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RBI GRADE B 2019

RBI Grade B exam is one of India's premium banking recruitment exams. Lakhs of aspirants apply for this exam every year. Scoring well in the Finance and Management Section of the **RBI Grade B Phase 2 Exam** is the key to clear the exam.

Finance and Management Section (F&M) is the differential in the RBI Phase 2 Exam, because not many candidates appearing in the exam score well in this section. The main reason for it are the **F&M Problems** asked in the exam. To solve these problems, you need to be very good with the F&M Formulae.

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Bond Valuations

1. **Coupon payments** = Coupon rate x Maturity Value

$$P = C\left[\frac{1-\frac{1}{(1+i)^n}}{i}\right] + \frac{M}{(1+i)^n}$$

2. **Zero Coupon bond, P** $= \frac{M}{(1+i)^n}$

3. **Yield to maturity, YTM, i, IRR** $= \frac{C+\frac{f-p}{n}}{\frac{f+p}{2}}$

Where IRR = Internal Rate of Return

C= Coupon payments

f = Face value/Maturity Value of the bond

P = Price of the bond

n = Number of years to Maturity or Number of Payments

i = Interest rate or Required Yield

M= Value at maturity or Par Value

4. **Yield to call, YTC** $= \frac{\text{Coupon Interest Payment} + \frac{\text{Call Price} - \text{Market Value}}{\text{Number of years Until Call}}}{\frac{\text{Call Price} + \text{Market Value}}{2}}$

5. **Holding period return, HPR** $= \frac{\text{Interest Income} + (\text{End of period value} - \text{Initial value})}{\text{Initial Value}}$

6. **Annualised HPR** = $(HPR)^{\frac{1}{Years}} - 1$

- When the interest rates falls bond price rise & Vice-versa
- When interest rate increases, yield increases & Vice-versa

7. $\textbf{Bond price} \alpha \frac{\textbf{1}}{\textbf{Interest rate}}$

Prices of high coupon bonds are less sensitive to changes in interest rates than prices of low coupon bonds.

8. **Macaulay's duration** = $\sum_{t=1}^{n} \frac{(PV)(CF_t)xt}{\text{Market price of the bond}}$

Where,

PV x CF_t = Present vale of the coupon at time t

Market price of the bond is also represented as B_0

9. **Number of bonds bought** = $\frac{\text{Cash}}{\text{Nominal Value} \times \text{Dirty price}}$

Dirty price is the price of a bond including the interest accrued

Ratios

Liquidity Ratios

10. **Current ratio** = $\frac{\text{Current Assets}}{\text{Current Liabilities}}$

Current Assets, CA → Current Investments, Inventories, Trade receivables (debtors and bills receivables), Cash & Cash equivalents, Short term loans & Other advances, Prepaid expenses, Advance tax & Accrued income.

Current liabilities, CL → Short term borrowing, Trade payables (Creditors & bills payables), Other current liabilities & Short term provisions.

11. **Quick ratio/Acid test ratio** = $\frac{\text{Quick Assets}}{\text{Current Liabilities}}$ (or) $\frac{\text{Cash} + \text{MS} + \text{AR}}{\text{CL}}$, where MS = marketable securities and AR = Accounts Receivables

Quick Assets = CA – Inventories/Prepaid expenses, advance tax etc.

Solvency Ratios

12. **Debt equity ratio : Standard is 2:1**

D/E ratio = $\frac{\text{Long term debt}}{\text{Shareholders funds}}$

Shareholders funds (Equity) = Share capital + Reserves & Surplus + Money received against + Share warrants.

Share capital = Equity share capital + Preference share capital

Equity is also = Non-Current assets + WC – Noncurrent CL, WC = Working

Capital

Capital employed = Share capital + Reserves & Surplus + Long term debts

Debt = Long term borrowings + Other long term liabilities + Long term provisions

13. **Debt to capital employed ratio** = $\frac{\text{Long term debt}}{\text{Capital employed (or) Net assets}}$

Or

$$\frac{\text{Long term debt}}{\text{Shareholders fund} + \text{Long term debt}}$$

Or

$$\frac{\text{Long term debt}}{\text{Net assets}}$$

Net assets = Total assets – Current liabilities

Capital employed = Shareholders fund + Long term borrowings

14. **Proprietary Ratio** = $\frac{\text{Shareholders funds}}{\text{Capital employed (or) Net assets}}$

15. **Total assets to debt ratio** = $\frac{\text{Total Assets}}{\text{Long term debts}}$

16. **Interest coverage ratio** = $\frac{\text{Net profit before interest \& taxes}}{\text{Interest on long term debts}}$

17. **Times interest earned ratio** = $\frac{\text{EBIT}}{\text{Interest expenses}}$ (or) $\frac{\text{Net income}}{\text{Interest}}$,

EBIT – earnings before interest and taxes

18. **Capital gearing ratio** = $\frac{\text{Common stockholders equity}}{\text{Fixed cost bearing funds}}$

Fixed cost bearing funds = Debentures + Preferential share capital + Other long term loans

Activity or turnover ratios

19. **Inventory turnover ratio** = $\frac{\text{Cost of revenue from opertions}}{\text{Average inventory}}$

Cost of revenues from operations = Inventory in the beginning + Net purchases + Wages + Carriage inwards – Inventory at the end.

