

INSTITUTE OF ACTUARIES OF INDIA

SA1- Health and Care

May 2026 Examination

INDICATIVE SOLUTION

Introduction:

The indicative solution has been written by the Examiners with the aim of helping candidates. The solutions given are only indicative. It is realized that there could be other points as valid answers and examiners have given credit for any alternative approach or interpretation which they consider to be reasonable.

Solution 1:**i) Implications of 100% FDI in the Health Insurance Sector****A. Macro-economic Implications:**

- 1) **Capital Inflow:** Direct infusion of foreign currency into the domestic economy, improving the balance of payments.
- 2) **Job Creation:** Expansion of the insurance sector will stimulate direct employment (actuaries, underwriters, tech) and indirect employment (brokers, agents, TPAs).
- 3) **Deepening of Financial Markets:** Increased premium pools will lead to higher domestic investments, deepening local bond and equity markets.
- 4) **Technology Transfer:** Spillover effects from foreign entrants bringing advanced Insurtech, AI-driven underwriting, and global best practices.
- 5) **Currency Risk:** Long-term potential strain on domestic currency when foreign^[1]MNCs begin repatriating high volumes of dividends/profits.

B. Regulatory Implications:

- 1) **Systemic Risk Oversight:** Regulators must enhance monitoring of cross-border capital flows and guard against solvency risks that may spread from foreign parent companies.
- 2) **Transfer Pricing Scrutiny:** Increased need to monitor intra-group transactions (e.g., IT charges, services fees, etc) to prevent profit shifting.
- 3) **Data Privacy & Localization:** Regulators will likely enforce strict data localization laws to ensure domestic citizens' health data is not inappropriately offshored.
- 4) **Fit and Proper Governance:** Enhanced scrutiny of foreign directors and management teams joining local boards.
- 5) **Market Conduct:** Need for stricter oversight on mis-selling, as foreign entrants may aggressively chase market share to justify high acquisition costs.

C. Strategic Landscape Alterations:

1. For Domestic Incumbents (Competitors):

- 1) **Erosion of Market Share:** Dominant local players will face intense competition from globally capitalized entrants.
- 2) **Margin Squeeze:** Impending price wars to capture market share will compress profit margins.
- 3) **M&A and Consolidation:** Smaller, undercapitalized domestic insurers may become acquisition targets or be forced to exit the market.
- 4) **War for Talent:** Severe poaching of specialized local talent (especially health actuaries, specialized underwriters, and regulatory compliance experts).
- 5) **Forced Innovation:** Incumbents will be forced to rapidly modernize legacy systems and improve digital customer journeys to survive.

2. For Healthcare Providers

- 1) **Shift in Bargaining Power:** Larger, globally backed insurers will have stronger negotiating power against hospital networks to drive down tariffs.
- 2) **Standardization of Care:** Foreign insurers will push for standardized treatment protocols, DRG (Diagnosis-Related Group) billing, and value-based care models.
- 3) **Technological Integration:** Providers will be pressured to adopt electronic health records (EHR) and straight-through claims processing systems to partner with new insurers.

- 4) **Network Tiering:** Emergence of strict, tiered provider networks based on clinical outcomes and cost-efficiency

3. For Policyholders

- 1) **Product Proliferation:** Access to a wider array of innovative products (e.g., global coverage, specialized critical illness, wellness-linked wearables).
- 2) **Pricing Benefits:** Downward pressure on premiums in the short-to-medium term due to aggressive introductory pricing by new entrants.
- 3) **Service Enhancement:** Improved customer experience, faster claims settlement via digital platforms, and better grievance redressal.
- 4) **Financial Inclusion:** Deeper penetration into rural or uninsured segments as new entrants seek untapped markets.
- 5) **Market Confusion Risk:** Risk of policyholders being overwhelmed by overly complex product designs imported from mature markets, leading to potential mis-buying

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ii) SAHI Joint Venture vs. Expanding Existing Life Company

