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FOR CA FINAL EXAM PREPARATION

CA Final 2022 Suggested Answers · Paper 2 Strategic Financial Management (Old Scheme)

EXAM
CA Final

YEAR
2022

TYPE
Suggested Answers

SUBJECT
Paper 2 Strategic Financial Management (Old Scheme)

DATE
May 2022

PAPER – 2 : STRATEGIC FINANCIAL MANAGEMENT

*Question No.**1** is compulsory.*

*Candidates are also required to answer any **four** from the remaining **five** questions.*

Working notes should form part of the respective answer.

Question 1

(a) *M/s. Daksh Ltd is planning to import multipurpose machine from USA at a cost of $15000. The company can avail loans at 19% Interest per annum with quarterly rests with which it can import the machine.*

However, there is an offer from New York branch of an Indian based bank extending credit of 180 days at 2% per annum against opening of an irrevocable letter of credit.

Other Information:

Spot rate US$ 1 = ₹ 75

180 days forward rate US $ 1 = ₹ 77

Commission charges for letter of credit at 2% per 12 months.

(i) *Justify why the offer from the foreign branch should be accepted?*

(ii) *Based on the present market condition company is not interested to take the risk of currency fluctuations and wanted to hedge with an additional expenses of ₹ 30,000, if so, what is your advise to the company?*

Assume 360 days in the year. ***(8 Marks)***

(b) *You had purchased a 3 month call option on the Equity shares of Satya Ltd for a premium of ₹ 30 each, the current market price of the share is ₹ 560 and the exercise price is ₹ 590. You expect the price range between ₹ 540 to ₹ 640.*

The expected share price of Satya Ltd and related probability is given below:

Expected price (₹)	*540*	*560*	*580*	*600*	*620*	*640*
Probability	*0.10*	*0.15*	*0.05*	*0.35*	*0.20*	*0.15*

Compute the followings:

(i) *Expected share price at the end of 3 months,*

(ii) *Value of call option at the end of 3 months, if the exercise price prevails,*

(iii) *In case the option is held to its maturity, what will be the expected value of the call option?*

(iv) *Find out the price of the shares quoted at the stock exchange to get the value of the call option as computed in (iii) above.* ***(8 Marks)***

(c) *What is Net interest position risk and Price risk?* ***(4 Marks)***

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Answer

(a) (i) *Option I (To finance the purchases by availing loan at 19% per annum):*

	Amount
Cost of equipment ($ 15,000 at US$ 1 = ₹ 75)	₹ 11,25,000
Add: Interest at 4.75% I Quarter	53,438
Add: Interest at 4.75% II Quarter (on ₹ 11,78,438)	55,976
Total outflow in Rupees	12,34,414
Alternatively, interest may also be calculated on compounded basis, i.e.,	
₹ 1,12,5000 × $[1.0475]^2$	₹ 12,34,413

Option II (To accept the offer from foreign branch):

	Amount
Cost of letter of credit at 1 % on US$ 15,000 at US$ 1 = ₹ 75	₹ 11,250
Add: Interest for 180 days (₹ 11,250 × 19% x 180/360)	₹ 1,069
(A)	₹ 12,319
Payment at the end of 180 days:	
Cost	US$ 15,000
Interest at 2% p.a. [15000 × 2/100 × 180/360]	US$ 150
	US$ 15,150
Conversion at US$ 1 = ₹ 77 [15150 x ₹ 77] (B)	₹ 11,66,550
Total Cost: (A) + (B)	₹ 11,78,869

Advise: Option 2 is cheaper by (₹ 12,34,413 – ₹ 11,78,869) lakh or ₹ 55,544. Hence, the offer may be accepted.

(ii) If company is not interested to take the risk of currency fluctuations and wanted to hedge with an additional expense of ₹ 30,000 then it can do so because even taking forward position is resulting in increased cash outflow by the same amount.

