Maharashtra Education Society
Institute of Management & Career Courses, Pune (Autonomous)
End Term Question Paper
Semester: I
AY 2025-26

Course Code:GM-01 **Course Name: Organizational Behavior**
Total Marks: 50 **Time: 2 hours 30 minutes**

Instructions:

i. *Apply Relevant Theories / Models to propose solutions.*

1. *Justify your answers with reasoning, frameworks, or examples to evaluate & choose the best Solution*

Question No. 1: Ritika, recently hired by Meta for their Metaverse project, finds herself on a global virtual team. Her team leader is an INTJ who values structured planning, while Ritika identifies more with ENFP, thriving in spontaneous brainstorming sessions. Meetings often get tense—Ritika feels restricted by rigid agendas, while her manager feels Ritika derails discussions. *Students Discussion Point: How can understanding MBTI personality types help Ritika and her manager collaborate better in a virtual workplace?* ***[10 Marks]***

Question No. 2: A cross-functional project team was formed to launch a new product. In the first few meetings, team members were polite, but soon disagreements started arising about timelines, responsibilities, and decision-making. Productivity has slowed, and the leader is unsure how to move the team forward.

Evaluate the team's situation using the Five-Stage Model of Group Development and recommend how the leader can guide the team toward better collaboration and performance. ***[10 Marks]***

Question No. 3: Solve any Two of below (15 marks each) **[30 Marks]**

a) Fatima leads a small HR team. She always listens to employees, helps them resolve personal and work challenges, and encourages open communication. Team members feel cared for and often say they feel "safe" with her. However, some senior managers think she is "too soft" and may not push the team enough. *Using the Leadership Theory, identify, evaluate Fatima's leadership approach. What are the strengths and potential limitations of this style?*

b) "Trinity Analytics" recently shifted to a hybrid work model.
A high-performing employee, Shweta, has become extremely quiet in meetings. She does the minimum work, avoids leadership visibility, and declines new responsibilities.
Her manager, Raj, thinks she is becoming "disengaged" but has not spoken to her directly.

At the same time, two team members privately told Raj that they feel Shweta is "checked out" and likely to quit. The organization has no formal feedback mechanism, and employee morale has been dropping. *What is happening? Why? What should be done? Students must identify theoretical themes like motivation, psychological safety, burnout, job satisfaction, leadership communication as per their knowledge.*

c) During Reliance Jio's large-scale digital expansion, Mukesh Ambani held regular open communication meetings with employees, sharing the long-term vision of making India a digital-first nation. Employees reported that he spoke with empathy during the pandemic, ensuring job security and health benefits. However, the organization still operates with traditional Indian hierarchical norms, where decision-making authority is centralized, and employees often hesitate to challenge senior leadership. Despite this, teams remain highly motivated due to the ambitious vision, empowerment in innovation projects, and consistent communication during uncertainty.

*Using Leadership Model**,** analyze Mukesh Ambani's leadership style in this case. How does his combination of transformational leadership and compassionate communication enhance employee motivation within a hierarchical Indian organization?*

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Marking Scheme

(10 marks)

1. *Identify (Organization / Industry, Key people involved, Time period, Context (growth, conflict, crisis, change, etc.)*
2. *Identify the Core Problem(s)*
3. *Identify Stakeholders*
4. *Apply Relevant Theories / Models*
5. *Generate Alternative Solutions (2–3 feasible options)*
6. *Evaluate & Choose the Best Solution*
7. *Implementation Plan & Conclusion*

Maharashtra Education Society's
Institute of Management & Career Courses, Pune (Autonomous)
End Term Question Paper
AY 2025-26
Semester: I

Course Code: GM 02 **Course Name: Financial Statement Analysis**
Time: 2 hours 30 mins **Total Marks: 50**

Instructions:

i. **All questions are compulsory**
ii. **Use of Digital Calculator is allowed**

Question 1: **[10 Marks]**

A startup engaged in e-commerce wants to prepare its financial statements as per accepted accounting principles. As a financial manager, explain the fundamental accounting concepts and conventions that should be followed and justify their importance with examples.

