Department of Commerce

Osmania University

Computer Lab – Practical Question Bank

B.Com (Business Analytics)

Semester VI

Business Applications for Emerging Technologies

Time: 60 Minutes

Record	**: 10**
Skill Test	**: 15**
Viva - Voce	**: 10**
Total Marks	**: 35**

Use Excel & Python

Use Microsoft Excel to solve the following.
Download a company Tata Motors' financial statements like P&L, Balance Sheet, Cash flow etc for the past 10 years from the following website to solve Q1 to Q10.
https://www.moneycontrol.com/financials/tatamotorspassengervehicles/balance-sheetVI/tm03#tm03

1 Using 10-year Tata Motor's Financials, (i) Analyse the trend of Total Revenue (ii) Plot the line graph and identify patterns or irregularities (iii) Calculate Year on Year Growth rates in Excel. (iv) Using Excel Forecast the revenue for the next three years. (v) Give your inferences.

2 Using 10 years of financial data, (i) calculate Gross Profit Margin, Operating Margin, and Net Profit Margin. (ii) Illustrate the trends in Excel and discuss what these trends indicate about the firm's operational performance and strategic decisions.

3 Cost Structure Decomposition (Technical + Business)

- Break total expenses into major components:
  - Materials consumed
  - Purchases of stock-in-trade
  - Employee benefits
  - Finance cost
  - Depreciation & amortization
  - Other expenses
- Calculate each as a % of Total Expenses.
- Identify patterns and potential cost-management opportunities.
- Excel stacked bar or area chart.

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4 Working Capital Efficiency Dashboard (Technical + Digital)
Using the balance sheet for 10 years:

- Analyze Inventory, Receivables, and Payables trends.
- Calculate Days Inventory Outstanding (DIO), Days Receivable (DSO), and Days Payable (DPO).
- Build a simple Excel dashboard with conditional formatting.
  Deliverable: Mini dashboard + insights.

5 Cash Flow Insights: CFO, CFI, CFF (Technical)

- Extract CFO, CFI, CFF for 10 years.
- Insert Excel sparklines to visualise inflows/outflows.
- Interpret the sustainability of operating cash flows and capital investment patterns.
  Deliverable: Sparkline table + interpretation.

6 Use Excel forecast function to forecast revenue for the next 3 years. Create a graph showing historical and forecasted revenue. Comment on forecast reliability.

7 Using 10 years of financial data, compare the Net Profit Margin of Tata Motors with key competitors like Maruti Suzuki and Mahindra & Mahindra in the automobile industry.

8 Analyse the investment trend and composition of Non-Current Assets of Tata Motors over 10 years.

9 Using Tata Motors' financials, evaluate how external disruptions (e.g., COVID-19) impacted revenue, profitability, and operational efficiency. Conduct a comparative analysis of the affected years versus unaffected years.

10 Analyse the trend and composition of Non-Current Assets and Non-Current Liabilities over ten years and evaluate the company's long-term financing strategy using Excel.

11 Using the last five years' P&L statements of Tata Motors Ltd., prepare a vertical (common-size) income statement by taking Net Sales as 100%. Present the analysis using suitable graphs and provide key financial inferences.

12 Using the last five years' P&L statements of Tata Motors Ltd., prepare a horizontal (trend) analysis by selecting an appropriate base year. Present the results using trend charts and interpret the major changes.

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13 Using the last five years' Balance Sheets of Tata Motors Ltd., prepare a vertical (common-size) balance sheet, taking Total Assets as 100%. Use appropriate illustrations and provide meaningful inferences.

14 Using the last five years' Balance Sheets of Tata Motors Ltd., conduct a horizontal analysis to study year-on-year changes in major asset and liability components. Support your analysis with graphs and interpretations.
Create an automated Excel system that imports a month stock price data from screener.in and transform and load the data.

15 Compare the P&L performance of Tata Motors Ltd. with any two major competitors (e.g., Mahindra & Mahindra, Maruti Suzuki) over the last five years. Develop a comparative dashboard highlighting key metrics such as revenue growth, operating margin, net profit margin, and EPS. Interpret the comparative results.

16 Perform a mail merge using a Word document and an Excel data source. Submit the merged output for 5 sample records.

17 Import student master data and semester-wise marks from multiple Excel worksheets using Power Query, consolidate them into a single table, and use Power Pivot to calculate and display total and average marks for each student.

18 You have a P&L (Profit & Loss) statement dataset for 10 financial years. You are required to create a separate sheet that automatically calculates key financial ratios for any selected year. Any changes made to the original dataset should reflect automatically in the ratio analysis sheet.