1. Strategic Implications

- 1) **Focus & Agility:** A standalone health insurance JV ensures dedicated focus and agility, while expanding a life insurer divides attention between life and health.
- 2) **Brand Value:**
The JV leverages the foreign partner's global healthcare brand; the life insurer relies only on its domestic brand.
- 3) **Product Breadth:**
A JV can offer the full range of health products, whereas life insurers are usually limited to fixed benefits or riders.
- 4) **Time to Market:**
Expanding a life insurer is faster since it already exists; setting up a JV takes longer due to negotiations and approvals.
- 5) **Valuation:**
A specialized JV often commands higher market valuation multiples compared to a mixed life-health insurer.
- 6) **Control vs. Synergy:**
Life insurer expansion retains full control and profits; a JV requires shared control, shared profits, and may face cultural differences.
- 7) **Cannibalization:**
A new JV may reduce sales of health riders already offered by the life insurer.

2. Operational Implications

- 1) **Systems & IT:**
Life insurers rely on legacy systems built for low-frequency claims, while a health JV can design modern, cloud-native systems tailored for high-volume health claims.
- 2) **Claims Management:**
Health insurance requires complex, frequent claim handling and TPA integration, which life insurers are not well equipped to manage.

3) **Distribution Channels:**

Life insurers have large agency networks with immediate reach but limited health expertise; a JV must build new channels or retrain agents.

4) **Provider Networks:**

A JV can leverage foreign partner expertise to build hospital networks, whereas life insurers typically lack such contracting capabilities.

5) **Human Resources:**

Life insurers benefit from shared services (Finance, HR, Legal), while a JV must duplicate these functions, increasing initial operating costs.

3. Regulatory Implications

1) **Licensing Constraints:**

Life insurance licenses usually cannot cover full health indemnity products; a separate SAHI license is legally required.

2) **New License Risk:**

Setting up a SAHI JV involves applying for a new license, which adds regulatory uncertainty and delays.

3) **FDI Approvals:**

A SAHI JV needs special approvals for foreign capital and ownership, including regulatory and antitrust clearances.

4) **Governance:**

Joint ventures face complex governance requirements, such as shareholder agreements, deadlock mechanisms, and minority protections.

5) **Compliance Burden:**

Expanding the life insurer keeps reporting consolidated, while a SAHI JV creates a new entity with separate compliance and audit obligations.

4. Capital Implications

1) **Capital Burden:**

A SAHI JV shares initial setup costs with the foreign partner, while expanding the Life insurance company requires the domestic group to fund all capital.

2) **Solvency Framework:**

Life insurers benefit from diversification (mortality + morbidity), which can reduce overall capital needs.

3) **Concentration Risk:**

A SAHI JV faces concentrated health risks, leading to volatile solvency ratios and frequent capital injections.

4) **Fungibility of Capital:**

Life insurers' capital can be flexibly reallocated between life and health lines; JV capital is locked within the new entity.

5) **Dividend Timelines:**

Life insurers with mature portfolios may already pay dividends, while a new SAHI JV typically faces losses for several years before dividends are possible.

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iii) 1. Challenges & Mitigations for Importing Foreign CI and IP Pricing/Reserving

A. Actuarial Challenges (Pricing & Reserving):

Key Challenges in Using Foreign CI/IP Data for Local Pricing & Reserving

- 1) **Morbidity Data Applicability**
Foreign incidence rates may not align with local genetics, lifestyle, or disease prevalence, leading to mispricing.
- 2) **Medical Trends**
Imported data may overlook local health dynamics, such as rising non-communicable diseases unique to the region.
- 3) **Diagnostic Disparities**
Greater availability of advanced screening locally can sharply increase reported CI claims compared to foreign baselines.
- 4) **Return-to-Work Dynamics**
IP pricing depends on rehabilitation culture, labour laws, and social security norms, which differ significantly across markets.
- 5) **Economic Assumptions**
Foreign models often assume stable inflation and interest rates, while emerging markets face volatility that impacts long-tailed IP liabilities.
- 6) **Absence of Standard Tables**
Without statutory local valuation tables, actuaries must rely on internal models, inviting regulatory scrutiny.
- 7) **Margins for Adverse Deviation (MAD)**
Setting MADs is highly subjective without historical local run-off data, increasing reserving uncertainty.
- 8) **Discount Rate Sensitivity**
IP reserves are highly sensitive to discount rate assumptions; falling local rates can create severe capital strain.
- 9) **IBNR Estimation**
Standard chain-ladder methods fail due to lack of local claim development patterns and long reporting lags for complex illnesses.