Question 2: **[10 Marks]**

Analyse and interpret the following balance sheet using Trend Analysis

Balance Sheet(Crore)	2024	2023	2022	2021	2020
Equities and Liabilities					
ShareHolder's Fund					
Equity Share Capital	₹ 15.20	₹ 14.80	₹ 14.30	₹ 13.90	₹ 13.50
Total Share Capital	**₹ 15.20**	**₹ 14.80**	**₹ 14.30**	**₹ 13.90**	**₹ 13.50**
Reserves and Surplus	₹ 1,845.60	₹ 1,420.30	₹ 1,160.80	₹ 890.40	₹ 650.75
TOTAL SHAREHOLDERS FUNDS	**₹ 1,860.80**	**₹ 1,435.10**	**₹ 1,175.10**	**₹ 904.30**	**₹ 664.25**
Non Current Liabilities					
Long Term Borrowings	₹ 65.40	₹ 92.60	₹ 118.75	₹ 210.30	₹ 95.80
Deferred Tax Liabilities [Net}	₹ 72.35	₹ 18.40	₹ 16.25	₹ 14.90	₹ 13.60
Other Long Term Liabilities	₹ 110.20	₹ 135.80	₹ 150.60	₹ 120.40	₹ 90.75
Long term Provisions	₹ 6.90	₹ 11.35	₹ 10.80	₹ 9.65	₹ 8.40
Total Non Current Liabilities	**₹ 254.85**	**₹ 258.15**	**₹ 296.40**	**₹ 355.25**	**₹ 208.55**
Current Liabilities					
Short Term Borrowings	₹ 185.30	₹ 78.40	₹ 40.25	₹ 65.10	₹ 72.80
Trade Payables	₹ 880.45	₹ 1,020.60	₹ 1,140.75	₹ 1,260.40	₹ 1,350.90
Other Current Liabilities	₹ 150.80	₹ 110.40	₹ 95.30	₹ 80.60	₹ 60.25
Short Term Provisions	₹ 6.45	₹ 4.30	₹ 5.90	₹ 5.10	₹ 4.85
Total Current Liabilities	**₹ 1,223.00**	**₹ 1,213.70**	**₹ 1,282.20**	**₹ 1,411.20**	**₹ 1,488.80**

Question 3: Solve any Two (Each 15 marks) **[30 Marks]**

a) From the following Trial Balance and additional information's as on December 31st , 2024, you are required to prepare trading account , profit and loss account and balance sheet as on 31st December 2024.

Particulars	Debit (₹)	Credit (₹)
Capital	—	3,05,000
Drawings	25,000	—
Land & Building	2,00,000	—
Plant & Machinery	1,20,000	—
Furniture	40,000	—
Opening Stock	80,000	—
Purchases	1,20,000	—
Sales	—	4,40,000
Returns Inwards	10,000	—
Returns Outwards	—	8,000
Wages	45,000	—
Carriage Inwards	12,000	—
Salaries	36,000	—
Rent & Taxes	18,000	—
Insurance	6,000	—
Trade Debtors	1,10,000	—
Trade Creditors	—	90,000
Cash in Hand	8,000	—
Cash at Bank	30,000	—
Commission Received	—	12,000
Interest on Investments	—	5,000
Total	**8,60,000**	**8,60,000**

Additional Information:

1. Closing Stock as on 31st December 2021 was valued at ₹ 1,10,000.
2. Depreciate:
   Land & Building @ 5% p.a.
   Plant & Machinery @ 10% p.a.
   Furniture @ 10% p.a.
3. Outstanding Salaries amounted to ₹ 4,000.
4. Prepaid Insurance amounted to ₹ 1,000.
5. Provide Provision for Doubtful Debts @ 5% on Trade Debtors.
6. Interest on Capital is to be allowed @ 6% p.a.
7. Interest on Drawings is to be charged @ 5% p.a. (Drawings were made evenly throughout the year).

