresh page and number your answers.
3. Answer all parts of the same Question together and in sequence.

Q.1 Case Study: Proof of Work in Blockchain

(12 Marks) CO:01

Introduction

Proof of Work (PoW) is a consensus mechanism that ensures the security and integrity of blockchain networks by requiring participants (miners) to solve complex mathematical puzzles to validate transactions and add them to the blockchain. First introduced in Bitcoin by Satoshi Nakamoto, PoW has become the cornerstone of many cryptocurrencies.

How It Works

Miners compete to solve a cryptographic puzzle by finding a hash (output) that meets specific criteria. This process requires substantial computational resources, ensuring that the network remains secure and decentralized. Once a miner successfully solves the puzzle, they broadcast the solution to the network, and other participants verify its correctness. If valid, the miner earns a reward in cryptocurrency, and the transaction block is added to the blockchain.

Advantages of PoW

1. **Security:** PoW makes it computationally infeasible for malicious actors to alter the blockchain as they would need to redo the work for all subsequent blocks.
2. **Decentralization:** PoW enables a trustless system where no central authority is needed to validate transactions.
3. **Resistance to Sybil Attacks:** By requiring significant computational effort, PoW reduces the risk of fake identities overwhelming the network.

Challenges of PoW

1. **Energy Consumption:** The computational work required for mining consumes a significant amount of electricity, raising concerns about environmental sustainability.
2. **Centralization Risk:** High costs of mining equipment can lead to centralization, where only large mining pools dominate the network.
3. **Scalability:** PoW's design limits the number of transactions that can be processed per second, affecting its scalability for large-scale applications.

Case Application: Bitcoin

Bitcoin is the most prominent application of PoW. Its decentralized nature relies on miners worldwide solving cryptographic puzzles to secure the network. However, Bitcoin's energy



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consumption has sparked debates about transitioning to more sustainable alternatives like Proof of Stake (PoS).

Questions

1. Why is Proof of Work considered secure against tampering and attacks?
2. What are the environmental implications of using Proof of Work in large-scale blockchain networks? *slow transaction*
3. How does PoW compare to other consensus mechanisms like Proof of Stake in terms of efficiency and decentralization?
4. Could the energy demand of PoW hinder its adoption in future blockchain systems? If so, how can these challenges be mitigated?

Q.2 Case Study: Decentralized Finance (DeFi) in Blockchain

(12 Marks) CO:02

Introduction

Decentralized Finance (DeFi) is a revolutionary application of blockchain technology that aims to recreate and improve traditional financial services without relying on intermediaries such as banks or brokers. Using smart contracts on blockchain networks like Ethereum, DeFi platforms offer services such as lending, borrowing, trading, and asset management.

Key Features of DeFi

1. Decentralization: Transactions and operations are managed on distributed ledgers, ensuring transparency and reducing the reliance on centralized institutions.
2. Accessibility: DeFi platforms are open to anyone with internet access, making financial services available to the unbanked and underbanked populations.
3. Programmability: Smart contracts automate processes, reducing costs and increasing efficiency.

Use Case: Uniswap

Uniswap is a decentralized exchange (DEX) that allows users to trade cryptocurrencies directly from their wallets without intermediaries. It uses an automated market-making system to ensure liquidity, enabling peer-to-peer transactions.

Challenges

Despite its benefits, DeFi faces challenges such as smart contract vulnerabilities, regulatory uncertainty, and high transaction fees during network congestion.

Questions

1. From an operational point of view, how does DeFi facilitate financial inclusion when compared to traditional financial systems?
2. Considering the aspects of risk management, detail on the risks associated with relying on smart contracts in DeFi platforms?
3. How can scalability issues prevalent in the blockchain networks impact the growth and usability of DeFi applications?

Q.3 Case Study: Initial Coin Offering (ICO) in Cryptocurrency

(12 Marks) CO:03



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Introduction

An Initial Coin Offering (ICO) is a fundraising method in the cryptocurrency space where new blockchain-based projects sell their native tokens to investors in exchange for capital. ICOs offer a way for startups to raise funds without going through traditional financial institutions or venture capital firms, providing early investors with the potential for high returns.

How ICOs Work

In an ICO, a project team issues a whitepaper detailing the project's goals, technology, and tokenomics (the structure of the token's distribution and value). Interested investors can buy tokens during the ICO using established cryptocurrencies like Bitcoin or Ethereum. These tokens often grant investors access to the platform once it's operational or give them a stake in the project's future success.

