Skillshort

Self-Study Preparation Pack

CMA INTERMEDIATE

Paper 9: Operations Management and Strategic Management (OMSM)

Chapter-wise Practice Questions with Answers

For the December 2026 term · 50 MCQs (5 sets) + 10 descriptive questions with solutions · Original Skillshort questions

50 MCQs with key | 10 descriptive with solutions | Numbers verified in Python | Solve after each chapter

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This subject pack has 6 parts

1 Chapter-wise notes | 2 Important topics & weightage | 3 Past papers: trends & links

4 Mock tests + solutions | **5 Chapter practice questions** | 6 Last-week plan & strategy

Prepared by Skillshort for self-study. Original explanations and questions; not an official ICAI/ICMAI/ICSI publication. Items marked VERIFY should be checked against the latest official material.

Part A – Chapter-wise MCQs

Each set is followed by its answer key. Attempt a set in 20 minutes after finishing the related chapters.

Set 1 – Chapters 1–3 (Introduction, operations planning, design of systems)

1. Which of the following is an order qualifier rather than an order winner for most products?

(a) A unique design
(b) Meeting minimum quality standards
(c) The lowest price in the market
(d) The fastest delivery

2. Mass customisation is achieved mainly through

(a) Job production
(b) Modular design and postponement
(c) Fixed-position layout
(d) Higher inventories

3. Weights 0.5, 0.3 and 0.2 are given to the latest, previous and oldest months with demand 450, 420 and 400. The weighted moving-average forecast is

(a) 423
(b) 431
(c) 435
(d) 450

4. The Delphi method of forecasting is

(a) A causal method
(b) A time-series method
(c) A qualitative method using a panel of experts
(d) Regression analysis

5. Adding capacity ahead of expected demand is a

(a) Lag strategy
(b) Lead strategy
(c) Match strategy
(d) Chase strategy

6. In EBQ, the maximum inventory equals

(a) EBQ
(b) EBQ × (1 – d/p)
(c) EBQ × d/p
(d) EBQ ÷ 2

7. In MRP, net requirement equals

(a) Gross requirement + on hand
(b) Gross requirement – on hand – scheduled receipts
(c) Scheduled receipts – on hand
(d) Planned orders × lead time

8. Cellular layout is based on

(a) Grouping similar machines
(b) Group technology – families of parts processed in cells
(c) Moving the product past fixed stations only
(d) Keeping the product stationary

9. The location method that weights each factor and scores each site is the

(a) Centre-of-gravity method
(b) Factor-rating method
(c) Locational break-even
(d) Transportation method

10. Aggregate planning that keeps a constant workforce and builds inventory in slack periods is a

(a) Chase strategy
(b) Level strategy
(c) Subcontracting strategy
(d) Lag strategy

Set 1 – Answer key

Q	Ans	Explanation / working
1	(b)	**Order qualifiers** are the minimum needed to be considered; order winners (price, design, speed) win the order over rivals.
2	(b)	Standard **modules** assembled late (**postponement**) give variety at low cost.
3	(b)	0.5 × 450 + 0.3 × 420 + 0.2 × 400 = 225 + 126 + 80 = **431**.
4	(c)	Experts answer anonymous rounds of questionnaires until a **consensus** forms.
5	(b)	A **lead** strategy builds capacity before demand; a lag strategy adds it after demand appears.
6	(b)	Stock builds at (p – d) during the run, so the maximum = **EBQ (1 – d/p)**.
7	(b)	Net = gross – **on-hand stock** – **scheduled receipts** (plus safety stock if any).
8	(b)	Cells of different machines handle **part families** (group technology).
9	(b)	The **factor-rating** method multiplies weights by scores and totals them.
10	(b)	A **level** strategy produces at a constant rate; inventory absorbs demand changes.