Average inventory = $\frac{\text{Opening} + \text{Closing Inventory}}{2}$

Or Cost of revenue from operations = Revenue from operations – Gross profit

20. **Trade receivables turnover ratio** = $\frac{\text{Net credit revenue from operations}}{\text{Average trade receivables}}$

21. **Trade payables turnover ratio** = $\frac{\text{Net credit purchase}}{\text{Average trade payables}}$

Average trade payables = (Creditors + Bills Payables) At the beginning + (Creditors + Bills Payables) At the end

22. **Net assets (or) Capital employed turnover ratio** = $\frac{\text{Revenue from operations}}{\text{Capital employed}}$

23. **Fixed assets turnover ratio** = $\frac{\text{Net revenue from operations}}{\text{Net fixed assets}}$

24. **Working capital turnover ratio** = $\frac{\text{Net revenue from operations}}{\text{Working capital}}$

Profitability Ratios

25. **Gross profit ratio/margin** = $\frac{\text{Gross profit}}{\text{Net revenue from operations / Sales}}$

Gross profit = Sales – Cost of goods sold

Or

Gross profit = Revenue from operations – Net Revenue from operations

Net purchases = Cash purchases + Credit purchases – Return outwards

Cost of revenue from operations = Purchases + [Opening – Closing Inventory] +

Direct expenses

26. **Operating ratio**

$$\frac{\text{Operating expenses}}{\text{Net sales}} = \frac{\text{Cost of revenue from operations} + \text{Operating expenses}}{\text{Net revenue from operations}}$$

27. **Operating profit rate** = $\frac{\text{Operating profit}}{\text{Revenue from operations}} \times 100$

28. **Net profit ratio or (PAT) or Profit after tax** = $\frac{\text{Net profit}}{\text{Revenue from operations}} \times 100$

29. **Return on capital employed/Investment** = $\frac{\text{PBIT}}{\text{Capital employed}} \times 100$

Capital employed = Total net worth + OTL

Or

Capital employed = Fixed assets + Current assets – Current liabilities

30. **Return on shareholders fund/Equity** = $\frac{\text{PAT}}{\text{Shareholders fund}} \times 100$

31. **EPS** = $\frac{\text{Profit available to equity shareholders}}{\text{Number of equity shares}}$

Profit available to equity shareholders = PAT - Preferential dividend on preferential shares

32. **Book value per shares** = $\frac{\text{Equity shareholders funds}}{\text{Number of equity shares}}$

33. **Dividend pay-out ratio** = $\frac{\text{Dividends per share}}{\text{Earnings per share}}$

34. **Price earnings (P/E) ratio** = $\frac{\text{Market price of the share}}{\text{Earnings per share}}$

Break even analysis or Cost volume profit analysis

35. **BEP** = $\frac{\text{Total fixed cost}}{\text{Selling price per unit} - \text{Variable price per unit}}$

Or

$\frac{\text{TFC}}{\text{P} - \text{V}}$

BEP in sales value = BEP x SP/Unit

36. **Number of units to be sold to break even** = $\frac{\text{Total fixed cost}}{\text{Unit contribution margin}}$

37. **BEP** = $\frac{\text{Fixed cost} \times \text{Sales}}{\text{Sales} - \text{Variable cost}}$

38. **Margin of Safety (MoS)** = Current O/P – Break even O/P

39. **MoS %** = $\frac{\text{MoS}}{\text{Current output}} \times 100$

Or

$= \frac{\text{Profit}}{\text{P / V ratio}}$

Breakeven is only possible when firm's prices are higher than its variable costs per unit

Contribution margin = SP/Unit – VC/Unit

40. **Profit – Volume ratio** = $\frac{\text{Contribution}}{\text{Sales}}$

Or

$= \frac{\text{Fixed expenses} + \text{Profit}}{\text{Sales}}$

Or

$= \frac{\text{Sales} - \text{Variable cost}}{\text{Cost}}$

Contribution = Fixed cost ± Profit/Loss

41. **Break even sales** = $\frac{\text{Fixed costs}}{\text{P / V Ratio}}$

42. **Desired sales** = $\frac{\text{Fixed cost} + \text{Desired cost}}{\text{P / V Ratio}}$

43. **MoS** = Actual sales in units – BEP volume in units

44. **MoS %** = $\frac{\text{MoS}}{\text{Actual sales in units}}$

45. **Degree of Operating Leverage (DOL)** = $\frac{\text{Contribution margin}}{\text{Profit before tax}}$

46. **Operating profit margin** = $\frac{\text{EBIT}}{\text{Sales}}$

47. **Return on Assets, ROA** = $\frac{\text{EBIT}}{\text{Total assets}}$

48. **Return on Equity, ROE** = $\frac{\text{Net profit}}{\text{Equity}}$

49. **Debt Service coverage ratio, DSCR** = $\frac{\text{Operating Income}}{\text{Total Debt Service Costs}}$

