Chapter 5 – Product Costing: Summarized Final Answers

Chapter 5 – Product Costing: Manufacturing Processes, Cost Terminology, and Cost Flows

Concept Questions Summary:
1. Raw materials: unprocessed inputs; Work-in-process: unfinished goods; Finished goods: completed products.
2. JIT is a pull system driven by customer demand; traditional systems are push-based.
3. JIT systems order and produce only as needed, reducing waste and storage costs.
4. Benefits of JIT/Lean: lower waste, better quality, reduced costs, and faster production.
5. Lean in services: reduces wait time, improves efficiency, and streamlines customer processes.
6. Direct costs are easily traced to products; indirect costs are not.
7. Manufacturing costs = direct materials + direct labor + manufacturing overhead.
8. Nonmanufacturing costs = selling + administrative (period costs).
9. Cost flow: Raw materials → WIP → Finished goods → COGS.
10. Cost vs. Expense: costs become expenses when used up or sold.
11. Product costs attach to goods; period costs are expensed immediately.
12. Accurate costing helps in pricing, budgeting, and decision-making.

Brief Exercises Summary:
1. True/False review: a–F, b–F, c–T, d–T, e–F.
2. Lean production effects: less waste and inventory; higher efficiency.
3. Manufacturing vs nonmanufacturing: classification based on function.
4. Lean production traits: true for flexibility, quality, and reduced waste.
5. Cost identification: DM, DL, IL, MOH categorized.
6. Total product cost ₹45,00,000; unit cost ₹100.

Exercises Summary:
7. Total product cost ₹20,81,000 (DM ₹4.5L, DL ₹15L, OH ₹1.31L).
8. Direct labor ₹62.5L; indirect labor ₹29L; president salary = period cost.
9. Raw material used ₹4,96,000.
10. RM used ₹56,50,000.
11–12. Cost of goods manufactured ₹92,50,000; verified via material flow.
13. Cost per unit ₹119; COGS ₹28,56,000.
14. Ending RM ₹14,50,000.
15. Net income ₹14,40,000.
16. RM used ₹61,50,000.
17. Unit cost ₹128.75; COGS ₹23,17,500.
18–19. Merchandising: COGS ₹2,44,50,000; sales ₹3,17,75,000.
20. Net income ₹72,50,000.
21. Product vs. Period cost: ₹2,62,500 and ₹87,500 per year respectively.

Problems Summary:
22. COGM ₹1,52,50,000; COGS ₹1,55,00,000; overhead ₹61,50,000; period costs excluded.
23. Material for 500 chairs ₹7,25,000; COGS ₹5,51,000; ending WIP ₹1,45,000.
24. COGM ₹1,32,50,000; COGS ₹1,35,00,000; net income ₹18,50,000.
25. B&B Manufacturing – COGS ₹1,19,75,000; NI ₹5,00,000; shows profitability.
26. Service company labor cost ₹18,700; automation saves ₹11,050 per return.
27. Company #1 NI ₹5L; Company #2 NI ₹7.75L; both profitable.
28. Total manufacturing cost ₹3.6 crore; COGM ₹3.615 crore; COGS ₹3.605 crore.
29. Company #1 NI ₹2.25L; Company #2 NI ₹8.5L.
30. Venus Corp: COGS ₹1.40 crore; net income ₹51.14L.
31. Total cost of mouse pads ₹37.5L; expenses ₹28.12L; inventory ₹9.37L.
32. JIT implementation: reduced inventory, ₹10L annual interest gain, 20% sales risk.
33. Advertising and admin = period costs; not part of manufacturing overhead.
34. Regal Shoes: Type A profit ₹6.04L; Type B ₹14.04L; total profit ₹20.68L.
35. Future cost ↑13%; selling price must rise ₹208 to maintain 32.5% profit margin.
36. Philips India: COGM ₹23.08L; net income ₹3.3L after ₹4.22L admin expenses.

Overall Insights:
- Manufacturing costs include DM, DL, and MOH; all others are period costs.
- JIT reduces waste and improves efficiency but requires supply reliability.
- Accurate cost flow ensures reliable profit computation.
- Understanding COGM and COGS is essential for managerial decision-making.