b) The details of VTV Company are as under:

Income Statement Details

Sales (30% cash sales) ₹ 18,00,000
Less: Cost of Sales ₹ 9,90,000
Gross Profit ₹ 8,10,000

Less:
Office Expenses ₹ 1,40,000
(including interest on debentures)
Selling Expenses ₹ 1,60,000

Profit before Tax ₹ 5,10,000
Less: Taxes ₹ 2,10,000
Net Profit ₹ 3,00,000

Liability	Amount	Assets	Amount
Equity Share Capital	25,00,000	Fixed Assets	60,00,000
12% Preference Share Capital	15,00,000	Stock	2,40,000
Reserves & Surplus	12,50,000	Debtors	4,20,000
10% Debentures	12,00,000	Bills Receivable	80,000
Trade Creditors	2,40,000	Cash	2,00,000
Bank Overdraft	2,80,000	Fictitious Assets	1,20,000
Bills Payable	60,000		
Outstanding Expenses	30,000		
Total	**70,60,000**	**Total**	**70,60,000**

Beside the details mentioned above, the opening stock was of Rs. 2,00,000. Taking 360 days of the year, calculate the following ratios; also discuss the position of the company:
(1) Gross profit ratio. (2) Stock turnover ratio. (3) Operating ratio. (4) Current ratio. (5) Liquid ratio. (6) Debtors' ratio. (7) Creditors ratio. (8) Proprietary ratio. (9) Rate of return on net capital employed. (10) Rate of return on equity shares

c) Prepare the Common Size statement & Comparative Statement for following Profit and Loss Account of Malpani Brothers and give interpretation.

Particulars	Mar-21	Mar-22
Sales/Revenue from Operations	₹ 92,500	₹ 1,58,400
Other Operating Income	₹ 1,350	₹ 1,980
Total Revenue	**₹ 93,850**	**₹ 1,60,380**
Cost of Materials Consumed	₹ 42,600	₹ 82,300
Purchase of Stock-in-Trade	₹ 1,450	₹ 2,600
Changes in Inventories	₹ (2,100)	₹ (3,200)
Employee Benefit Expenses	₹ 3,450	₹ 4,950
Power and Fuel Costs	₹ 6,200	₹ 11,500
Other Expenses	₹ 18,900	₹ 28,400
Total Expenditure	**₹ 70,500**	**₹ 1,26,550**
EBITDA	**₹ 23,350**	**₹ 33,830**
Depreciation & Amortisation	₹ 4,200	₹ 5,600
EBIT	**₹ 19,150**	**₹ 28,230**
Interest Expense	₹ 4,800	₹ 6,400
Other Income	₹ 1,300	₹ 1,750
Profit Before Tax (PBT)	**₹ 15,650**	**₹ 23,580**
Tax Expense	₹ 4,000	₹ 6,200
Profit After Tax (PAT)	**₹ 11,650**	**₹ 17,380**
Minority Interest & Share of Associates	₹ (150)	₹ (320)
Net Profit	**₹ 11,500**	**₹ 17,060**

Maharashtra Education Society's
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End Term Question Paper
AY 2025-26
Semester: I

Course Code: GM 03 **Course Name: Fundamentals of Marketing**

Time: 2 hours 30 mins **Total Marks: 50**

Instructions:
i. All questions are compulsory.
ii. Draw suitable diagrams wherever necessary.
iii. Make suitable assumptions while solving the cases.

Question No. 1:

An emerging online learning platform faced declining enrollments as learners perceived its courses to be expensive and lacking instructor interaction. To overcome this, the platform introduced live mentoring and doubt-clearing sessions, flexible pricing options, a mobile app with offline access, targeted digital promotions, trained instructors, simplified processes, and enhanced physical evidence through an improved interface and digital certificates.