Use Case: Ethereum

Ethereum's ICO in 2014 is one of the most notable examples. It raised over \$18 million, which was pivotal in launching the Ethereum blockchain, enabling decentralized applications (dApps) and smart contracts.

Challenges and Risks

While ICOs can offer substantial returns, they are also high-risk due to the possibility of fraud, lack of regulation, and the failure of many projects to deliver on their promises.

Questions

1. From a process point of view, detail on the differentiation that an ICO brings in comparison to traditional fundraising methods like IPOs.
2. Considering the aspects of risk management in case of an ICO, what could be the potential risks for investors participating in an ICO?
3. What has been the impact of regulation in mitigating the regulatory risk, in improving the security of ICOs and protecting the investors?

Q.4 Case Study: Bitcoin in Cryptocurrency

(12 Marks) CO:04

Introduction

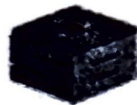
Bitcoin, created by an anonymous person or group known as Satoshi Nakamoto in 2008, is the first and most well-known cryptocurrency. It operates on a decentralized network, using blockchain technology to enable peer-to-peer transactions without the need for intermediaries like banks. Bitcoin's limited supply of 21 million coins and its proof-of-work consensus mechanism are key features that distinguish it from traditional currencies.

How Bitcoin Works

Bitcoin transactions are recorded on a public ledger called the blockchain. Each transaction is verified by miners who use computational power to solve complex mathematical problems, securing the network. Once verified, transactions are added to the blockchain, ensuring transparency and immutability. Bitcoin can be transferred globally, offering an alternative to traditional banking systems.

Use Case: Digital Gold

Often referred to as "digital gold," Bitcoin has been increasingly used as a store of value and a hedge against inflation. It has gained mainstream adoption with institutional investors, companies, and even countries, such as El Salvador, adopting Bitcoin as legal tender.



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Challenges

Bitcoin faces challenges such as scalability issues, high energy consumption due to mining, and regulatory uncertainty.

Questions

1. How does Bitcoin's decentralized nature benefit its users?
2. What are the advantages of using Bitcoin as a store of value compared to traditional assets like gold?
3. How do scalability and transaction fees affect Bitcoin's adoption for everyday use?

Q.5 Case Study: Double Spending in Bitcoin

(12 Marks) CO:05

Introduction

Double spending is a potential issue in digital currencies where the same cryptocurrency is spent more than once. Bitcoin, as a decentralized digital asset, faces the challenge of ensuring that a single transaction can't be replicated and spent multiple times. To prevent double spending, Bitcoin relies on its blockchain and proof-of-work consensus mechanism, which ensures the integrity of its transactions.

How Double Spending Works

In a typical double spending attack, a malicious actor tries to send the same Bitcoin to two different recipients by creating two conflicting transactions. Without proper verification, both transactions could be accepted, leading to the same coins being spent twice.

Bitcoin's Solution: The Blockchain

Bitcoin solves the double spending problem by utilizing a public ledger called the blockchain. Each transaction is validated by miners, who ensure that no double spending occurs by confirming that the Bitcoin being spent hasn't already been used in another transaction. The decentralized nature of the Bitcoin network ensures that once a transaction is confirmed by the majority, it is considered final.

Challenges and Considerations

While Bitcoin's system is secure against double spending, it is not immune to attacks, particularly in situations with low network hash rates or when a user has low confirmation times.

Questions.

1. Detail on the mechanism of the Double Spending Problem and what makes it imperative to contain the impact of Double Spending in case of digital currencies.
2. How are miners impactful in protecting the Bitcoin network from the impact of double spending?
3. What is the impact of network confirmations in affecting the likelihood of double spending in Bitcoin transactions?



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TRIMESTER - V (Batch: 2023-25)

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Course Name	Data Visualization with Power BI	Course Code	
Duration	Three Hours	Max. Marks	60

Instructions:

All Questions are compulsory and carry equal marks.

Q.1

10 Marks (CO:01)

Tables Practical Activity

The Sales Manager needs your help to analyse the data. Perform the required tasks and answer the following:

1. Identify the **Manufacturer** with the highest **Sales**.
 2. Find out which **Product Category** has the lowest **Profit value**.
 3. Determine which **Channel** incurred the highest **Cost of Sales**.
 4. Which **Manufacturer** generated the highest **Profit**?
 5. Identify the **Promotion Name** with the highest **Sales**.
- Find the **Product Sub Category** with the highest **Profit**.