(b) (i) Expected Share Price

= ₹ 540 X 0.10 + ₹ 560 X 0.15 + ₹ 580 X 0.05 + ₹ 600 X 0.35 + ₹ 620 X 0.20 + ₹ 640 X 0.15

= ₹ 54 + ₹ 84 + ₹ 29 + ₹ 210 + ₹ 124 + ₹ 96 = ₹ 597

(ii) Value of Call Option

= ₹ 590 - ₹ 590 = Nil

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(iii) If the option is held till maturity the expected Value of Call Option

Expected price (X)	Value of call (C)	Probability (P)	Expected Value of Option
₹ 540	0	0.10	0
₹ 560	0	0.15	0
₹ 580	0	0.05	0
₹ 600	₹ 10	0.35	₹ 3.50
₹ 620	₹ 30	0.20	₹ 6.00
₹ 640	₹ 50	0.15	₹ 7.50
Total			₹ 17.00

Alternatively, it can also be calculated as follows:

Expected price (X)	Exercise price (E)	Probability (P)	Expected Value of Option CP (X – E) X P
₹ 540	₹ 590	0.10	Not Exercised*
₹ 560	₹ 590	0.15	Not Exercised*
₹ 580	₹ 590	0.05	Not Exercised*
₹ 600	₹ 590	0.35	₹ 3.50
₹ 620	₹ 590	0.20	₹ 6.00
₹ 640	₹ 590	0.15	₹ 7.50
Total			₹ 17.00

* If the stock price goes below ₹ 590, option is not exercised at all.

(iv) Price to be quoted at the stock exchange to get the value of the call option

₹ 590 + ₹ 17 = ₹ 607

(c) **Net Interest Position Risk:** The size of non-paying liabilities is one of the significant factors contributing towards profitability of banks. Where banks have more earning assets than paying liabilities, interest rate risk arises when the market interest rates adjust downwards. Thus, banks with positive net interest positions will experience a reduction in NII as the market interest rate declines and increases when interest rate rises. Thus, large float is a natural hedge against the variations in interest rates.

Price Risk: Price risk occurs when assets are sold before their stated maturities. In the financial market, bond prices and yields are inversely related. The price risk is closely associated with the trading book, which is created for making profit out of short-term movements in interest rates.

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Banks which have an active trading book should, therefore, formulate policies to limit the portfolio size, holding period, duration, defeasance period, stop loss limits, marking to market, etc.

Question 2

(a) Mr. D had invested in three mutual funds (MF) as per the following details:

Particulars	***MF 'A'***	***MF 'B'***	***MF 'C'***
Amount of Investment	*2,00,000*	*5,00,000*	*4,00,000*
NAV at the time of purchase	*10.00*	*25.00*	*20.00*
Dividend Yield up to 31.03.2022	*3%*	*5%*	*4%*
NAV as on 31.03.2022	*10.50*	*22.80*	*20.80*
Annualized Yield as on 31.03.2022	*9.733%*	*- 11.185%*	*15%*

Assume 1 Year = 365 Days.

Mr. D has misplaced the documents of his investments.

You are required to help Mr. D to find out the following:

(i) Number of units allotted in each scheme,

(ii) Value of his investments as on 31.03.2022,

(iii) Holding period of his investments in number of days as on 31.03.2022

(iv) Dates of original investments

(v) Total Return on investments,

(vi) Assuming past performance of all three schemes will continue for next one year, what action the investor should take? What will be the expected return for the next one year after the above action?

(vii) Will your answer as above point no. (vi) changes if the Mutual fund charges exit load of 5% if the investment is redeemed within one year? If so, advise the investor what and when the action to be taken to optimise the returns. ***(8 Marks)***

(b) Calculate the value of share from the following Information:

Profit of the company (After tax)	*₹ 560 crores*
Equity share capital of the Company	*₹ 1900 crores*
Par value of share	*₹ 50 each*
Debt ratio (Debt/Debt + Equity)	*43%*
Long run growth rate of the company	*7%*
Beta 0.1 (Risk free Interest rate)	*9.5%*

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Market return	*12.6%*
Capital expenditure per share	*₹ 53*
Depreciation per share	*₹ 45*
Increase in working capital	*₹ 4.62 per share*

(8 Marks)