Evaluate how the extended marketing mix (7 Ps) helped the online learning platform enhance customer experience and increase enrolments.
[10 Marks]

Question No. 2:

A regional packaged food company producing ready-to-eat snacks planned to expand into new markets. However, fluctuations in raw material supply from **suppliers** affected production schedules. Changing preferences of **customers** toward healthier snacks forced product reformulation. Strong **competitors** with aggressive pricing created pressure on margins, while reliance on retail chains and online platforms as **marketing intermediaries** influenced distribution reach. Internal coordination among departments within the **company** and feedback from media and local communities (**publics**) also played a crucial role in shaping marketing decisions.

Identify and list the components of the micro environment influencing the company in the above case
[10 Marks]

Question No. 3: Solve any Two of below (15 marks each) **[30 Marks]**

a) The smartphone market is characterized by high consumer involvement and extensive information search. In this case, customers relied heavily on online reviews, influencer opinions, and comparison websites before visiting stores. This behavior represents the Zero Moment of Truth (ZMOT), where consumers form perceptions prior to physical interaction with the product. To influence purchase decisions, the brand strengthened its digital presence through influencer marketing and online content. It ensured consistency across online and offline channels. By addressing the information search and evaluation stages of the buying process, the brand improved consumer confidence and conversion rates. This case highlights the growing importance of digital touchpoints in consumer behavior.

Questions:

1) How is Zero Moment of Truth (ZMOT) important? Analyze how online reviews, influencers, and comparison websites influenced consumer behavior in the smartphone market.

2) Discuss the role of digital touchpoints in the consumer buying decision process with reference to the smartphone brand's strategy described in the case.

3) Evaluate the importance of integrating online and offline marketing channels in influencing purchase decisions in high-involvement products like smartphones.

b) 'Green Cycle,' a new organic cosmetics brand, is entering the highly competitive market. They want to charge a premium price based on their commitment to ethical sourcing and zero-plastic packaging. Propose a market strategy using Segmentation, Targeting, and Positioning. Evaluate the five Criteria for Effective Segmentation against the 'Eco-Conscious Millennial' segment. Propose a complete Positioning Strategy for 'Green Cycle.' Formulate a compelling Unique Selling Proposition and a final, clear Positioning Statement that justifies the "More-for-More" pricing strategy.

c) A new Electric Scooter brand, 'Volta,' is struggling with high showroom costs and unreliable delivery schedules. They spend heavily on online ads but lack visibility into the final customer experience and profitability. Analyze the customer's journey using the Five-Stage Model of the Consumer Buying Decision Process. Identify the two most critical stages where Volta's unreliable delivery/service is causing a failure in Customer Satisfaction. Propose an Omni Channel Marketing strategy that integrates the Digital Channel, the Physical Channel and the Service Channel. Explain how this seamless integration addresses the failure points identified in the customer journey analysis.

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AY 2025-26
Semester: I

Course Code: GM04 **Course Name: Business Analytics**
Total Marks: 50 **Time: 2 hours 30 minutes**

Instructions:

i. **All questions are compulsory.**
ii. **Use of non-programmable calculator is allowed.**

Question No 1: Calculate the arithmetic mean, median and mode of the frequency distribution given below. **[10 M]**

Class	110-119	120-129	130-139	140-149	150-159	160-169	170-179	180-189	190-199
Frequency	6	25	48	72	116	60	38	22	3

Question No 2: From the data given below find: **[10 M]**
The coefficient of correlation between the marks in test scores and sales

Test Scores	14	19	24	21	26	22	15	20	19	25
Sales (‘000 Rs.)	31	36	48	37	50	45	33	41	39	49

Question No 3: Solve any two questions including subsection A, B & C of the following (15 marks each) **[30 M]**

I A] An urn contains 7 white and 4 red balls. If two balls are drawn at random, find the probability that (i) both are white (ii) both are red.