B. Commercial challenges:

Market & Product Challenges for CI/IP in Emerging Markets

- 1) **Premium Affordability**
Foreign pricing methods often load heavily for uncertainty, making CI/IP products too expensive compared to the local market's expectation of low-cost indemnity cover.
- 2) **Distribution Friction**
Income Protection (IP) replaces earnings rather than hospital bills, requiring highly trained financial advisors. Many local markets lack such distribution sophistication.
- 3) **Underwriting Bottlenecks**
Strict foreign medical and financial underwriting protocols can cause customer frustration, long onboarding times, and high drop-out rates.
- 4) **Product Misunderstanding**
Policyholders may confuse CI/IP with indemnity health insurance. This leads to dissatisfaction when claims are denied (e.g., surviving a CI event but not meeting payout conditions).

C. Risk management Challenges in Introducing CI/IP Products

- 1) **Severe Anti-Selection**
Early buyers in a new market are often those with suspected health issues, especially for CI, leading to adverse risk pools.
- 2) **Moral Hazard (IP)**
In downturns, IP can act like unemployment insurance, creating disincentives for policyholders to return to work.

- 3) **Replacement Ratio Risk**
Difficulty verifying true incomes in economies with large informal/cash sectors can result in over-insurance and inflated claims.
- 4) **Regulatory Rejection**
Local regulators may reject imported pricing bases under “File and Use” rules if assumptions lack credible local justification.
- 5) **Currency & Inflation Mismatch**
Offshore reinsurance introduces currency risk, while local inflation erodes the real value of long-term IP benefits, stressing reserves.

2. Recommended Mitigation Strategies:

A. Data & Actuarial Mitigation:

- 1) **Credibility Blending:** Actuaries must mathematically blend the foreign MNC data with local population statistics, reinsurer manuals, and competitor proxies using credibility theory.
- 2) **Conservative Phasing:** Launch with heavier margins for uncertainty, with a pre-planned glide path to reduce prices as local experience emerges.
- 3) **Asset-Liability Management (ALM):** Implement strict duration matching for IP reserves using long-term local government bonds to hedge interest rate risk.

B. Product Design Mitigation:

- 1) **Reviewable Premiums:** If locally permitted, design the CI/IP products with reviewable guaranteed rates (e.g., rates can be changed every 3-5 years) rather than fully guaranteed rates for life.
- 2) **Strict Waiting & Survival Periods:** Implement 90-180 day waiting periods for CI, and strict survival periods (e.g., 14-30 days post-diagnosis) to limit mortality overlap.
- 3) **Tiered Benefit Structures:** Offer severity-based CI (payouts proportional to the severity of the illness) to manage early-stage diagnostic claims**. **
- 4) **Deferred Periods (IP):** Enforce mandatory deferred periods (e.g., 3-6 months) for IP to eliminate short-term, high-frequency sickness claims.
- 5) **Limited Benefit Terms (IP):** Limit IP payouts to 2 or 5 years per claim rather than "up to retirement age" to cap tail liability.
- 6) **Offset Clauses:** Include policy conditions that offset IP claim payments against any local statutory sick pay or workers compensation received.
- 7) **Rigorous Definitions:** Use highly specific, locally legally vetted medical definitions for CI triggers to prevent claims leakage via ambiguity.

C. Underwriting, Claims & Reinsurance Mitigation:

- 1) **Financial Underwriting:** Implement uncompromising financial underwriting for IP— requiring audited tax returns to calculate strict replacement ratios (max 60-75% of net income).
- 2) **Tele-underwriting:** Utilize digital/tele-underwriting to maintain strict standards without the friction of physical medical tests for lower sum assureds.
- 3) **Active Claims Rehabilitation:** Establish an active claims management team focused on physical rehabilitation and return-to-work support programs for IP claimants.
- 4) **Heavy Initial Reinsurance:** Utilize heavy Quota Share (e.g., 50-80%) reinsurance initially to transfer pricing risk, reduce capital strain, and—crucially—gain access to the reinsurer's localized pricing and underwriting manuals.
- 5) **Surplus Relief:** Use financing reinsurance treaties to support the heavy initial new business strain of long-term CI/IP products.

