Skillshort

Self-Study Preparation Pack

CMA INTERMEDIATE

Paper 11: Financial Management and Business Data Analytics (FMDA)

Mock Test 1 – Full Paper with Model Answers

ICMAI Syllabus 2022 pattern: 100 marks · 3 hours · Section A – 15 MCQs × 2 (compulsory) · Section B – any 5 of Q2–Q8 (14 marks each) · Original Skillshort questions, numericals verified in Python

Time: 3 hours | Max marks: 100 | No negative marking | Model answers follow the paper

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This subject pack has 6 parts

1 Chapter-wise notes

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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.

Section A – Multiple Choice Questions (30 marks)

Q1. Choose the correct option (2 × 15 = 30).

1. The present value of a perpetuity of ₹10,000 a year at 8% is
(a) ₹80,000 (b) ₹1,00,000
(c) ₹1,25,000 (d) ₹1,50,000

2. A nominal rate of 12% compounded monthly gives an effective annual rate of about
(a) 12.00% (b) 12.36%
(c) 12.55% (d) 12.68%

3. Rf = 6%, β = 1.5 and Rm = 12%. The cost of equity under CAPM is
(a) 12% (b) 13.5%
(c) 15% (d) 18%

4. 10% irredeemable debentures are issued at par; tax rate 30%. The after-tax cost of debt is
(a) 3% (b) 7%
(c) 10% (d) 13%

5. Annual demand 3,600 units, ordering cost ₹50 per order, carrying cost ₹4 per unit a year. EOQ is
(a) 200 units (b) 300 units
(c) 360 units (d) 450 units

6. A project costs ₹4 lakh and gives CFAT of ₹1 lakh a year for 10 years. Its payback reciprocal is
(a) 10% (b) 20%
(c) 25% (d) 40%

7. EBIT ₹5 lakh and interest ₹1 lakh. The degree of financial leverage is
(a) 0.80 (b) 1.20
(c) 1.25 (d) 5.00

8. Raw-material period 30 days, WIP 15 days, finished goods 20 days, debtors 45 days, creditors 30 days. The net operating cycle is
(a) 65 days (b) 80 days
(c) 110 days (d) 140 days

9. A 182-day T-bill of face value ₹100 is issued at ₹96.50. Its annualised yield is about
(a) 3.6% (b) 7.0%
(c) 7.3% (d) 7.6%

10. Which of the following is not a money-market instrument?
(a) Commercial paper (b) Certificate of deposit
(c) Treasury bill (d) Equity share

11. D_1 = ₹5, Ke = 12% and g = 7%. The share price under Gordon's model is
(a) ₹41.67 (b) ₹71.43
(c) ₹100 (d) ₹125

12. Under Walter's model, a growth firm (r > Ke) maximises share price with a payout of
(a) 0% (b) 50%
(c) 100% (d) Any payout

13. JSON and XML files are examples of

(a) Structured data (b) Semi-structured data
(c) Unstructured data (d) Metadata only

14. A validation check that recomputes the last digit of a code such as GSTIN to detect keying errors is a

(a) Range check (b) Format check
(c) Check-digit check (d) Consistency check

15. Prescriptive analytics answers the question

(a) What happened? (b) Why did it happen?
(c) What will happen? (d) What should we do?

Section A – Answer key with reasons

Q	Ans	Explanation / working
1	(c)	PV = A ÷ r = 10,000 ÷ 0.08 = **₹1,25,000**.
2	(d)	$(1 + 0.01)^{12} - 1$ = **12.68%**.
3	(c)	6 + 1.5 × (12 − 6) = **15%**.
4	(b)	10 × (1 − 0.30) = **7%**.
5	(b)	√(2 × 3,600 × 50 ÷ 4) = √90,000 = **300 units**.
6	(c)	Payback = 4 years; reciprocal = 1 ÷ 4 = **25%**.
7	(c)	DFL = EBIT ÷ EBT = 5 ÷ 4 = **1.25**.
8	(b)	30 + 15 + 20 + 45 − 30 = **80 days**.
9	(c)	(3.50 ÷ 96.50) × 365 ÷ 182 = **7.27%**.
10	(d)	**Equity shares** are capital-market instruments.
11	(c)	5 ÷ (0.12 − 0.07) = **₹100**.
12	(a)	When r > Ke, retention adds value – **zero payout**.
13	(b)	They carry tags but not a fixed table schema – **semi-structured**.
14	(c)	**Check digit** – derived from the other characters.
15	(d)	Descriptive → diagnostic → predictive → **prescriptive (what should we do)**.