(c) Explain the outcomes of Financial Planning. ***(4 Marks)***

Answer

(a) (i) Number of Units in each Scheme

MF 'A'	₹ 2,00,000 / ₹ 10.00	= 20,000
MF 'B'	₹ 5,00,000 / ₹ 25.00	= 20,000
MF 'C'	₹ 4,00,000 / ₹ 20.00	= 20,000

(ii) Value of Investment on 31.03.2022

MF 'A'	= 20,000 x ₹ 10.50	₹ 2,10,000
MF 'B'	= 20,000 x ₹ 22.80	₹ 4,56,000
MF 'C'	= 20,000 x ₹ 20.80	₹ 4,16,000
Total		**₹ 10,82,000**

(iii) Yield on each Fund

	Capital Yield	Dividend Yield	Total	Yield (%)
MF 'A'	₹ 2,10,000 - ₹ 2,00,000 = ₹ 10,000	₹ 6,000	₹ 16,000.00	8.00
MF 'B'	₹ 4,56,000 - ₹ 5,00,000 = - ₹ 44,000	₹ 25,000	- ₹ 19,000.00	-3.80
MF 'C'	₹ 4,16,000 - ₹ 4,00,000 = ₹ 16,000	₹ 16,000	₹ 32,000.00	8.00
Total			₹ 29,000.00	

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No. of Days Investment Held

	MF 'A'	MF 'B'	MF 'C'
Period of Holding (Days)	$\frac{8.00}{9.733}\times 365$ = 300 Days	$\frac{-3.80}{-11.185}\times 365$ = 124 Days	$\frac{8.00}{15.00}\times 365$ = 195 Days

(iv) Date of Original Investment 04.06.21 27.11.21 17.09.21

(v) Total Yield $= \frac{₹29,000.00}{₹11,00,000}\times 100 = 2.636\%$

(vi) If past of all three schemes will continue for next one year, the investor should redeem the units of MFs 'A' and 'B' and invest the proceeds in MF 'C'. The expected return next will be 15%.

(vii) If the Mutual funds are charging exit load of 5%, if investment is redeemed within one year, then investor should get redeemed units of MF 'B' now and units of MF 'A' after 65 days.

(b) No. of Shares $= \frac{₹\ 1,900\text{ crores}}{₹\ 50} = 38$ crores

$$EPS = \frac{PAT}{No.of\ shares}$$

$$EPS = \frac{₹\ 560\text{ crores}}{38\text{ crores}} = ₹\ 14.737$$

Cost of Equity = $R_f + ß\ (R_m - R_f)$

$= 9.5 + 0.1\ (12.6 - 9.5) = 9.81\%$

FCFE = Net income – [(1-b) (capex – dep) + (1-b) (ΔWC)]

FCFE = 14.737 – [(1-0.43) (53-45) + (1-0.43) (4.62)]

= 14.737 – [4.56 + 2.6334] = 7.5436

$$P_o = \frac{FCFE(1+g)}{K_e - g} = \frac{7.5436(1.07)}{0.0981-0.07} = \frac{8.0716}{0.0281} = ₹\ 287.25$$

(c) Outcomes of the financial planning are:

(i) **Financial Objectives:** Financial objectives are to be decided at the very outset so that rest of the decisions can be taken accordingly. The objectives need to be consistent with the corporate mission and corporate objectives.

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(ii) Financial Decision Making: Financial decision making helps in analyzing the financial problems that are being faced by the corporate and accordingly deciding the course of action to be taken by it.

(iii) Financial Measures: The financial measures like ratio analysis, analysis of cash flow statement etc. are used to evaluate the performance of the Company. The selection of these measures again depends upon the corporate objective.

Question 3

(a) Skylark Systems Ltd. is interested to expand its operations in US for which it requires funds of $ 20 million, net of issue expenses and floatation costs etc., which amounts to 3% of the issue size. To finance this project it proposes to issue GDR.

Following factors are considered in pricing the issue:

(i) Expected market price of share at the time of issue of GDR is ₹300 (FV ₹10)

(ii) 3 shares shall underlay each GDR and shall be priced at 10% discount to market price.

(iii) Expected exchange rate is ₹75/$

(iv) 20% Dividend is expected to be paid for next year with growth rate of 15%

You are required to compute the number of GDRs to be issued and cost of GDR to Skylark Systems Ltd.

If the company is able to raise the funds in US at the rate of 4% p.a. and the company is able to repay the loan along with interest from revenues generated from the operations of US, what is your advise to the company? **(8 Marks)**

(b) You have been given the following information about Swecha Ltd.