iv) Due Diligence, Valuation, and Integration of the Distressed Target SAHI

1. Actuarial Investigations & Due Diligence:

A. Loss Ratio Analysis (115% Indemnity)

- 1) **Pricing Adequacy:** Review whether assumptions on claim frequency/severity or medical inflation were fundamentally flawed. This identifies if poor pricing or external cost escalation drove the 115% loss ratio.
- 2) **Claims Leakage/Fraud:** Sample recent claims to identify if the high loss ratio is due to poor adjudication, provider fraud, over-servicing, or lack of standard treatment protocols. Leakage can materially inflate loss ratios beyond actuarial expectations.
- 3) **Network Management:** Assess hospital contracts—tariff agreements vs. open fee-for-service billing. Poor contracting often leads to uncontrolled cost escalation.
- 4) **Vintage Analysis:** Split results by underwriting year to isolate legacy underpriced cohorts. This helps determine if new business is equally unsustainable.
- 5) **Expense Ratio:** With 35% expenses, combined ratio reaches ~150%. This indicates severe capital burn and unsustainable operations.

B. Reserving Adequacy

- 1) **Run-off Triangles:** Perform an independent actuarial review of claim development triangles to assess the adequacy of historical IBNR (Incurred But Not Reported) provisions.
- 2) **Case Reserves (OSLR):** Check if claims handlers under-reserve to flatter accounts. Systematic understatement creates solvency risk.
- 3) **Premium Deficiency Reserve (PDR/URR):** Given the 115% loss ratio, the Unearned Premium Reserve (UPR) is fundamentally inadequate to cover future claims. Assess the size of the PDR / Unexpired Risk Reserve (URR) required.
- 4) **CI/IP Reserves:** For the 15% profitable book, scrutinize the assumptions. Check if the high profitability is an illusion caused by overly aggressive discount rates or insufficient IBNR for the long-tail IP claims.
- 5) **Persistency/Anti-selection:** Excellent persistency in CI/IP might indicate anti-selection (only the sickest are holding onto the policies). Review claim frequency trends for adverse selection.
- 6) **Reinsurance Treaties:** Review all reinsurance contracts. Are they in a deficit? Will reinsurers enact "change of control" clauses to cancel treaties upon acquisition, leaving the JV exposed?

C. Valuation Impact

- 1) **Depressed Embedded Value:** The distressed indemnity portfolio will project negative future cash flows, severely dragging down the Value of In-Force (VIF) and overall Appraisal Value.
- 2) **Capital Hole Deduction:** The purchase price must be adjusted downward for any identified solvency deficit, reserve shortages (IBNR gaps), and the immediately required PDR.
- 3) **Contingent Liabilities:** Valuation must account for potential regulatory fines or pending litigation from unpaid policyholders/providers in the distressed entity.
- 4) **Valuing Profitable CI/IP Block:** Apply higher multiples to the profitable CI/IP book aligned with JV strategy.
- 5) **Intangible Valuation:** Assess the value of intangibles: the SAHI regulatory license itself (saving the JV 2 years of setup), existing hospital network tie-ups, and the database of existing customers for cross-selling. The net result will likely be a deeply discounted purchase price.

2. Post-Acquisition Integration & Turnaround

A. Indemnity Portfolio Turnaround

- 1) **Aggressive Repricing:** File for regulatory approval to raise renewal premiums sharply.
- 2) **Product Redesign:** Introduce co-pays, deductibles, and sub-limits to reduce claim severity.
- 3) **Network Rationalization:** Renegotiate hospital contracts and delist fraudulent providers.
- 4) **Underwriting Tightening:** Impose moratoriums on toxic products until repriced.
- 5) **Claims Adjudication:** Deploy MNC AI and global protocols to clamp down on leakage.