Section B – Descriptive Questions (70 marks)

Answer any five of Questions 2 to 8 (14 marks each). Working notes form part of the answer.

Q2 (a) (7 marks). Explain the book-building process of issuing shares and its advantages over a fixed-price issue.

(b) (7 marks). What is data cleaning? Explain common data-quality problems and the techniques used to fix them.

Q3 (a) (7 marks). From the following, prepare the balance sheet of Ravi Ltd.: sales (all credit) ₹30,00,000; gross profit 20%; stock turnover on cost of goods sold 8 times; debtors' collection period 1.5 months; creditors' payment period 1 month (purchases equal COGS); current ratio 2.5; quick ratio 1.5; fixed-asset turnover on sales 2 times; long-term debt to equity 0.5; reserves and surplus ₹3,00,000. Current liabilities consist of creditors and a bank overdraft.

(b) (7 marks). Compute cash from operating activities: profit after tax ₹5,00,000 after a tax provision of ₹1,50,000, depreciation ₹1,20,000, profit on sale of machinery ₹30,000 and interest paid ₹40,000. Debtors rose ₹60,000; stock fell ₹25,000; creditors rose ₹35,000; prepaid expenses rose ₹5,000; outstanding expenses fell ₹10,000. Tax paid ₹1,30,000.

Q4 (a) (7 marks). Prepare a common-size income statement for X Ltd. and Y Ltd. and comment (₹ lakh): sales 50 and 80; cost of goods sold 32 and 56; operating expenses 8 and 10; interest 2 and 4; tax 2.4 and 2.5.

(b) (7 marks). Zeta Ltd. has 1,00,000 equity shares (book value of equity ₹40 lakh, market price ₹60, expected dividend ₹4.80, growth 6%); 12% debentures ₹20 lakh quoted at ₹105 per ₹100; 10% preference shares ₹10 lakh quoted at par. Tax 25%. Compute WACC using book-value and market-value weights.

Q5 (a) (7 marks). A machine with book value ₹3,00,000 and 5 years' remaining life (straight-line depreciation ₹60,000) can be sold now at book value. A new machine costs ₹10,00,000, has a 5-year life, nil salvage and saves ₹3,00,000 a year in cash operating costs. Tax 25%; cost of capital 10% (PVAF 3.791). Should the machine be replaced?

(b) (7 marks). A project costs ₹5 lakh and yields ₹1.5, 2.0, 2.5 and 1.0 lakh over four years. Cost of capital 12% (PVF 0.893, 0.797, 0.712, 0.636). Compute the NPV, discounted payback period and IRR (by interpolation between 15% and 16%).

Q6 (a) (7 marks). Prepare an estimate of working capital on cash-cost basis: output 1,20,000 units a year (even); per unit – raw material ₹50, wages ₹20, overheads ₹30 (including depreciation ₹5); selling price ₹125. Raw materials in stock 1 month; WIP half a month (material full, conversion 50%); finished goods 1 month; debtors 2 months; creditors 1 month; wages paid half a month in arrear; cash overheads 1 month in arrear; cash balance ₹50,000; add 10% for contingencies.

(b) (7 marks). Annual requirement 6,000 units at ₹50; ordering cost ₹120; carrying cost 20% of price. A 2% discount is offered on orders of 1,000 units or more. Find the EOQ and decide whether to accept the discount.

Q7 (a) (7 marks). EPS ₹12 and Ke 12%. Using Walter's model, find the share price at payouts of 0%, 50% and 100% when r is 15%, 12% and 10%, and state the optimum payout for each.

(b) (7 marks). Sales ₹30 lakh; variable cost 60% of sales; fixed cost ₹6 lakh; 10% debt ₹10 lakh; 2,00,000 equity shares; tax 25%. Compute DOL, DFL, DCL and EPS, and the percentage change in EPS if sales rise by 20%.

Q8 (a) (7 marks). Explain the types of data – structured, semi-structured and unstructured – with examples from finance, and the 5 V's of big data.

(b) (7 marks). Explain cloud computing service models and the role of robotic process automation (RPA) in finance functions.

Model Answers – Section B

SOLUTION Q2(a) Book building

Process: issuer appoints book-running lead managers → files the offer document with SEBI → announces a **price band** (cap not more than 120% of the floor) → bids invited through syndicate members and brokers via ASBA/UPI for 3–10 working days → book shows demand at each price → **cut-off price** fixed on the basis of demand → allotment to QIBs, non-institutional and retail investors in the prescribed proportions → listing within the timeline (T+3).

Advantages over a fixed-price issue: price discovery by the market; demand known before pricing; lower risk of under-subscription; retail investors can bid at cut-off; faster allotment and refunds; anchor investors give confidence VERIFY.