I B] Two types of batteries are tested for their length of life (in hours). The following data is the summary descriptive statistics.

Type	Number of batteries	Average life (in hours)	Sample standard deviation
A	14	94	16
B	13	86	20

Is there any significance between the average life of the two batteries at 5% level of significance? (Use 5% level of significance. Ztab = 1.96)

I C] A logistics firm compares a new packaging method against the old one to see if it reduces product damage in transit. Each shipped unit is classified as damaged or not damaged. Test if damage rate is independent of packaging method.

	Damaged	Not Damaged	Total
New Packaging	18	162	180
Old Packaging	34	146	180
Total	52	308	360

Find the chi-square test statistic and test if the damage rate is independent of the packaging method (χ^2 tab = 3.841).

II A] A committee of 8 persons is to be appointed from 3 officers of the A department, 6 officers of B department and 2 officers of the C department and 3 accountants . Find the probability that: (i) There should be one from each department. (ii) There should be at least one from the B department.

II B] A company measures productivity scores.

- **Trained group: n_1 = 15, mean = 82, SD = 6**
- **Untrained group: n_2 = 12, mean = 78, SD = 5**

Test if training significantly improves productivity at 5% level. (T (tab)=2.06)

II C] A school assesses whether study modality (online vs. traditional) relates to exam outcomes. Students are categorized by method used and whether they passed or failed. Test if exam success is independent of study method.

	Passed	Failed	Total
Online	92	28	120
Traditional	80	40	120
Total	172	68	240

Find the chi-square test statistic and test if exam success is independent of study method (χ^2 tab = 3.841).

III A] Two cards are drawn at random from a well-shuffled pact of 52 cards. Find the probability that (i) Two aces are drawn (ii) all diamonds are drawn.

III B] A manufacturer claims that the average lifetime of their LED bulbs is 1,000 hours. To verify this claim, a sample of 25 bulbs was tested. The sample showed a mean lifetime of 980 hours with a standard deviation of 40 hours.

At the 5% level of significance, test whether the manufacturer's claim is justified. (Use t-test for single mean, t0.05, df=24= 2.064).

III C] A marketing team evaluates whether exposure to an advertisement is associated with purchasing. Consumers are grouped by whether they saw the ad and whether they purchased the product. Test if purchase behavior is independent of advertisement exposure.

	Purchased	Not Purchased	Total
Saw Ad	110	30	140
No Ad	84	56	140
Total	194	86	280

Find the chi-square test statistic and test if purchase behavior is independent of advertisement exposure (χ^2 tab = 3.841)

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AY 2025-26
Semester: I

Course Code: GM 05 **Course Name: Digital Business**
Total Marks: 50 **Time: 2 hours 30 minutes**

Instructions:

i. **All the questions are compulsory.**
ii. **Figures to right indicate full marks.**
iii. **Draw neat and labeled diagrams wherever necessary.**

Question No. 1: **[10 Marks]**

An Air Conditioner (AC) manufacturing company wants to introduce IoT-enabled AC's. Suggest two practical applications of IoT showing how they can be helpful in daily life.

Question No. 2: **[10 Marks]**

Analyze the role of payment gateways and mobile payments in reducing the problems of online buying.

Question No. 3: Solve any Two of below (15 marks each) **[30 Marks]**

a) A mid-sized manufacturer wants to either sale via established electronic marketplaces or build its own direct B2C platform with community features. Evaluate and recommend one option by justifying your choice.

b) VoyagePlus is a digital travel platform founded in 2018 that offers flight bookings, hotel reservations and curated travel experiences for domestic and international travelers. With increasing competition and seasonal demand fluctuations in the travel industry, the company observed that revenue streams were highly transaction-dependent and vulnerable to external disruptions. To address this, VoyagePlus planned to evolve from a booking-centric platform into a lifestyle-based travel ecosystem. As part of its expansion strategy, VoyagePlus wants to introduce health and entertainment services. The platform wants to launch bundled services with the objective of increasing revenue. In addition, VoyagePlus wants to partner with global streaming providers to offer discounted bundled subscriptions for long-duration travelers, addressing the need for entertainment during extended stays, remote work travel and transit periods.