B. CI/IP Integration & Corporate Structure

- 1) **Ring-fence Profitable Block:** Protect CI/IP operations from indemnity turnaround disruption.
- 2) **Leverage Success:** Use CI/IP data, manuals, and staff as baseline for JV flagship products.
- 3) **Cultural Integration:** Retain key talent, manage morale, and replace weak management.
- 4) **IT Migration:** Parallel run legacy vs. modern systems; migrate data carefully.
- 5) **Capital Injection:** Restore solvency to 150%
- 6) **Brand Transition:** Sunset distressed brand; rebrand under JV/MNC to rebuild trust.
- 7) **Regulatory Communication:** Maintain transparent dialogue to reassure regulator and policyholders.

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Solution 2:

i) Commercial Rationale and Disadvantages for XYZ Corp

A. Commercial Rationale (Why XYZ wants to offload)

- 1) **Risk Transfer (Inflation):** Offloading to ABC Health removes XYZ's exposure to volatile medical inflation, stabilizing future liabilities.
- 2) **Risk Transfer (Longevity):** Eliminates the risk of retirees living longer and accumulating higher lifetime medical claims.
- 3) **Balance Sheet Cleanup:** Transfers a volatile liability off the Ind AS balance sheet, improving solvency and leverage ratios.
- 4) **Earnings Volatility Reduction:** Converts unpredictable pay-as-you-go claims into a fixed upfront cost, smoothing P&L.
- 5) **Core Competency Focus:** Allows management to concentrate on manufacturing instead of health insurance administration.
- 6) **M&A/Spin-off Readiness:** A cleaner balance sheet makes XYZ more attractive to investors or buyers.
- 7) **Tax Efficiency:** The single premium may be deductible as a business expense, creating an immediate tax shield.
- 8) **Employee/Retiree Security:** Retiree benefits are secured within a regulated insurer, protecting them from XYZ's bankruptcy risk.

B. Potential Disadvantages for XYZ Corp

- 1) **Massive Liquidity Hit:** Funding a large upfront premium drains corporate cash reserves significantly.
- 2) **Risk Premium Cost:** ABC Health's pricing includes margins for risk and profit, making the cost higher than expected claims.
- 3) **Loss of Control:** XYZ loses discretion over scheme design, claims leniency, and provider network management.
- 4) **Loss of Favourable Experience:** If medical inflation falls or morbidity improves, ABC retains the profit while XYZ loses upside.

- 5) **Counterparty Risk:** Medical risk is exchanged for ABC's credit risk; default could leave XYZ liable to retirees.
- 6) **Data Privacy Friction:** Transferring employee medical records raises GDPR/data protection compliance risks and costs.

[5]

ii) Data, Historical Information, and MI Request

A. Demographic & Exposure Data (Member Level)

- 1) **Unique Identifiers:** Anonymized IDs, DOB, and ages are essential to build mortality/morbidity tables without breaching privacy.
- 2) **Gender Profile:** Gender splits allow actuaries to apply differentiated morbidity and longevity assumptions.
- 3) **Location/Geography:** Regional data captures localized medical inflation and provider cost variations.
- 4) **Status & Survival:** Alive/deceased status and retirement dates are critical for exposure and persistency analysis.
- 5) **Spousal/Dependent Data:** Ages and benefit rules for dependents affect liability duration and survivor benefits.
- 6) **Historical Exposure:** Monthly headcounts over 3–5 years enable accurate PMPM cost calculations.

B. Scheme Rules & Benefit Design

- 1) **Master Policy Document:** Defines covered services (inpatient, outpatient, pharmacy, dental, vision) for liability scope.
- 2) **Cost Sharing Mechanisms:** Deductibles, co-pays, and coinsurance determine net claim costs borne by XYZ.
- 3) **Limits:** Annual or lifetime caps restrict maximum liability per retiree.
- 4) **Benefit Alterations:** Past rule changes must be tracked to normalize historical claims experience.
- 5) **Network Rules:** Restrictions or penalties for out-of-network use affect utilization and cost predictability.

C. Historical Claims & Financial Data

- 1) **Granular Claims Data:** 3–5 years of detailed claims (service vs. payment dates, billed vs. paid) reveal settlement lags.
- 2) **Clinical Categorization:** ICD-100 splits allow morbidity profiling by disease category.
- 3) **Large Claims/Outliers:** Identifying shock claims of higher value helps assess volatility and reinsurance needs.
- 4) **Pharmacy Data:** Drug costs must be separated, as pharmacy inflation often exceeds hospital inflation.
- 5) **Prior Actuarial Reports:** Ind AS valuations benchmark liabilities and actuarial assumptions.
- 6) **Run-off/IBNR Data:** Claim triangles highlight reporting delays and adequacy of historical reserves.