SOLUTION Q2(b) Data cleaning

Meaning: detecting and correcting (or removing) inaccurate, incomplete, duplicate or inconsistent records so that analysis is reliable.

Problem	Fix
Missing values	Delete the record, impute mean/median/mode, or flag
Duplicates	De-duplicate on a unique key
Inconsistent formats (dates, units, case)	Standardise with rules and lookup tables
Outliers	Investigate; correct, cap (winsorise) or exclude
Invalid codes and typos	Validation lists, referential checks
Irrelevant fields	Remove to reduce noise

Steps: profile the data → define rules → clean → validate → document and monitor. Cleaning **fixes**; validation **prevents and detects**.

SOLUTION Q3(a) Ravi Ltd. – balance sheet from ratios

Item	Working	₹
Cost of goods sold	30,00,000 × 80%	24,00,000
Stock	24,00,000 ÷ 8	3,00,000
Debtors	30,00,000 × 1.5 ÷ 12	3,75,000
Current liabilities	CA = 2.5 CL; CA − 3,00,000 = 1.5 CL → CL	3,00,000
Current assets	2.5 × 3,00,000	7,50,000
Cash	7,50,000 − 3,00,000 − 3,75,000	75,000
Creditors	24,00,000 ÷ 12	2,00,000
Bank overdraft	3,00,000 − 2,00,000	1,00,000
Fixed assets	30,00,000 ÷ 2	15,00,000
Equity + long-term debt	22,50,000 − 3,00,000	19,50,000
Equity (D : E = 0.5 : 1)	19,50,000 ÷ 1.5	13,00,000
Long-term debt	13,00,000 × 0.5	6,50,000
Share capital	13,00,000 − 3,00,000	10,00,000

Balance sheet: share capital 10,00,000 + reserves 3,00,000 + long-term debt 6,50,000 + creditors 2,00,000 + overdraft 1,00,000 = **₹22,50,000** = fixed assets 15,00,000 + stock 3,00,000 + debtors 3,75,000 + cash 75,000.

SOLUTION Q3(b) Cash from operating activities

Particulars	₹
Profit before tax (5,00,000 + 1,50,000)	6,50,000
Add: depreciation 1,20,000; interest 40,000	1,60,000
Less: profit on sale of machinery	(30,000)
Operating profit before working-capital changes	7,80,000
Debtors (60,000); stock 25,000; creditors 35,000; prepaid (5,000); outstanding expenses (10,000)	(15,000)
Cash generated from operations	7,65,000
Less: tax paid	(1,30,000)
Net cash from operating activities	**6,35,000**

SOLUTION Q4(a) Common-size income statement (% of sales)

Item	X (₹ lakh)	X %	Y (₹ lakh)	Y %
Sales	50	100.0	80	100.0
Cost of goods sold	32	64.0	56	70.0
Gross profit	18	36.0	24	30.0
Operating expenses	8	16.0	10	12.5
EBIT	10	20.0	14	17.5
Interest	2	4.0	4	5.0
EBT	8	16.0	10	12.5
Tax	2.4	4.8	2.5	3.1
Net profit	5.6	11.2	7.5	9.4

Comment: Y is larger, but X is more profitable per rupee of sales – its gross margin is 6 points higher. Y keeps operating expenses lower (12.5%), but its higher cost of goods sold and interest leave a net margin of 9.4% against 11.2% for X.

SOLUTION Q4(b) Zeta Ltd. – WACC

Ke = 4.80 ÷ 60 + 6% = **14%**; Kd (book) = 12 × 0.75 = **9%**; Kd (market) = 9 ÷ 105 = **8.57%**; Kp = **10%**.

Source	Book ₹ lakh	Market ₹ lakh	Cost (book / market)
Equity	40	60	14%
Debentures	20	21	9% / 8.57%
Preference	10	10	10%
Total	70	91	

Book WACC = (40 × 14 + 20 × 9 + 10 × 10) ÷ 70 = **12.00%**. Market WACC = (60 × 14 + 21 × 8.57 + 10 × 10) ÷ 91 = **12.31%**. Market weights are preferred – they reflect the current cost of raising funds.

SOLUTION Q5(a) Replacement decision

Net outlay = 10,00,000 − 3,00,000 = ₹7,00,000. Incremental depreciation = 2,00,000 − 60,000 = ₹1,40,000.

Incremental CFAT = (3,00,000 − 1,40,000) × 0.75 + 1,40,000 = ₹2,60,000

NPV = 2,60,000 × 3.791 − 7,00,000 = **₹2,85,660**

NPV is positive → **replace** the machine.