	Swecha Ltd.		Market		
Year	Average Share price	Dividend per share	Average Index	Dividend Yield %	Return on Govt. bond %
2017	460	30	4060	5	5.5
2018	497	33	4320	6.5	5.5
2019	523	38	4592	4.5	5.5
2020	556	43	4780	6	5.5
2021	589	50	4968	5.5	5.5

(i) Compute the Beta value of the company as at the end of year 2021.

(ii) What is your Observation? **(8 Marks)**

(c) What are Foreign Currency Convertible Bonds? What are their advantages? **(4 Marks)**

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Answer

(a) Working Notes:

Net Issue Size = $ 20 million

Gross Issue = $\frac{20.00}{0.97}$ = $ 20.619 million

Issue Price per GDR in ₹ (300 x 3 x 90%)	₹ 810
Issue Price per GDR in $ (₹ 810/ ₹ 75)	$ 10.80
Dividend Per GDR (D_1) = ₹ 2 x 3 =	₹ 6.00
Net Proceeds Per GDR = ₹ 810 x 0.97 =	₹ 785.70

Number of GDR to be issued

$$\frac{\$\ 20.619\ \text{million}}{\$\ 10.80} = 1.9092\ \text{million}$$

Cost of GDR

$$k_e = \frac{6.00}{785.70} + 0.15 = 15.76\%$$

If the company receives an offer from US Bank willing to provide an equivalent amount of loan with interest rate of 4%, it should accept the offer.

(b) (i) Computation of Beta Value

Calculation of Returns

$$\text{Returns} = \frac{D_1 + (P_1 - P_0)}{P_0} \times 100$$

Year	Returns from Swecha Ltd.	Returns from market Index
2018	$\frac{33 + (497 - 460)}{460} \times 100 = 15.22\%$	$\frac{(4320 - 4060)}{4060} \times 100 + 6.50\% = 12.90\%$
2019	$\frac{38 + (523 - 497)}{497} \times 100 = 12.88\%$	$\frac{(4592 - 4320)}{4320} \times 100 + 4.50\% = 10.80\%$
2020	$\frac{43 + (556 - 523)}{523} \times 100 = 14.53\%$	$\frac{(4780 - 4592)}{4592} \times 100 + 6.00\% = 10.09\%$
2021	$\frac{50 + (589 - 556)}{556} \times 100 = 14.93\%$	$\frac{(4968 - 4780)}{4780} \times 100 + 5.50\% = 9.43\%$

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Computation of Beta

Year	Swecha Ltd. (X)	Market Index (Y)	XY	Y^2
2018	15.22%	12.90%	196.34	166.41
2019	12.88%	10.80%	139.10	116.64
2020	14.53%	10.09%	146.61	101.81
2021	14.93%	9.43%	140.79	88.92
Total	57.56%	43.22%	622.84	473.78

Average Return of Krishna Ltd. = $\frac{57.56}{4}$ = 14.39%

Average Market Return = $\frac{43.22}{4}$ = 10.81%

$$\text{Beta } (\beta) = \frac{\sum XY - n\bar{X}\bar{Y}}{\sum Y^2 - n(\bar{Y})^2} = \frac{622.84 - 4\times14.39\times10.81}{473.78 - 4(10.81)^2} = 0.097$$

(ii) Observation

	Expected Return (%)	Actual Return (%)	Action
2017	5.5% + 0.097(12.90% - 5.5%) = 6.22%	15.22%	Buy
2018	5.5% + 0.097(10.80% - 5.5%) = 6.01%	12.88%	Buy
2019	5.5% + 0.097(10.09% - 5.5%) = 5.95%	14.53%	Buy
2020	5.5% + 0.097(9.43% - 5.5%) = 5.88%	14.93%	Buy

(c) A type of convertible bond issued in a currency different than the issuer's domestic currency. In other words, the money being raised by the issuing company is in the form of a foreign currency. A convertible bond is a mix between a debt and equity instrument. It acts like a bond by making regular coupon and principal payments, but these bonds also give the bondholder the option to convert the bond into stock.

Advantages of FCCBs

(i) The convertible bond gives the investor the flexibility to convert the bond into equity at a price or redeem the bond at the end of a specified period, normally three years if the price of the share has not met his expectations.