Final Answers Summary – Chapter 7: Job Order and Process Costing

Chapter 5 – Job Order Costing and Process Costing: Final Answers Summary

Concept Questions:
1. Job costing is used when products differ; process costing when they are homogeneous.
2. Job order costing accumulates costs by individual jobs; process costing by departments or processes.
3. Source documents: job cost sheet, materials requisition, and labor time ticket.
4. Predetermined overhead rate = Estimated Overhead / Estimated Activity Base.
5. Overapplied overhead: applied > actual; Underapplied: applied < actual.
6. Equivalent units measure partially completed goods.
7. FIFO and Weighted-Average are two main process costing methods.
8. Transferred-in costs are costs of materials, labor, and overhead from previous departments.

Brief Exercises:
1. Predetermined OH rate = ₹20 per labor hour.
2. Total cost of Job 101 = ₹2,50,000.

3. Applied OH = ₹75,000; Actual OH = ₹80,000 → underapplied ₹5,000.
4. Equivalent units (materials) = 8,000; conversion = 7,000.
5. Cost per equivalent unit = ₹12.
6. Department A: ₹5/unit; Department B: ₹8/unit → Total ₹13/unit.
7. Overhead applied ₹1,80,000; actual ₹1,70,000 → overapplied ₹10,000.
8. Transferred cost to Dept B = ₹4,00,000.
9. Job 205 total cost = ₹1,35,000; cost/unit = ₹450.
10. Cost of goods manufactured = ₹12,00,000.

Problems:
11. Job 301 → Material ₹90,000, Labor ₹60,000, OH ₹72,000 → Total ₹2,22,000.
12. Predetermined OH = ₹30/machine hr; OH applied ₹1,50,000; underapplied ₹10,000.
13. Equivalent units – materials: 10,000; conversion: 9,000; cost/unit ₹15.
14. Total departmental cost transferred = ₹4,50,000.
15. FIFO: EU Materials 12,000, Conversion 10,800; WA: 12,500 and 11,200.
16. Cost of completed goods ₹5,40,000; Ending WIP ₹60,000.
17. Cost reconciliation: Beg WIP ₹80,000 + Added ₹7,20,000 = ₹8,00,000 (Output ₹7,50,000 + End WIP ₹50,000).
18. Job costing suited for construction, printing, and customized orders; process for chemicals, paint, cement.
19. Equivalent units cost summary: ₹3.25 (materials), ₹4.50 (conversion).
20. Final transferred cost to next department ₹3,00,000.

Overall Insights:
- Job costing is used for specific, customized production.
- Process costing suits mass production with continuous flow.
- Equivalent units simplify partial completion costing.
- Predetermined overhead rates standardize cost control.
- Proper overhead allocation prevents profit distortion.
- Cost reconciliation ensures accuracy across departments.

Chapter 8 – Activity-Based Costing: Summarized Final Answers

Chapter 8 – Activity-Based Costing (ABC): Summary Answers

Concept Questions Summary:
1. Overhead levels: unit, batch, product, facility. Each level relates to activity frequency and scope.
2. ABC allocates overhead based on activities and their drivers, not just volume.
3. Stage 1: Identify activities and assign costs; Stage 2: Apply rates using cost drivers.
4. Proper cost driver selection is critical for accurate costing and decision-making.
5. In JIT systems, ABC refines cost accuracy by reducing facility-level allocations.
6. ABC applies to selling/admin tasks using drivers like calls or shipments.

7. ABC reduces cross-subsidization between products by better tracing costs.
8. Benefits: more accurate cost info, better planning, performance evaluation.
9. Limitations: costly and time-consuming to implement and maintain.

Brief Exercises Summary:
1. Classification examples: batch-level, product-level, unit-level, etc.
2. Activity-driver link: purchasing = orders; setups = batches; inspection = tests.
3. Overhead rates: Unpacking ₹200/box, Inspecting ₹1,000/batch, Packing ₹25/unit.
4. Benefits/limitations: accurate decisions vs. high setup cost.

Exercises Summary:
5. ABC driver identification: Different activities linked to relevant cost drivers.
6. Overhead rates – purchasing ₹1,000/order; receiving ₹375/shipment; sales ₹10/order. Small umbrella overhead = ₹1,89,37,500; Large = ₹1,10,62,500.
7. Mattress factory: material ₹700/part; testing ₹1,000/test; calls ₹1,000/call → Overhead = ₹7.25Cr (Firm) & ₹2.75Cr (Extra-Firm).
8. Traditional rate ₹5,250/DLH vs. ABC ₹37,500 per batch → minimal difference.
9. Monitors: Traditional ₹2,50,000 vs. ABC ₹4,36,248; ABC more realistic.
10. Same conclusion: ABC ₹37,500 > Traditional ₹36,750; improved precision.
11. HR ABC: Recruitment ₹6,250/applicant; Query ₹3,250; Admin ₹24,500/employee; Separation ₹25,000 → separation is most costly.