19 Use Excel's XLOOKUP function to automate ratio calculations for any two companies, allowing dynamic selection.

20 Calculate Financial, Operating and Composite Leverages Tata Motors Financial Statements and give your inferences.

For the questions given below, download Car Price Prediction data set from Kaggle.
https://www.kaggle.com/datasets/hellbuoy/car-price-prediction

21 Perform exploratory data analysis in Python and write a program to implement Simple Linear Regression to predict the selling price of a car using its present price.

22 Implement Multiple Linear Regression to predict car selling price using multiple features.

23 Write a Python program to classify cars into Low or High price categories using Decision Tree.

24 Implement k-NN algorithm to classify car price category.

25 Implement Naïve Bayes classifier to classify cars as Cheap or Expensive.

26 Write a Python program to perform K-Means clustering on car prices.

27 Implement Support Vector Machine (SVM) for car price classification.

28 Write a Python program to calculate the accuracy of a classification model.

29 Perform feature scaling using Standardization on car price data.

30 Perform basic time series analysis on car prices based on manufacturing year

31 Create an Excel sheet with the following columns:
| Asset | Threat | Vulnerability | Likelihood (1–5) | Impact (1–5) | Risk Score = L × I | Recommended Control |
In the Asset Column list 10 assets and explain the attributes.
Auto calculate risk score.
Highlight the high risk items using conditional formatting.

32 An organization has experienced a cybersecurity data breach and wants to estimate the financial impact of the incident.
Using Microsoft Excel, design a Data Breach Impact Calculator that includes the following:

1. Create an Excel worksheet with input fields for: Number of records affected, Cost per lost record, Legal penalty / fine, Downtime cost
2. Calculate the Total Financial Loss using the formula:
   = (Number of Records × Cost per Record) + Legal Penalty + Downtime Cost
3. Display the calculated total loss clearly in the worksheet.
4. Create a bar chart to visually represent the Total Financial Loss.
5. Format the worksheet appropriately (labels, currency formatting, and chart title)

33 Create a Vendor Cybersecurity Evaluation Matrix in Excel. Compare at least four vendors based on compliance, security features, response time, and cost. Calculate the final score using a weighted formula and identify the best vendor.

34 Create strong password rules using Excel data validation.

35 Perform the steps to protect a Word document and an Excel workbook using password protection.

36 Write the steps for installation of software from open source mode and paid subscription mode.

37 What is Malware? Write steps to remove Malware from your system.

38 Using Microsoft Excel, compile a threat analysis table of common cyber attacks. For each attack, record: (a) Attack Name (b) Method of Operation (c) Potential Impact or Damage (d) Defense or Mitigation Techniques
Format the table neatly and ensure your descriptions are concise.

39 Demonstrate how Two-Factor Authentication (2FA) can be applied to protect sensitive documents. Write the steps involved in securing a file using:
a) Google Drive with 2FA enabled
b) OneDrive with 2FA enabled
c) A password-protected ZIP file uploaded to a cloud platform

40 Explain how encryption and access control can be used to protect sensitive files. Write the step-by-step procedure to:
a) Encrypt a document using built-in file encryption
b) Apply password protection to the encrypted file
c) Store the protected file securely in a cloud platform with Two-Factor Authentication enabled.

41 Simulate blockchain block linking using Microsoft Excel. Create two blocks and generate a simple hash for each block by combining block number, transaction data, and previous hash. Show how changing data in one block affects subsequent blocks.

42 Create a comparison table to differentiate Push and Pull paradigms. Include features, working mechanism, and cybersecurity-related examples for each paradigm.

43 Create a decision matrix in Excel to compare Permissioned and Permissionless blockchains. Analyze each based on access control, security, performance, and use cases. Identify which type is better for each criterion with suitable examples.

44 Create a table in Excel to list the key characteristics of Bitcoin. For each characteristic, provide a brief description and a real-world example. Include at least ten characteristics.

45 Create an Excel table to analyse blockchain custody, responsibility, and control models for different usage scenarios. Identify high-risk custody situations and apply conditional formatting to highlight them.

46 Create an Excel-based drag-and-match activity to identify the core components of blockchain. Use Data Validation to create dropdown lists for descriptions and correctly match each component with its function.

47 Create a timeline in Excel showing the history of blockchain technology from its early foundations to recent developments. Include at least ten major events and represent them using a bar-style timeline chart.

48 Create an Excel table to compare different types of cryptocurrency wallets. Identify whether each wallet is custodial, who holds the private keys, and its security level. Apply conditional formatting to highlight High, Medium, and Low security wallets.

49 Create a table to compare Block Chain consensus Mechanisms.

50 Create a table in excel to analyze how block chain technology is applied across different domains.