Set 2 – Chapter 4 (Production planning and control, operations research)

11. Routing in PPC means

(a) Deciding the path and sequence of operations
(b) Releasing orders to the shop
(c) Following up delays
(d) Checking quality

12. Dispatching is

(a) Deciding where to locate the plant
(b) Issuing orders and documents to start work as per schedule
(c) Inspecting output
(d) Forecasting demand

13. In a transportation problem with 3 sources and 4 destinations, a basic feasible solution has at most

(a) 7 occupied cells
(b) 6 occupied cells
(c) 12 occupied cells
(d) 4 occupied cells

14. In MODI, an unoccupied cell with negative $\Delta = c - (u + v)$ indicates

(a) The solution is optimal
(b) Cost can be reduced by bringing that cell into the solution
(c) Degeneracy
(d) An unbalanced problem

15. To solve a maximisation assignment problem, first

(a) Add a dummy row
(b) Subtract all elements from the largest element
(c) Multiply by −1 and stop
(d) Use VAM

16. Johnson's rule for n jobs on two machines minimises

(a) Total cost
(b) Total elapsed time (makespan)
(c) Number of jobs late
(d) Machine utilisation

17. λ = 20 per hour and μ = 25 per hour. The average time a customer spends in the system is

(a) 9.6 minutes
(b) 12 minutes
(c) 2.4 minutes
(d) 3 minutes

18. Required output 480 units in a 480-minute shift; total task time 220 seconds. Minimum stations are

(a) 3
(b) 4
(c) 5
(d) 6

19. In Monte Carlo simulation, random numbers are assigned on the basis of

(a) Variance
(b) Cumulative probability
(c) Median
(d) Mode

20. In graphical LPP, the optimum lies at

(a) The origin always
(b) A corner point of the feasible region
(c) Any interior point
(d) The midpoint of a constraint

Set 2 – Answer key

Q	Ans	Explanation / working
11	(a)	**Routing** fixes the route; scheduling fixes time; dispatching releases work; expediting follows up.
12	(b)	**Dispatching** puts the plan into action by releasing work orders.
13	(b)	m + n − 1 = 3 + 4 − 1 = **6**; fewer means degeneracy.
14	(b)	A **negative** opportunity cost means improvement is possible; all Δ ≥ 0 means optimal.
15	(b)	Convert profits to a **regret (opportunity-loss) matrix** and minimise.
16	(b)	It sequences jobs to minimise the **total elapsed time**.
17	(b)	W = 1 ÷ (μ − λ) = 1 ÷ 5 hour = **12 minutes** (Wq = 9.6 minutes).
18	(b)	Cycle time = 60 seconds; 220 ÷ 60 = 3.67 → **4** in theory (precedence may need more).
19	(b)	Random-number ranges follow the **cumulative probability** distribution.
20	(b)	By the extreme-point theorem the optimum is at a **corner point** (or along an edge if tied).

Set 3 – Chapters 5–7 (Productivity and TQM, project management, maintenance)

21. Output rose from 10,000 to 12,000 units and labour hours from 5,000 to 5,500. The labour-productivity index is about

(a) 100
(b) 109
(c) 120
(d) 110

22. A p-chart is used to control

(a) Dimensions of a shaft
(b) The fraction defective in samples
(c) Number of defects per unit
(d) Mean weight

23. "Quality is free" and "zero defects" are associated with

(a) Deming
(b) Juran
(c) Crosby
(d) Ishikawa

24. Six Sigma aims at a defect level of about

(a) 3.4 per million opportunities
(b) 34 per thousand
(c) 1 per hundred
(d) 6 per million

25. PERT activity times are assumed to follow a

(a) Normal distribution
(b) Beta distribution
(c) Poisson distribution
(d) Uniform distribution

26. If the critical path is 30 days with a variance of 9, the probability of completing within 33 days is about

(a) 50%
(b) 68%
(c) 84%
(d) 95%

27. While crashing, the activity crashed first is the critical activity with the

(a) Highest cost slope
(b) Lowest cost slope
(c) Longest duration
(d) Largest float

28. A dummy activity in a network

(a) Consumes time but no resources
(b) Shows logical dependence and consumes neither time nor resources
(c) Is always critical
(d) Has the largest float

29. A machine should be replaced when

(a) Its book value is nil
(b) The average annual cost is at its minimum
(c) Its scrap value rises
(d) Running cost falls

30. Expensive spares that are rarely needed but critical to keep a plant running are

(a) Consumable spares
(b) Insurance (capital) spares
(c) Maintenance spares
(d) Rotable spares

Set 3 – Answer key

Q	Ans	Explanation / working
21	(b)	2.18 ÷ 2.0 × 100 ≈ **109**.
22	(b)	p-chart – **proportion defective**; c-chart – defects per unit; $\bar{x}$ and R – variables.
23	(c)	**Philip Crosby**. Juran – quality trilogy; Ishikawa – fishbone diagram.
24	(a)	**3.4 defects per million opportunities**.
25	(b)	Activities – **beta**; project duration – approximately normal.
26	(c)	Z = (33 − 30) ÷ 3 = 1 → **84%**.
27	(b)	Crash the **cheapest** critical activity first.
28	(b)	Dummies show **logic only**.
29	(b)	Replace when the next year's cost exceeds the **minimum average annual cost**.
30	(b)	**Insurance spares** are held against rare but costly breakdowns and are usually capitalised.