Problems Summary:
12. Traditional costing Big Board ₹7,221 vs. ABC ₹9,313; Small Board ₹4,314 vs. ₹3,717 – ABC corrects distortion for complex, low-volume products.
13. Fairchild Inc.: ABC enhances cost accuracy, affecting pricing & profit recognition.
14. Traditional costing distorted costs; ABC per-unit cost: P ₹427, Q ₹425, R ₹335.2.
15. ABC rates: Receiving ₹62.58, Setups ₹153.77, Quality ₹39.84, Dispatch ₹157.93. Cost/unit – R ₹18.68, S ₹2.08, T ₹5.82 → shows ABC precision.
16. Traditional ₹16,000 vs. ABC ₹12,600 → ABC saves ₹3,400; highlights driver relevance.
17. ABC assigns ₹1,50,387.5 overhead vs. traditional flat rate; more accuracy under automation.
18. Job cost: Traditional ₹14,35,000 vs. ABC ₹15,10,000 → higher true cost for complex job.
19. Projectors job: overhead ₹12,32,450 (purchase ₹1,200, setups ₹5,000, testing ₹26,250, machine ₹12,00,000); focus on reducing machine cost.
20. JIT + ABC: total savings ₹92,50,000 via reduced purchase, setup, and inventory cost.
21. Bid pricing: Regular ₹87,112; Deluxe ₹1,24,800; markup applied to ABC-derived costs.
22. ABC assigns inspection costs by inspection count (Rs.625/inspection) → accurate product cost.
23. Service firm: Corporate ₹9,37,500 vs. Individual ₹10,62,500 → ABC reveals profit pattern reversal from traditional costing.
24. ABC vs traditional: ABC better reflects overhead drivers, ensuring realistic pricing and control.

Overall Insights:
- ABC links overhead to activities, reducing distortions common in traditional costing.
- Enhances product pricing, customer profitability, and strategic decisions.
- Requires data accuracy and periodic updates but greatly improves cost visibility.
- Integration with JIT enhances operational efficiency and profit planning.

Final Answers Summary – Chapter 6: Cost Allocation and Activity-Based Costing

Chapter 6 – Cost Allocation and Activity-Based Costing (ABC): Final Answers Summary

Concept Questions:
1. Cost allocation is the process of assigning indirect costs to cost objects like products or services.
2. Traditional costing uses one overhead rate; ABC uses multiple activity cost drivers for accuracy.
3. Direct costs are traced; indirect costs are allocated.
4. Activity cost pool: a grouping of overhead costs associated with a specific activity.
5. Cost driver: any factor that causes a change in the cost of an activity.
6. Unit-level, batch-level, product-sustaining, and facility-level are major activity classifications.
7. Cost allocation improves pricing, budgeting, and performance evaluation.
8. ABC provides better insight into cost behavior and profitability.

Brief Exercises:
1. Departmental overhead rates: Dept A = ₹10/hr, Dept B = ₹8/hr.
2. Applied overhead = ₹2,00,000 (based on labor hours).
3. Allocation rate = ₹25 per machine hour.
4. Cost driver rate = ₹2.50 per setup.
5. Product X: ₹3,00,000; Product Y: ₹2,00,000 allocated overhead.
6. Revised allocation lowers distortion in unit cost.
7. ABC: Activity 1 ₹1.5/unit, Activity 2 ₹2/unit; Total ₹3.5/unit.
8. Customer profitability improved after accurate ABC tracing.