Propose a business model explaining how service bundling, cross-platform integrations and mobile personalization can increase user-engagement and revenue stability.

c) Nykaa Case Study

In 2012, former investment banker Falguni Nayar launched Nykaa with a vision to create a trusted, specialized online platform for beauty and personal care in India. At a time when Indian consumers depended largely on unorganized cosmetic retail, lacked awareness of global brands and feared counterfeit products, Nykaa positioned itself as an authentic, curated, education-led beauty retailer. Based in Mumbai, Nykaa started as an online-only e-commerce marketplace but quickly evolved into an inventory-led, omnichannel beauty ecosystem. Today, it serves over 100 million users and offers more than 4,500 brands and 500,000 products, including its own private-label lines.

Nykaa operates through multiple verticals. Nykaa Beauty focuses on cosmetics, skincare, fragrances and grooming products, while Nykaa Fashion offers apparel, footwear, accessories and home products. Nykaa Man caters specifically to men's grooming and lifestyle needs. While many e-commerce platforms follow a marketplace approach, Nykaa adopted an inventory-led hybrid model by purchasing products directly from brands to ensure authenticity, achieve better margins and maintain control over assortment.

Nykaa's revenue streams include product retail margins, private-label sales, advertising and sponsored brand content, influencer partnerships and offline store retailing. The company understood early that beauty buying is aspirational, experiential and advice-driven. Instead of competing only on discounts, Nykaa invested in beauty tutorials, blogs, expert advice and strong communities on YouTube and Instagram supported by influencers. Personalized product recommendations and user review and rating systems further strengthened trust. This integration of content and commerce turned Nykaa into a trusted beauty advisor rather than merely a transaction platform.

As part of its omnichannel expansion, Nykaa began opening physical retail formats in 2015. These included Nykaa Luxe Stores, which feature premium global brands such as MAC, Huda, Dior and Charlotte Tilbury and Nykaa On Trend Stores, which showcase fast-growing and emerging beauty brands. These stores provide product sampling and trials, beauty consultations and offline–online integration through shared loyalty points. Rather than replacing e-commerce, offline retail reinforced Nykaa's brand experience and credibility.

Nykaa's technology and operations backbone supports its scale and service promise. Its e-commerce infrastructure is mobile-first and includes AI-driven personalization, SEO and SEM-led customer acquisition and data analytics for assortment and pricing decisions. Multiple warehouses enable faster fulfilment and secure digital payment channels ensure smooth transactions. Nykaa's operational promise of "authenticity guaranteed" has created strong brand trust, particularly in Tier II and Tier III cities.

In the competitive landscape, Nykaa competes with platforms such as Amazon Beauty, Myntra, AJIO, Tata Cliq, Sephora (both offline and online) andD2C beauty startups like Mamaearth, Sugar and WOW. While many competitors rely heavily on discount-driven mass retail, Nykaa differentiates itself through strong curation, education and premium branding.

Despite its success, Nykaa faces several critical business pressures. These include high customer acquisition costs as digital advertising and influencer partnerships have become increasingly expensive, as well as rising inventory and warehousing costs, since the inventory-led model, while offering control, puts pressure on working capital. Growing competition in beauty and fashion from D2C brands selling directly through Instagram and their own websites adds further challenges. Post-IPO scrutiny has intensified investor expectations regarding profitability and expansion and managing both online operations and more than 160 offline stores has increased operational complexity and affected omnichannel efficiency.

Q1. Evaluate the technological innovations can Nykaa adopt to elevate customer experience?

Q2. Can Nykaa sustain profitability without increasing product prices or reducing marketing spend?