(ii) Companies prefer bonds as it leads to delayed dilution of equity and allows company to avoid any current dilution in earnings per share that a further issuance of equity would cause.

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(iii) FCCBs are easily marketable as investors enjoys option of conversion into equity if resulting to capital appreciation. Further investor is assured of a minimum fixed interest earnings.

Question 4

(a) Following information is available pertaining to ABC Ltd. which is expected to grow at a higher rate for 3 years after which growth rate will stabilize at a lower level.

Base year information is -

Revenues	EBIT (After Depreciation)	Capital Expenditure	Depreciation
₹ 1,000 Cr.	₹ 150 Cr.	₹ 140 Cr.	₹ 100 Cr.

Information for high growth and stable growth period are as follows:

Stable Growth

Particulars	High Growth	Stable Growth
Growth in Revenue & EBIT	20%	10%
Growth in Capital Expenditure and Depreciation	20%	Capital Expenditure are offset by Depreciation
Risk free rate	10%	9%
Equity Beta	1.15	1.00
Market Risk Premium	6%	5%
PreTax cost of Debt	13%	12.86%
Debt Equity Ratio	1:1	2:3

Working capital is 25% of Revenue for all time.

Corporate Tax Rate is 30%.

You are requested to find out the value of ABC Ltd. ***(8 Marks)***

(b) A mutual fund made an issue of New Fund Offer (NFO) on 01/01/2021 of 10.00 Lakh Units of ₹ 10 each. No entry load was charged. It made the following investments:

Particulars	(₹)
25,000 Equity Shares of XYZ Ltd., ₹ 100 each @ ₹ 320	80,00,000
5% Government Securities	4,00,000
10% NCDs Unlisted	5,00,000
8% Listed Debentures	10,00,000

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During the year, dividends of ₹ 8.00 lakhs were received on equity shares. Interest on all types of debt securities were received. On 31st December 2021 equity shares were appreciated by 15% while listed debentures were quoted at 20% premium.

XYZ Ltd., on 15th December 2021 in its AGM declared the interim dividend of 10% and bonus shares at 1:10 with the record date of 28th December 2021.

(i) Find out the NAV per unit as on 31st December given that the operating expenses paid during the year amounting to ₹ 3,00,000.

(ii) Find out the NAV, if the MF had distributed a dividend of, ₹ 0.50 per unit during the year to the investors.

(iii) If you are the investor, find out what is the annualised return you have got.

(8 Marks)

(c) What are the benefits of Securitization? ***(4 Marks)***

Answer

(a)

	High growth phase:	Stable growth phase:
k_e	0.10 + 1.15 x 0.06 = 0.169 or 16.9%.	0.09 + 1.0 x 0.05 = 0.14 or 14%.
k_d	0.13 x (1 - 0.3) = 0.091 or 9.1%.	0.1286 x (1 - 0.3) = 0.09 or 9%.
Cost of capital	0.5 x 0.169 + 0.5 x 0.091 = 0.13 or 13%.	0.6 x 0.14 + 0.4 x 0.09 = 0.12 or 12%.

Determination of forecasted Free Cash Flow of the Firm (FCFF)

(₹ in crores)

	Yr. 1	Yr. 2	Yr. 3	Terminal Year
Revenue	1200.00	1440.00	1728.00	1900.80
EBIT	180.00	216.00	259.20	285.12
EAT	126.00	151.20	181.44	199.58
Capital Expenditure	48.00	57.60	69.12	-
Less Depreciation				
Δ Working Capital	50.00	60.00	72.00	43.20
Free Cash Flow (FCF)	**28.00**	**33.60**	**40.32**	**156.38**

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Alternatively, it can also be computed as follows:

(₹ in crores)

	Yr. 1	Yr. 2	Yr. 3	Terminal Year
Revenue	1200.00	1440.00	1728.00	1900.80
EBIT	180.00	216.00	259.20	235.12
EAT	126.00	151.20	181.44	199.58
Add: Depreciation	120.00	144.00	172.80	190.08
	246.00	295.20	354.24	389.66
Less: Capital Exp.	168.00	201.60	241.92	190.08
Δ WC	50.00	60.00	72.00	43.20
	28.00	**33.60**	**40.32**	**156.38**