Q.2

10 Marks (CO:02)

Cards and Matrix Practical Activity

Experiment with different types of aggregations and visualizations. Follow these instructions:

1. Create **Card visualizations** to display the following:
 - o Total Profit (Sum)
 - o Average Profit
 - o Maximum Profit
 - o Minimum Profit
 - o Count of Products
2. Create a **Matrix Table** that shows **Profit** categorized by **Product Category** and **Region**.

Feel free to experiment with your ideas and improve the visualizations.



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Q.3

10 Marks (CO:03)

Practical Activity – Filters

Answer the following questions by applying appropriate filters and performing calculations:

- ✓ 1. How many cities recorded a **Profit** above 150,000? What is their combined **Total Profit**?
- ✓ 2. Calculate the **Total Profit** for all cities starting with the letter **S**.
- ✓ 3. Create a table displaying **Sales** for each **Product Name**. Then find:
 - The **Total Sales** for the **Audio** category.
 - The number of **Products** in the **Audio** category.
- ✓ 4. How many products contain the word **Contoso** and have **Sales** greater than 100,000?
- ✓ 5. What were the **Total Sales** from 1 January 2024 to 30 June 2024?
- ✓ 6. Identify the number of **Countries** that sold more than 50 types of **Products**.

Challenge – Create an Interactive Report

The Sales Manager has requested an interactive report in Power BI Desktop. Complete the following tasks:

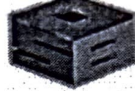
1. Add a heading: **Sales Report**.
2. Create **Card** visualizations for:
 - Total Sales
 - Total Profit
 - Average Sales
 - Number of Products
3. Design the following graphs:
 - **Area Graph**: Displaying **Sales** by **Year** and **Quarter**.
 - **Column Graph**: Showing **Profit** by **Product Category**.
 - **Pie Chart**: Displaying **Profit** by **Channel**.
4. Add a **Slicer** for **Region** to allow interactive filtering.

Q.4

05 Marks (CO:04)

Column Graph Challenge

This challenge focuses on experimenting with different types of column graphs. Perform the tasks below and enhance the visualizations:



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1. Create a **100% Stacked Column Graph** displaying **Sales by Product Category** with **Channel** as the legend.
2. Create a **Bar Graph** to display **Profit by Region**.
3. Enable interaction between the graphs by filtering the **100% Stacked Column Graph** when a bar is selected in the **Bar Graph**.

Q.5

10 Marks (CO:04)

Tables Practical Activity

The Sales Manager needs answers to the following questions. Perform the analysis in Power BI and document your findings:

1. Which **Manufacturer** recorded the highest **Sales**?
2. Identify the **Product Category** with the lowest **Profit value**.
3. Determine the **Channel** with the highest **Cost of Sales**.
4. Which **Manufacturer** had the highest **Profit**?
5. Which **Promotion Name** generated the highest **Sales**?

Identify the **Product Sub Category** with the highest **Profit**.

Cards and Matrix Practical Activity

Explore different types of aggregations and visualizations to create the following:

1. **Card Visualizations** to display:
 - o Total Profit (Sum)
 - o Average Profit
 - o Maximum Profit
 - o Minimum Profit
 - o Count of Products
2. **Matrix Table** showing **Profit by Product Category and Region**.

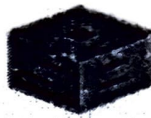
Feel free to enhance and personalize these visualizations.

Q.6

15 Marks (CO:05)

Practical Activity – Filters

Apply filters and calculations in Power BI to answer the following questions:



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1. How many cities achieved a Profit above 150,000? What is the **Total Profit** for these cities?
2. What is the **Total Profit** for cities starting with the letter S?
3. Create a table displaying Sales for each Product Name and find:
 - o The **Total Sales** for the Audio category.
 - o The number of **Products** in the Audio category.
4. How many products contain the word Contoso and have Sales greater than 100,000?
5. Calculate the **Total Sales** for the period 1 January 2024 to 30 June 2024.
6. Identify the number of **Countries** that sold more than 50 different types of Products.

Challenge – Create a Running Total Sales Report

The Sales Manager requires a plain matrix report in Power BI to analyze sales trends. Your task is to:

1. Create a **Matrix Table** that displays:
 - o Sales by Region.
 - o Running Total of Sales for each region over time (e.g., by month or quarter).
2. Add a column in the matrix to show **Sales versus Previous Period**:
 - o Calculate the difference between the current period's sales and the previous period's sales for each region.

Ensure the matrix is neatly organized and provides clear insights without any additional visuals.