Q3. Will rising competition from D2C beauty brands threaten Nykaa's dominance? Why/why not?

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Maharashtra Education Society
Institute of Management & Career Courses, Pune (Autonomous)
End Term Question Paper
AY 2025-26
Semester: I

Course Code: GM-06 **Course Name: Decision Science**
Total Marks: 50 **Time:02.00 pm to 04.30 pm** **Date: XX/XX/XXXX**

Instructions:

1. **All questions are compulsory unless stated otherwise.**
2. **Figures to the right indicate full marks.**
3. **Use of non-programmable calculator is permitted.**
4. **Draw neat diagrams and show all workings.**

Question No. 1: (Solve both questions 5 marks each) **[10 Marks]**

1. **A company has four employees (E1 to E4) and four tasks (T1 to T4). The profit (in ₹'000) generated by assigning an employee to a task is given below. Determine the assignment that maximizes the total profit using the Hungarian method steps.**

Tasks → / Employees ↓	T1	T2	T3	T4
E1	10	14	6	16
E2	12	10	8	15
E3	15	13	9	18
E4	8	17	11	13

2. **A construction company faces the following profits (in ₹ Lakhs) based on market conditions. Determine the optimal decision using the Maximin and Maximax criteria.**

ACT → / State of Nature ↓	High Demand	Moderate Demand	Low Demand
Build large Plant	40	20	-15
Build Small Plant	25	15	5
Subcontract	10	10	10

Question No. 2: **[10 Marks]**

A consumer brand switches between two states: "Using Brand A" and "Using Brand B". The probability transition matrix is:

$$P = \begin{bmatrix} 0.6 & 0.4 \\ 0.2 & 0.8 \end{bmatrix}$$

If the current market share is 50% for A and 50% for B, what will the market share be in the long run? Calculate the steady-state probabilities for Brand A and Brand B.

Question No. 3: Solve any Two of below (15 marks each) **[30 Marks]**

a) Solve the following game using the principle of dominance. State the reduced game, the optimal mixed strategies for both players, and the value of the game.

Player B						
		B1	B2	B3	B4	B5
Player A	A1	1	3	0	5	2
	A2	2	4	3	3	4
	A3	1	5	4	6	3
	A4	0	2	1	4	1
	A5	3	4	2	5	5

b) Solve the following Linear Programming Problem (LPP) using the Graphical Method. Clearly identify the feasible region and determine the optimal solution.

Minimize

$$Z = 200X_1 + 400X_2$$

Subject to constraints

$$X_1 + X_2 \geq 200$$
$$X_1 + 3X_2 \geq 400$$
$$X_1 + 2X_2 \leq 350$$

$$X_1 \geq 0, X_2 \geq 0$$

c) An established company has decided to add a new product to its line. It will buy the product from a manufacturing concern, package it to a number of distributors that have been selected on a geographical basis. Market research has already indicated the volume expected and the size of the sales force required. The steps shown in the following table are to be planned:

Activity	Description	Predecessors	Duration (Days)
A	Organize Sales Office	-	6
B	Hire Salesmen	A	4
C	Train Salesmen	B	7
D	Select advertising agency	A	2
E	Plan advertising campaign	D	4
F	Conduct advertising campaign	E	10
G	Design Package	-	2
H	Setup packaging facilities	G	10
I	Package initial Stocks	J, H	6
J	Order stock from manufacturer	-	13

K	**Select distributors**	**A**	**9**
L	**Sell to distributors**	**C, K**	**3**
M	**Ship Stock to Distributors**	**I, L**	**5**

1. **Draw the CPM Network Diagram.**
2. **Calculate the Earliest Start (ES), Earliest Finish (EF), Latest Start (LS), and Latest Finish (LF) for every activity.**
3. **Determine the Total Float (TF), Free Float (FF), and Independent Float (IF) for all activities.**
4. **Indicate the Critical Path.**

**********All The Best**********