Set 4 – Chapters 8–9 (Introduction to SM, strategic analysis and planning)

31. Strategy formulation differs from implementation in that formulation

(a) Focuses on efficiency
(b) Focuses on effectiveness – positioning forces before action
(c) Needs mainly motivation skills
(d) Is an operational process

32. The first step in the formal strategic planning process is

(a) Analysing the internal environment
(b) Selecting the corporate mission and major goals
(c) Implementing strategy
(d) SWOT

33. A statement of what an organisation wants to become in the long term is its

(a) Mission
(b) Vision
(c) Objective
(d) Policy

34. In Porter's five forces, the availability of video calls affecting airlines is an example of

(a) Threat of new entrants
(b) Threat of substitutes
(c) Supplier power
(d) Rivalry

35. A VRIO resource that gives sustained competitive advantage must be valuable, rare, inimitable and

(a) Owned
(b) Organised to capture value
(c) Old
(d) Outsourced

36. Rockart's sources of critical success factors do NOT include

(a) Structure of the industry
(b) Temporal factors
(c) Environmental factors
(d) The auditor's opinion

37. In the TOWS matrix, using strengths to counter threats is the

(a) SO strategy
(b) ST strategy
(c) WO strategy
(d) WT strategy

38. In the product life cycle, the stage with the highest sales and intense price competition is

(a) Introduction
(b) Growth
(c) Maturity
(d) Decline

39. The GE nine-cell matrix uses

(a) Market growth and relative share
(b) Industry attractiveness and business strength
(c) Products and markets
(d) Cost and differentiation

40. The scanning tool that provides the broad data from which key drivers of change are identified is

(a) BCG matrix
(b) PESTEL analysis
(c) Value chain
(d) Critical success factors

Set 4 – Answer key

Q	Ans	Explanation / working
31	(b)	Formulation – doing the right things (**effectiveness**), intellectual and analytical; implementation – efficiency, operational, motivation and leadership.
32	(b)	Mission and goals come first; then external and internal analysis, strategy choice and implementation.
33	(b)	The **vision** describes the desired future; the mission states the purpose and business.
34	(b)	A product from another industry meeting the same need – **substitute**.
35	(b)	V-R-I-**O** – the firm must be **organised** to exploit it.
36	(d)	The four sources: industry structure, competitive strategy/position/location, environmental and **temporal** factors.
37	(b)	**ST (maxi-mini)**.
38	(c)	**Maturity** – sales peak, competition is intense and the aim is to defend share.

Q	Ans	Explanation / working
39	(b)	Axes: **industry attractiveness** and **business (competitive) strength**.
40	(b)	**PESTEL** scans the macro environment.

Set 5 – Chapters 10–11 (Formulation and implementation, digital strategy)

41. A cost-leadership strategy is best supported by

(a) Premium branding
(b) Economies of scale and tight cost control
(c) Small batch custom work
(d) Heavy advertising of uniqueness

42. Entering a new business unrelated to existing products and markets is

(a) Concentric diversification
(b) Conglomerate diversification
(c) Horizontal integration
(d) Market penetration

43. The organisational structure that seeks both global efficiency and local responsiveness is the

(a) Global structure
(b) Multinational structure
(c) Transnational structure
(d) Functional structure

44. The McKinsey 7S "hard" elements are

(a) Shared values, style, staff
(b) Strategy, structure, systems
(c) Skills, staff, style
(d) Style, systems, skills

45. A strategic control that checks whether the assumptions behind a strategy are still valid is

(a) Implementation control
(b) Premise control
(c) Operational control
(d) Budgetary control

46. Business process re-engineering implies

(a) Incremental improvement
(b) Fundamental rethinking and radical redesign of processes
(c) Cost cutting only
(d) Outsourcing only