D. Management Information (MI) & Operational Context

- 1) **Current TPA Details:** Clarifies who administers claims and whether ABC Health will assume control.
- 2) **Provider Discounts:** Existing negotiated discounts must be compared to ABC's contracting ability.
- 3) **Litigation/Grievances:** Pending disputes or lawsuits may create contingent liabilities.
- 4) **Care Management Programs:** Wellness or chronic disease programs impact morbidity trends.
- 5) **Selection Effects:** Cash buyout options can cause anti-selection, with sicker lives remaining in the pool.
- 6) **Future Promises:** Written guarantees of benefit upgrades must be factored into liability projections.

iii) Pricing Methodology and Assumptions

A. Pricing Methodology

- 1) **Cash Flow Projection:** Project annual claims and expenses until the last retiree/dependent dies. This ensures the full liability run-off is captured.
- 2) **Present Value Discounting:** Discount projected cash flows to the valuation date using a risk-adjusted rate. This converts uncertain future costs into today's value.
- 3) **Single Premium Calculation:** $\text{Premium} = \text{PV of claims} + \text{PV of expenses} + \text{risk margin} + \text{cost of capital} + \text{profit}$. This ensures solvency and commercial viability.

B. Key Assumptions

- 1) **Base Claims Cost:** Start with XYZ's historical PMPM claims, normalized for scheme changes and outliers. This provides a credible baseline for projections^{**, **}
- 2) **Data Credibility:** Blend XYZ's experience with ABC Health's manual rates using credibility theory. This stabilizes assumptions for small populations.
- 3) **Medical Inflation (Glide Path):** Assume high short-term inflation (8–10%), tapering to GDP+1% over 10–15 years. This reflects realistic long-term trends.
- 4) **Ageing Curve (Morbidity):** Apply age-related morbidity escalation to base costs. Older cohorts drive higher claim intensity.
- 5) **Mortality/Longevity:** Use pensioner mortality tables with improvement factors. Longer lives mean more years of medical claims.
- 6) **Discount Rate:** Apply risk-free yield curve plus illiquidity premium. This reflects the long-term, illiquid nature of single-premium liabilities.
- 7) **Expenses:** Allow for heavy initial onboarding plus ongoing maintenance costs. Inflate with wage growth to reflect future expense trends.
- 8) **Risk Margins (PADs):** Add explicit margins for adverse deviation in medical trend and longevity. This protects against tail risk.
- 9) **Cost of Capital:** Include charges for holding solvency capital over the liability run-off. Ensures regulatory capital costs are priced in^{**, **}
- 10) **Spousal Assumptions:** Model probability of marriage and spouse age differences. Survivor benefits extend liability duration.

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iv) Current Balance Sheet of ABC Health (Pre-Transaction)

A. Major Asset Classes

- 1) **Cash & Equivalents:** High volumes maintained to meet daily indemnity claim payouts quickly. Ensures immediate liquidity for short-tailed liabilities.
- 2) **Short-Term Government Bonds:** Risk-free, highly liquid assets aligned with short liability durations. Provide stability and regulatory comfort.
- 3) **High-Grade Corporate Bonds:** Short-to-medium duration bonds add yield over government securities. Credit risk kept minimal to preserve solvency.
- 4) **Premium Receivables:** Amounts due from policyholders and brokers. Critical for cash flow forecasting and liquidity management.
- 5) **Reinsurance Recoverables:** Claims owed by reinsurers under quota-share or large claim treaties. Key to offsetting morbidity shocks.

- 6) **Deferred Acquisition Costs (DAC):** Capitalized commissions amortized over policy terms. Reflects front-loaded distribution costs.
- 7) **Property & Equipment:** Headquarters and branch offices. Tangible assets but non-core to insurance operations.
- 8) **Intangible Assets:** IT systems, claims engines, and apps. Enhance efficiency and customer engagement but require impairment testing.
- 9) **Deferred Tax Assets:** Timing differences between statutory and tax accounting. Useful for smoothing reported profits.