SOLUTION Q5(b) NPV, discounted payback and IRR

Year	Cash flow (₹ lakh)	PVF 12%	PV	Cumulative PV
1	1.5	0.893	1.3395	1.3395
2	2.0	0.797	1.5940	2.9335
3	2.5	0.712	1.7800	4.7135
4	1.0	0.636	0.6360	5.3495

NPV = 5.3495 − 5 = **₹0.35 lakh**. Discounted payback = 3 + (5 − 4.7135) ÷ 0.636 = **3.45 years**.

IRR: NPV at 15% = +0.0322 and at 16% = −0.0666 (₹ lakh); IRR = 15 + 0.0322 ÷ 0.0988 ≈ **15.3%**.

SOLUTION Q6(a) Working capital estimate (cash-cost basis)

Monthly output 10,000 units; cash cost per unit = 50 + 20 + 25 = ₹95.

Current assets	Working	₹
Raw materials	10,000 × 50 × 1	5,00,000
WIP	5,000 × (50 + 50% × 45)	3,62,500
Finished goods	10,000 × 95	9,50,000
Debtors (at cash cost)	20,000 × 95	19,00,000
Cash		50,000
Total		**37,62,500**
Creditors	10,000 × 50	5,00,000
Wages outstanding	10,000 × 20 × 0.5	1,00,000
Cash overheads outstanding	10,000 × 25	2,50,000
Total current liabilities		**8,50,000**
Net working capital		29,12,500
Add: 10% contingency		2,91,250
Working capital required		**32,03,750**

SOLUTION Q6(b) EOQ and quantity discount

Carrying cost = 20% × 50 = ₹10. EOQ = √(2 × 6,000 × 120 ÷ 10) = √1,44,000 = **379 units**.

Particulars	At EOQ (379)	At 1,000 units (price ₹49)
Purchase cost	3,00,000	2,94,000
Ordering cost	6,000 ÷ 379 × 120 = 1,897	6 × 120 = 720
Carrying cost	379 ÷ 2 × 10 = 1,897	500 × 9.80 = 4,900
Total	**3,03,795**	**2,99,620**

Accept the discount – it saves ₹4,175 a year.

SOLUTION Q7(a) Walter's model

P = [D + (r ÷ Ke)(E − D)] ÷ Ke

r	Payout 0%	50% (D = 6)	100% (D = 12)	Optimum
15% (growth)	125.00	112.50	100.00	0%
12% (normal)	100.00	100.00	100.00	Irrelevant
10% (declining)	83.33	91.67	100.00	100%

SOLUTION Q7(b) Leverages and EPS

Contribution = 30 lakh × 40% = 12,00,000; EBIT = 12,00,000 − 6,00,000 = 6,00,000; EBT = 6,00,000 − 1,00,000 = 5,00,000; EPS = 5,00,000 × 0.75 ÷ 2,00,000 = **₹1.875**.

DOL = 12 ÷ 6 = **2.0**; DFL = 6 ÷ 5 = **1.2**; DCL = 12 ÷ 5 = **2.4**.

With sales up 20%: contribution 14,40,000; EBT 7,40,000; EPS = **₹2.775** – a rise of **48%** (= 2.4 × 20%).

SOLUTION Q8(a) Types of data and the 5 V's

Type	Meaning	Finance examples
Structured	Fixed schema, rows and columns	General ledger, trial balance, ERP tables, GST return data
Semi-structured	Tags or markers, no rigid table	XBRL and XML filings, JSON from bank APIs, e-mails with fields
Unstructured	No predefined model	Contracts, scanned invoices, board minutes, call recordings, social media

5 V's: Volume (scale of data), **Velocity** (speed of generation – UPI transactions), **Variety** (forms and sources), **Veracity** (accuracy and trust), **Value** (usefulness for decisions).

SOLUTION Q8(b) Cloud models and RPA

- **IaaS** – rented computing, storage and networks (servers on demand). **PaaS** – platforms to build and run applications without managing infrastructure. **SaaS** – complete applications over the internet (cloud accounting, payroll, CRM).
- Deployment: public, private, hybrid and community clouds; benefits – scalability, pay-per-use, remote access, disaster recovery; concerns – data security, vendor lock-in, compliance.
- **RPA** uses software bots to perform rule-based, repetitive tasks: bank and vendor reconciliations, invoice capture and three-way matching, journal postings, GST/TDS return preparation, report generation. Benefits: speed, accuracy, 24 × 7 working, audit trail; suitable for stable, high-volume processes with structured inputs.