47. Converting paper records into digital form is

(a) Digital transformation
(b) Digitisation
(c) Digital strategy
(d) Disruption

48. The empathise stage of design thinking aims to

(a) Build prototypes
(b) Understand users' needs and experiences
(c) Test the final product
(d) Generate many ideas

49. Platform businesses such as ride-hailing apps grow mainly through

(a) Tariff protection
(b) Network effects
(c) Economies of scope only
(d) Government licences

50. Machine learning that uses many-layered neural networks for image and speech recognition is

(a) Robotic process automation
(b) Deep learning
(c) Blockchain
(d) Expert systems

Set 5 – Answer key

Q	Ans	Explanation / working
41	(b)	Scale, standardisation and cost control underpin **cost leadership**.
42	(b)	Unrelated – **conglomerate**; related – concentric.
43	(c)	**Transnational** – the best of both extremes.
44	(b)	Hard S's: **strategy, structure, systems**; soft: shared values, style, staff, skills.
45	(b)	**Premise control** checks planning assumptions continuously.
46	(b)	Hammer and Champy – **radical redesign** for dramatic improvement.
47	(b)	**Digitisation** – analogue to digital; digitalisation and transformation go further.
48	(b)	Stages: **empathise**, define, ideate, prototype, test.
49	(b)	More users attract more providers and vice versa – **network effects**.
50	(b)	**Deep learning** – multi-layer neural networks.

Part B – Descriptive Practice Questions

QUESTION D1 – Moving averages (4 marks)

Demand for the last three months (oldest first): 400, 420 and 450 units. Forecast next month by (i) a 3-month simple moving average and (ii) a weighted moving average with weights 0.5 (latest), 0.3 and 0.2.

SOLUTION D1

(i) SMA = (400 + 420 + 450) ÷ 3 = **423.3 units**. (ii) WMA = 0.5 × 450 + 0.3 × 420 + 0.2 × 400 = **431 units** – it reacts more to the rising trend.

QUESTION D2 – Economic batch quantity (6 marks)

Annual demand 24,000 units; set-up cost ₹600 per batch; holding cost ₹5 per unit per year; production rate 400 units a day; usage 100 units a day. Find the EBQ, number of runs a year, maximum inventory, length of each run and the total annual set-up plus holding cost.

SOLUTION D2

EBQ = $\sqrt{[2DS \div H(1 - d/p)]} = \sqrt{[2 \times 24{,}000 \times 600 \div (5 \times 0.75)]} = \sqrt{76{,}80{,}000}$ = **2,771 units**

Runs = 24,000 ÷ 2,771 = **8.66 a year**; maximum inventory = 2,771 × 0.75 = **2,078 units**; run length = 2,771 ÷ 400 = **6.93 days**; total cost = $\sqrt{(2DSH(1 - d/p))}$ = **₹10,392** (half set-up, half holding).

QUESTION D3 – Transportation: VAM and MODI (8 marks)

From \ To	D1	D2	D3	Supply
S1	8	6	10	30
S2	9	12	13	40
S3	14	9	16	50
Demand	35	45	40	120

Find an initial solution by VAM and test it for optimality.

SOLUTION D3

VAM: penalties – S3 has the highest (5) → allocate S3–D2 **45** (cost 9). Next S2 (penalty 4) → S2–D1 **35**. Then S3–D3 **5**, S2–D3 **5**, S1–D3 **30**.

Cost = 45 × 9 + 35 × 9 + 5 × 16 + 5 × 13 + 30 × 10 = 405 + 315 + 80 + 65 + 300 = **₹1,165**. Occupied cells = 5 = m + n − 1 ✓.

MODI: u1 = 0 → v3 = 10; u2 = 3 (13 − 10), v1 = 6 (9 − 3); u3 = 6 (16 − 10), v2 = 3 (9 − 6).

Δ for empty cells = c − u − v: S1D1 = 8 − 0 − 6 = 2; S1D2 = 6 − 0 − 3 = 3; S2D2 = 12 − 3 − 3 = 6; S3D1 = 14 − 6 − 6 = 2. All Δ ≥ 0 → **optimal; minimum cost ₹1,165** (unique, as no Δ is zero).

QUESTION D4 – Unbalanced assignment (5 marks)

Four workers can do three jobs (time in hours). Assign to minimise total time.