Problems:
9. Plantwide rate = ₹40 per DLH; Product A cost overstated; Product B understated.
10. Departmental rate approach improves accuracy.
11. ABC rate summary:
  - Setup cost ₹1,000 per setup

- Inspection ₹20 per batch
- Machine ₹50 per hour
- Material handling ₹5 per order

12. Total overhead applied: ₹6,00,000 using ABC vs ₹7,50,000 traditional.
13. Profitability ranking changes after ABC adoption.
14. Activity rates:
- Ordering ₹1,200 per order
- Machine ₹25 per hour
- Packaging ₹4 per unit

15. Product A true cost ₹150/unit; B ₹120/unit.
16. ABC identifies non–value-added costs reducing efficiency.
17. Service company ABC results: Customer 1 ₹30/unit; Customer 2 ₹18/unit.
18. Overcosted product revealed under traditional system.
19. Process improvements possible by eliminating redundant activities.
20. Final conclusion: ABC leads to more precise costing, improved decision-making, and identification of inefficiencies.

Overall Insights:
- Traditional costing may distort product profitability.
- ABC enhances managerial decisions in pricing, outsourcing, and resource allocation.
- Cost drivers should reflect cause-and-effect relationships.
- Continuous refinement of cost pools improves operational control.

Final Answers Summary – Chapter 9: Cost-Volume-Profit Analysis

Chapter 9 – Cost-Volume-Profit (CVP) Analysis: Final Answers Summary

Concept Questions:

1. Traditional → cost function; Contribution margin → cost behavior.
2. Contribution margin unchanged; break-even decreases if fixed cost reduces.
3. CM = Selling price – Variable cost; or Total Sales – Total Variable Costs.
4. Lower CM → Lower profit (same change amount).
5. BE (units) = Fixed Costs / CM per unit; BE (sales) = Fixed Costs / CM ratio.
6. BE point ↓ when fixed costs ↓ or CM ↑.
7. After-tax sales = Desired after-tax profit / (1 – tax rate).
8. Near BE, operating leverage ↑ sharply; small sales ↑ = large profit ↑.

Brief Exercises:

1. a) Contribution margin; b) Net income; c) Gross profit; d) Increase; e) CM ratio; f) Variable costs; g) Decrease, fixed costs.
2. New net income = ₹15,00,000.
3. BE (units) = Fixed Costs / CM per unit.
4. Target profit = 1,00,000 flowers.
5. Operating leverage = 2.
6. CM per unit doubles; sales can halve before profit affected.
7. ₹7,50,000 increase in NI for ₹25,00,000 sales rise (CM ratio 30%).
8. Net income ↑ ₹1,00,000 after ₹5,00,000 ad spend.
9. New CM ₹1,95,00,000; Net income ₹1,20,00,000.
10. BE selling price per meal = ₹1,750.
11. New BE = 10,000 logs (₹6,00,000 / ₹600 per log).
12. Weighted CM ₹300; BE = Fixed cost / 300.
13. Weighted CM ₹250; BE = 7,000 units; 3,500 Green units.
14. Sales volume = 9,500 units for ₹12,00,000 after-tax profit.
15. 32,000 fire extinguishers for ₹50,00,000 before-tax profit.

Problems:

16. Weighted CM ₹130; BE = 1,00,000 units; more Citronella reduces BE.
17. CM ratio = 65%; Advertising ↑ ₹50L → Income ↑ ₹15L.
18. Weighted CM ₹1,750 → BE 35,000 units; DM ↓ ₹500 → BE 33,000; new mix → BE 34,000.
19. a) SP ₹550; b) BE 5,000 units; c) For 35% return, SP ₹575 or cut costs.
20. a) BE 6,000 units; b) Target = 6,300 units; c) Net income ₹25L; d) New BE 8,572 (SP↓20%); e) BE 5,000 (VC↓40%); f) BE 7,000 (FC↑₹25L).
21. CM ratio 40%; new SP ₹291; units for same profit = 17,422.
22. Composite CM = ₹4/3; BE = 1,50,000 units (A=1,00,000; B=50,000).
23. Product mix 4:3 better (₹3.71/unit CM).
24. Original BE ₹4,54,286; new mix BE ₹5,00,000.
25. BE Mumbai 73,500; Pune 47,200; Optimum income ₹38,06,400.
26. BE sales ₹10Cr; For ₹3.5Cr profit, sales ₹20Cr.
27. Weighted CM ₹480; BE 31,250 units; 12,500 Daily, 6,250 Mud, 12,500 Face; selling more Mud ↓ BE.
28. BE 21,600 units; FC ₹19.44L; profit ₹12.96L; target 39,900 units; 20% profit at ₹1.94Cr sales; new SP ₹360 for BE ↓ by 3,600 units.
29. BE 2,000 units; incremental FC needs 2,125 units; best mix X:Y = 1:1; max profit ₹4,63,000.
30. BE = 251 students.
31. FC ₹20Cr; BE 40,000 units @₹10,000; if ₹9,000 → 60,000 units; profit ₹11.4Cr.
32. FC ₹50B; at 80 jets → loss ₹10B; needed SP ₹9.375B per jet for profit; total income over years ₹66B.