Or

$$\text{DSCR} = \frac{\text{PAT} + \text{Annual Interest} + \text{Lease Rental} + \text{Non} - \text{cash expenses}}{\text{Installment (Annual Interest} + \text{Principal Repayment)} + \text{Lease Rental}}$$

Non-cash expenses → Writing off preliminary expenses, Pre-operating expenses, Depreciation, Amortization, Provision for doubtful debts, Deferment of expenses like advertising, Promotions

50. **Du point analysis to assess ROE** =

$$\frac{\text{Net income}}{\text{Total equity}} = \frac{\text{Net income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Average total assets}} \times \frac{\text{Average total assets}}{\text{Equity}}$$

51. **Altaman Z score** = 1.2A + 1.4B + 3.3C + 0.6D + 1E

$$A = \frac{WC}{TA}$$

$$B = \frac{RE}{TA}$$

$$C = \frac{EBIT}{TA}$$

$$D = \frac{\text{Marketing value of equity}}{\text{Book debt}}$$

$$E = \frac{Sales}{TA}$$

Where, WC = Working Capital, TA = Total Assets, RE = Retained earnings.

Book debt is also called as total liabilities.

Score below 1.8 means the company is headed for bankruptcy.

52. **ROE** $= \frac{\text{Net profit}}{\text{Sales}} \times \frac{\text{Sales}}{TA} \times \frac{1}{(1 - \text{Debt asset ratio})}$

53. $\textbf{Dividendyield} = \frac{\textbf{Dividend / share}}{\textbf{MarketPrice}} \textbf{x100}$

54. **Capital equity ratio** $= \text{Capital Equity Ratio} = \frac{\text{Capital Equity (or) Net Assets}}{\text{NetWorth}}$

55. $\textbf{BookValue} = \frac{\textbf{Equity} + \textbf{Reserves}}{\textbf{Equity}} \textbf{x100}$

56. $\textbf{Debtors velocity or Debt collection period} = \frac{\textbf{Average book debts}}{\textbf{Sales}} \textbf{x12}$

57. $\textbf{Creditors velocity or creditors payment period} = \frac{\textbf{Average Creditors}}{\textbf{Purchases}} \textbf{x12}$

58. $\textbf{Proprietary ratio} = \frac{\textbf{TNW}}{\textbf{Tangible Assets}}$

Or

$$= \frac{\text{Proprietor's fund}}{\text{Total Assets}}$$

Proprietor's fund = Equity share capital + Preference Share capital + Revenue and Surplus.

59. **Value of no par Share** = $\frac{\textbf{The real net worth}}{\textbf{Total no of shares}}$

When the shares are having no face value it is said to be no par.

60. **Modigilani and Miller Approach**

Value of the firm = $\frac{EBIT}{k_o}(1-t)$,

Where, k_0 = Overall cost of capital, t = Tax Rate, EBIT = Earnings before Interest and taxes

61. **Debt issued at par** = $K_d = (1 - t) R$

Where, Kd = Cost of debt capital, t = Tax rate and R = Debenture interest rate

This means debt is issued at the face value of the debt.

62. **Debt Issued at Premium or Discount**

$$K_d = \frac{I}{N_p}(1-t)$$

Where, Kd = Cost of debt capital, I = Annual interest payable, Np = Net proceeds of debenture and t = Tax rate

63. **Financial Leverage** = $\frac{\text{Operating Profit / EBIT}}{\text{PBT}}$

PBT = Profit before Tax

64. **Degree of financial leverage** = $\frac{\text{Percentage change in taxable Income}}{\text{Percentage change in EBIT}}$

65. **Combined Leverage** = OL x FL = $\frac{C}{PBT}$

OL = Operating Leverage = $\frac{C}{OP}$, FL = Financial Leverage. $\frac{OP}{PBT}$

Where C = contribution, OP = EBIT = Operating profit, PBT = Profit before tax

66. **Working Capital Leverage** = $\frac{\text{Percentage change in ROI}}{\text{Percentage change in WC}}$

Or = $\frac{CA}{TA \pm DCA}$

Where, CA = Current Assets, TA = Total Assets and DCA = Changes in the level of Current Assets

67. **Payback Period** = $\frac{\textbf{Initial Investment}}{\textbf{Annual Cash inflows}}$

68. **Economic Order quantity** = EOQ = $\sqrt{\frac{2ab}{c}}$

Where, a = annual usage of inventories/annual consumption, b = buying cost/ordering cost per order, c = carrying cost per unit

EOQ is that inventory level that minimizes the total of ordering of carrying cost.

69. **Capital Asset Pricing Model** = $\bar{R} = R_f + \beta \times (\bar{R}_m - R_f)$

Where $\bar{R}$ = Expected return on a security, R_f = risk-free rate, $(\bar{R}_m - R_f)$ Expected

Difference between return on market and risk free rate, β = Beta of the security.

70. **Gap Analysis** = Δ Profit = Gap x Δi

It measures the sensitivity of bank's profits to changes in market interest rates.

i = Interest rates difference.

Gap = amount of rate sensitive assets – rate sensitive liabilities.

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