B. Major Liability Classes

- 1) **Unearned Premium Reserve (UPR):** Largest liability, representing unexpired risk periods. Ensures matching of premiums to coverage.
- 2) **IBNR:** Reserve for claims incurred but not yet reported. Short-tailed for retail indemnity, typically settled quickly.
- 3) **Outstanding Claims Reserve (OSLR):** Reported but unpaid claims. Small due to straight-through processing and TPA approvals.
- 4) **Premium Deficiency Reserve (PDR/URR):** Held when UPR is insufficient for loss-making cohorts. Protects solvency against adverse experience.
- 5) **Claims Handling Expense Reserve:** Covers administrative costs of settling IBNR and OSLR claims. Ensures full liability recognition.
- 6) **Reinsurance Payables:** Premiums owed to reinsurers. Must be managed to maintain treaty continuity.
- 7) **Commissions Payable:** Distribution costs owed to agents/brokers. Reflects ongoing acquisition expense obligations.
- 8) **TPA/Provider Payables:** Bulk settlements owed to hospitals. Critical for maintaining provider network relationships.

C. Capital & Equity

- 1) **Share Capital:** Initial shareholder injection forming the statutory capital base.
- 2) **Retained Earnings:** Accumulated profits from indemnity operations. Reflects historical performance.
- 3) **Free Capital / Surplus:** Excess capital above regulatory minimums. Provides buffer for morbidity shocks and growth.
- 4) **ALM Profile:** Assets duration ~0.5–1.5 years; liabilities ~0.5–1 year. Balance sheet is highly liquid and duration-matched.

[10]

v) ALM & Capital Impact + Challenges of Duration & Inflation Hedging

A. Impact on ALM & Capital Strategy

- 1) **Duration Disruption:** The PRMB block introduces liabilities lasting 15–30+ years, mismatching ABC's current short-term asset base. This requires a fundamental shift in ALM strategy.
- 2) **Liquidity Reversal:** A large upfront premium creates excess cash. Rapid deployment is needed to avoid low-return drag.
- 3) **Capital Strain (SCR Increase):** New risk modules—longevity, long-term health trend, and interest rate risk—significantly raise solvency capital requirements.
- 4) **Capital Raising:** Free surplus may be insufficient; ABC may need subordinated debt, equity issuance, or financial reinsurance.
- 5) **Diversification Benefit:** Longevity risk has low correlation with retail morbidity, offering modest diversification in capital models.

- 6) **Re-segmentation:** A ring-fenced ALM portfolio for PRMB liabilities prevents cross-subsidization with the retail indemnity book.

B. Challenges of Duration Matching

- 1) **Missing Ultra-Long Bonds:** Domestic markets rarely issue 30–50 year bonds, making exact matching impossible.
- 2) **Reinvestment Risk:** Using shorter bonds (e.g., 10-year) exposes ABC to reinvestment risk if future rates fall.
- 3) **Convexity Mismatch:** Liability cash flows depend on mortality/health trends, while fixed-income assets are static, causing duration drift.
- 4) **Callable Bonds:** Issuers may call bonds when rates fall, breaking duration match at the worst time.
- 5) **Use of Derivatives:** Interest rate swaps/swaptions can synthetically extend duration but add counterparty and collateral risks.

C. Challenges of Inflation Hedging (Medical Inflation)

- 1) **Super-Inflation:** Medical inflation outpaces CPI due to technology, drug costs, and ageing demographics.
- 2) **Basis Risk in Linkers:** CPI-linked bonds leave a gap versus true medical inflation, creating basis risk.
- 3) **Lack of Direct Hedges:** No liquid instruments exist to hedge medical inflation directly.
- 4) **Equity/Property Mismatch:** Real assets may beat inflation but introduce market volatility.
- 5) **Market Risk Penalty:** Equity/property exposures attract heavy solvency capital charges under regulatory regimes.
- 6) **Compounding Effect:** Ageing morbidity plus medical inflation creates exponentially rising liabilities, extremely difficult to hedge.

[10]
[40 Marks]