Final Answers Summary – Chapter 13: Relevant Costs and Product Planning Decisions

Chapter 13 – Relevant Costs and Product Planning Decisions: Final Answers Summary

Concept Questions:
1. Accept special orders only if incremental revenue exceeds all relevant costs including opportunity costs.
2. With excess capacity, only variable costs are relevant; fixed costs remain unchanged.
3. For make-or-buy: compare variable + avoidable fixed + opportunity cost versus purchase price.

4. Qualitative factors: supplier quality, reliability, employee morale, long-term strategy.
5. Outsourcing drawbacks: dependence, job loss, loss of control, lower employee loyalty.
6. Irrelevant costs: sunk and unavoidable fixed costs.
7. Drop a product only if contribution margin lost < fixed cost savings.
8. With limited resources, prioritize highest contribution per unit of constraint.
9. Bottleneck management improves throughput and reduces idle capacity.
10. Sell or process further: process only if incremental revenue > incremental processing cost.

Brief Exercises:
1. Minimum price ₹750 (equal to variable cost).
2. Buying reduces profit by ₹1,50,000 → continue making.
3. Dropping product reduces profit ₹10,00,000 → keep product.
4. True/False: (a) F, (b) F, (c) T, (d) F, (e) F.
5. Process further if price ₹112.5; else sell at ₹87.5.

Exercises:
6. Minimum price = ₹1,800.
7. Relevant cost/unit = ₹275.
8. Minimum price ₹400 for acceptance.
9. Profit increases ₹10,50,000.
10. Make increases cost ₹1,00,000 → Buy.
11. Buy increases cost ₹2,00,000 → Make.
12. Outsourcing saves ₹2,50,000 → Accept.
13. Outsourcing saves ₹25,00,000 → Accept.
14. Dropping reduces profit ₹7,50,000 → Don't drop.
15. No effect (CM = Fixed cost saved).
16. Produce CD1 (₹200 CM/hour) → Max profit ₹80,00,000.
17. Produce queen beds (higher CM/hour).
18. Produce artificial leather footballs (₹7,000 CM/hour).
19. Sell defective units as is (rework loss ₹600).
20. Finish chairs (profit ₹750/unit).

Problems:
21. Accept special order → profit +₹13,50,000; monitor customer impact.
22. Accept order → profit ₹75,000 (₹25,000 setup); reject if opportunity loss ₹65,000.
23. Continue making → saves ₹25,00,000.
24. Buy → saves ₹18,00,000; consider worker effects.
25. Make saves ₹1,25,000; buy if excess demand.
26. Suspend below 6,000 units; consider market & workforce effects.
27. Drop East segment → profit increases to ₹1,100 million.
28. Don't drop Craps; profit falls ₹300 million.
29. Prioritize men's boots (₹2,600 CM/hour).

30. Highest CM/foot: Salsa #2 → maximize allocation.
31. Prioritize Pro Model balls (₹40,000 CM/hour).
32. Don't smoke salmon (loss); process only if gain ≥ ₹12.5/pound.
33. Accept only if capacity allows; reject at 9,000 medals (loss ₹15,000).
34. Make (₹1.9M) cheaper; buy if rental income ₹1.85M.
35. Don't drop Product C; profit ↓ ₹10,200 if dropped.
36. Raw material constraint: C, B, A; labor constraint: C, A, B; no limit → ₹1,65,500 profit.
37. Process Q, T further; sell R, S → total profit ₹2,84,000.
38. Minimum acceptable price = ₹3,33,000.
39. Reject order (cost ₹2,955 > price ₹2,875).
40. Best plan: make 17,500 skateboards + 1,000 tackle boxes; buy 9,000 boxes. Qualitative factors: quality, ethics, training.

Overall Insights:
- Only future, avoidable, and incremental costs are relevant for decisions.
- Opportunity cost is key in resource constraint and special order decisions.
- ABC and bottleneck analysis enhance product-mix optimization.
- Qualitative aspects ensure sustainability and ethical decision-making.