Present Value (PV) of FCFF during the explicit forecast period is:

FCFF (₹ in crores)	PVF @ 13%	PV (₹ in crores)
28.00	0.885	24.78
33.60	0.783	26.31
40.32	0.693	27.94
		₹ 79.03

Terminal Value of Cash Flow = $\frac{156.38}{0.12-0.10}$ = ₹ 7819 Crore

PV of the terminal, value is = ₹ 7819 Crore x $\frac{1}{(1.13)^3}$

= ₹ 7819 Crore x 0.693 = ₹ 5418.57 Crore

The value of the firm is = ₹ 79.03 Crores + ₹ 5418.57 Crores = ₹ 5497.60 Crores

(b) (i) In order to find out the NAV, the cash balance at the end of the year is calculated as follows-

Particulars	₹
Cash balance in the beginning	
(₹ 100 lakhs – ₹ 99 lakhs)	1,00,000
Dividend Received	8,00,000
Interest on 5% Govt. Securities	20,000
Interest on 10% NCDs	50,000

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Interest on 8% Debentures	80,000
Interim Dividend	2,50,000
	13,00,000
(-) Operating expenses	3,00,000
Net cash balance at the end	10,00,000
Calculation of NAV	₹
Cash Balance	10,00,000
5% Govt. Securities (at par)	4,00,000
27,500 equity shares @ ₹ 368 each	1,01,20,000
10% NCDs (Unlisted) at cost	5,00,000
8% Debentures @ 120%	12,00,000
Total Assets	1,32,20,000
No. of Units	10,00,000
NAV per Unit	₹ 13.22

(ii) Calculation of NAV, if dividend of ₹ 0.50 is paid –

Net Assets (₹ 1,32,20,000 – ₹ 5,00,000)	₹ 1,27,20,000
No. of Units	10,00,000
NAV per unit	₹ 12.72

(iii) Annualised Return

$$= \frac{13.22-10.00}{10.00} \times 100 = 32.20\%$$

Or

$$= \frac{[12.72-10.00]+0.50}{10.00} \times 100 = 32.20\%$$

(c) The benefits of securitization can be viewed from the angle of various parties involved as follows:

(A) From the angle of originator

Originator (entity which sells assets collectively to Special Purpose Vehicle) achieves the following benefits from securitization.

(i) **Off – Balance Sheet Financing:** When loan/receivables are securitized it releases a portion of capital tied up in these assets resulting in off Balance Sheet

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financing leading to improved liquidity position which helps in expanding the business of the company.

(ii) **More specialization in main business**: By transferring the assets the entity could concentrate more on core business as servicing of loan is transferred to SPV. Further, in case of non-recourse arrangement even the burden of default is shifted.

(iii) **Helps to improve financial ratios**: Especially in case of Financial Institutions and Banks, it helps to manage Capital –To-Weighted Asset Ratio effectively.

(iv) **Reduced borrowing Cost**: Since securitized papers are rated due to credit enhancement even they can also be issued at reduced rate as of debts and hence the originator earns a spread, resulting in reduced cost of borrowings.

(B) From the angle of investor

Following benefits accrues to the investors of securitized securities.

(i) **Diversification of Risk**: Purchase of securities backed by different types of assets provides the diversification of portfolio resulting in reduction of risk.

(ii) **Regulatory requirement**: Acquisition of asset backed belonging to a particular industry say micro industry helps banks to meet regulatory requirement of investment of fund in industry specific.

(iii) **Protection against default**: In case of recourse arrangement if there is any default by any third party then originator shall make good the least amount. Moreover, there can be insurance arrangement for compensation for any such default.

Question 5

(a) M/s. Vasavi Ltd. is considering the takeover of M/s. SKPD Ltd. by the exchange of five new shares in M/s. Vasavi Ltd. for every eight shares in M/s. SKPD Ltd. The relevant financial details of the two companies prior to merger announcement are as follows:

Particulars	*M/s. Vasavi Ltd.*	*M/s. SKPD Ltd.*
Profit before tax (₹ crore)	*18*	*20.8*
No. of shares (in crore)	*20*	*18*
P/E ratio	*11*	*8*

Corporate tax rate 30%.