Worker	J1	J2	J3
W1	10	14	22
W2	16	12	18
W3	12	10	20
W4	14	16	24

SOLUTION D4

Add a **dummy job J4** with zero times to balance the matrix (4 × 4), then apply the Hungarian method.

Optimal: **W1–J1 (10), W3–J2 (10), W2–J3 (18)**; W4 gets the dummy (stays idle). Minimum time = **38 hours** (checked against all 24 assignments).

QUESTION D5 – Single-server queue (5 marks)

Customers arrive at a counter at 20 per hour (Poisson); service is exponential at 25 per hour. Find utilisation, L, Lq, W, Wq and the probability that there are more than 3 customers in the system.

SOLUTION D5

ρ = 20 ÷ 25 = **0.8**; L = λ ÷ (μ − λ) = **4**; Lq = λ^2 ÷ [μ(μ − λ)] = 400 ÷ 125 = **3.2**; W = 1 ÷ 5 hour = **12 minutes**; Wq = λ ÷ [μ(μ − λ)] = 0.16 hour = **9.6 minutes**; P(n > 3) = ρ^4 = **0.41**.

QUESTION D6 – PERT probability (4 marks)

The critical path is 30 days with variance 9. Find (i) the probability of finishing within 33 days and (ii) the duration with 95% confidence.

SOLUTION D6

σ = 3. (i) Z = (33 − 30) ÷ 3 = 1.0 → **84.1%**. (ii) T = 30 + 1.645 × 3 = **34.9 days**.

QUESTION D7 – Line balancing (6 marks)

Tasks (seconds): A 40; B 30 (after A); C 50 (after A); D 20 (after B); E 35 (after C); F 45 (after D and E). Required output 480 units in a 480-minute shift. Find the cycle time, theoretical minimum stations, a feasible balance and its efficiency.

SOLUTION D7

Cycle time = 480 × 60 ÷ 480 = **60 seconds**. Theoretical minimum = 220 ÷ 60 = 3.67 → 4.

Precedence and the 60-second limit allow: S1 A (40); S2 B + D (50); S3 C (50); S4 E (35); S5 F (45) → **5 stations** (no feasible grouping gives 4 – checked by enumeration).

Efficiency = 220 ÷ (5 × 60) = **73.3%**; balance delay 26.7%

QUESTION D8 – Simulation of lead time (5 marks)

Lead time (days) 1, 2, 3, 4 with probabilities 0.20, 0.40, 0.25, 0.15. Simulate 10 orders with random numbers 93, 14, 72, 10, 21, 81, 87, 90, 38, 10 and find the average lead time.

SOLUTION D8

Ranges: 1 day 00–19; 2 days 20–59; 3 days 60–84; 4 days 85–99.

Lead times: 4, 1, 3, 1, 2, 3, 4, 4, 2, 1 → total 25 → **average 2.5 days** (expected 2.35 days; a short run differs from the expectation).

QUESTION D9 – McKinsey 7S framework (6 marks)

Explain the McKinsey 7S framework and its use in strategy implementation.

SOLUTION D9

The 7S model (Peters and Waterman) says an organisation is effective when seven interdependent elements are aligned:

- **Hard S's** (easy to define and change): **strategy** – plan to gain advantage; **structure** – reporting lines and division of work; **systems** – processes and procedures (budgeting, IT, HR systems).
- **Soft S's**: **shared values** – core beliefs at the centre of the model; **style** – leadership and culture; **staff** – people and their development; **skills** – distinctive capabilities.

Use: diagnosing why a strategy fails, planning a merger or restructuring, and checking that a change in one element (e.g. strategy) is matched by changes in the others.

QUESTION D10 – GE nine-cell matrix (6 marks)

Explain the GE/McKinsey nine-cell matrix and how it differs from the BCG matrix.

SOLUTION D10

The matrix plots each SBU on **industry attractiveness** (market size, growth, profitability, competition, technology, regulation) and **business strength** (market share, brand, cost position, distribution, technology), each rated high, medium or low – giving nine cells.

- Top-left three cells (high/high, high/medium, medium/high) → **invest and grow**.
- Diagonal cells → **selectivity / hold and earn**.
- Bottom-right three cells → **harvest or divest**.

Difference from BCG: BCG uses only two single measures (market growth and relative market share) in four cells; the GE matrix uses **multiple weighted factors** on each axis and nine cells, giving a richer but more subjective assessment.