You are required to determine:

a. Market value of both the companies

b. Value of original share holders

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c. *Price per share after merger*

d. *Effect on share price of both the companies. If the directors of Vasavi Ltd. expect their own pre-merger P/E ratio to be applied to the combined earnings.* ***(8 Marks)***

(b) *Closing Values of NIFTY Index from 3rd to 12th day of the month of January 2022 were as follows:*

Days	Date	Closing Values of NIFTY Index
1	03/01/2022	17626
2	04/01/2022	17805
3	05/01/2022	17925
4	06/01/2022	17746
5	07/01/2022	17813
6	10/01/2022	18003
7	11/01/2022	18056
8	12/01/2022	18212

The simple moving average of NIFTY Index for the month of December 2021 was 17174.

You are required to calculate

(i) *The value of exponent for 15 days EMA.*

(ii) *The exponential moving average (EMA) of NIFTY during the above period. (Calculations to be done up to 2 decimals only)*

(iii) *Analyse the buy & sell signal on the basis of your calculations* ***(8 Marks)***

(c) *Briefly explain:*

(a) *Compliance risk and*

(b) *Operational risk* ***(4 Marks)***

Answer

(a)

	M/s Vasavi Ltd.	M/s SKPD Ltd.
Profit before Tax (₹ in crore)	18.00	20.80
Tax 30% (₹ in crore)	5.40	6.24
Profit after Tax (₹ in crore)	12.60	14.56
Earnings per Share	$\frac{12.60}{20}$ = ₹ 0.63	$\frac{14.56}{18}$ = ₹ 0.81
Price per Share before Merger (EPS x P/E Ratio)	₹ 0.63 x 11 = ₹ 6.93	₹ 0.81 x 8 = ₹ 6.48

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a. Market Value of company

M/s Vasavi Ltd. = ₹ 6.93 x 20 Crore = ₹ 138.60 crore

M/s SKPD Ltd. = ₹ 6.48 x 18 Crore = ₹ 116.64 crore

b. Value of Original Shareholders

After Merger

	M/s Vasavi Ltd.	M/s SKPD Ltd.
No. of Shares	20 crores	$18 \times \frac{5}{8} = 11.25$ crores
Combined	31.25 crores	
% of Combined Equity Owned	$\frac{20}{31.25} \times 100 = 64.00\%$	$\frac{11.25}{31.25} \times 100 = 36.00\%$
Value of Original Shareholders	₹ 255.24 crore x 64.00% = ₹ 163.35 crores	₹ 255.24 crore x 36% = ₹ 91.89 crores

c. Price per Share after Merger

$EPS = \frac{₹\ 27.16\,crore}{31.25\,crore} =$ ₹ 0.87 per share

P/E Ratio = 11

Market Value Per Share = ₹ 0.87 X 11 = ₹ 9.57

d. Effect on Share Price

M/s Vasavi Ltd.

Gain/loss (-) per share = ₹ 9.57 – ₹ 6.93 = ₹ 2.64

i.e. $\frac{9.57 - 6.93}{6.93} \times 100 = 0.381$ or 38.10%

∴ Share price would increase by 38.10%

M/s SKPD Ltd.

$9.57 \times \frac{5}{8} =$ ₹ 5.98

Gain/loss (-) per share = ₹ 5.97 – ₹ 6.48 = (₹ 0.51)

i.e. $\frac{5.97 - 6.48}{6.48} \times 100 = (0.0787)$ or (-7.87%)

∴ Share Price would decrease by 7.87%.

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(b) (i) Value of Exponent for 15 days EMA

$= \frac{2}{n+1} = 0.125$

(ii) $EMA_t = a \times P_t + (1 - a)(EMA_{(t-1)})$ Where, a = exponent, P_t = Price of today

Date	1 Sensex	2 EMA for Previous day ($EMA_{(t-1)}$)	3 1-2	4 3 × 0.125	5 EMA 2 + 4
03/01/2022	17626	17174	452	56.50	17230.50
04/01/2022	17805	17230.50	574.50	71.81	17302.31
05/01/2022	17925	17302.31	622.69	77.84	17380.15
06/01/2022	17746	17380.15	365.85	45.73	17425.88
07/01/2022	17813	17425.88	387.12	48.39	17474.27
10/01/2022	18003	17474.27	528.73	66.09	17540.36
11/01/2022	18056	17540.36	515.64	64.45	17604.82
12/01/2022	18212	17604.82	607.18	75.90	17680.71

(iii) A buy (bullish) signal is generated when actual price line (NIFTY in the give case) rises through the moving average, while a sell a (bearish) signal is generated when actual NIFTY level declines through the moving averages. In the case under consideration the price line of NIFTY never breaches the 15-day EMA line. In-fact it is hovering around the 15-day EMA line only.

(c) (a) Compliance Risk: Every business needs to comply with rules and regulations. For example, with the advent of Companies Act, 2013, and continuous updating of SEBI guidelines, each business organization has to comply with plethora of rules, regulations and guidelines. Noncompliance leads to penalties in the form of fine and imprisonment.

However, when a company ventures into a new business line or a new geographical area, the real problem then occurs. For example, a company pursuing cement business likely to venture into sugar business in a different state but laws applicable to the sugar mills in that state are different. So, that poses a compliance risk. If the company fails to comply with laws related to a new area or industry or sector, it will pose a serious threat to its survival.

(b) Operational Risk: This type of risk relates to internal risk. It also relates to failure on the part of the company to cope with day-to-day operational problems. Operational risk relates to 'people' as well as 'process'. We will take an example to illustrate this.

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For example, an employee paying out ₹ 1,00,000 from the account of the company instead of ₹ 10,000.

This is a people as well as a process risk. An organization can employ another person to check the work of that person who has mistakenly paid ₹ 1,00,000 or it can install an electronic system that can flag off an unusual amount.

Question 6

(a) Calculate the Covariance & Correlation Coefficient of the two securities, from the historical rates of return over the past 10 years.

Years	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***
Security 1 (Return %)	*15*	*10*	*12*	*8*	*18*	*16*	*20*	*24*	*16*	*14*
Security 2 (Return %)	*24*	*20*	*18*	*14*	*22*	*26*	*12*	*28*	*16*	*15*

(8 Marks)

(b) MPD Ltd. issues a ₹ 50 Million Floating Rate Loan on July 1, 2018 with resetting of coupon rate every 6 Months equal to LIBOR + 50 bps.

MPD is interested in an Interest rate Collar Strategy of selling a Floor and buying a cap.

MPD buys the 3 years cap and sell 3 years Floor as per the following details on July 1, 2018:

Principal Amount	*₹ 50 Million*
Strike Rate	*5% for Floor & 8% for Cap*
Reference Rate	*6 months LIBOR*
Premium	*NIL, since premium paid for cap = premium received for Floor*

The Reset dates & Interest rates p.a., on that dates are:

Reset Date	***31/12/2018***	***30/06/2019***	***31/12/2019***	***30/06/2020***	***31/12/2020***	***30/06/2021***
LIBOR (%)	*7.00*	*8.00*	*6.00*	*4.75*	*4.25*	*5.25*

Using the above data, you are required to determine:

(i) Effective Interest paid out at each six reset dates, (Round off to the nearest rupee)

(ii) Average overall effective rate of interest p.a. (round off to 2 decimals) ***(8 Marks)***

(c) Define Angle Investors, are these only individuals? If not, list the entities.

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OR

Enlist the criteria for an entity to be classified as a Startup entity under the Startup India Scheme initiated by the Government of India. ***(4 Marks)***

Answer

(a) Calculation of Covariance

Year	R_1	*Deviation* $(R_1-\overline{R_1})$	*Deviation* $(R_1-\overline{R_1})^2$	R_2	*Deviation* $(R_2-\overline{R_2})$	*Deviation* $(R_2-\overline{R_2})^2$	*Product of deviations*
1	15	-0.3	0.09	24	4.5	20.25	-1.35
2	10	-5.3	28.09	20	0.5	0.25	-2.65
3	12	-3.3	10.89	18	-1.5	2.25	4.95
4	8	-7.3	53.29	14	-5.5	30.25	40.15
5	18	2.7	7.29	22	2.5	6.25	6.75
6	16	0.7	0.49	26	6.5	42.25	4.55
7	20	4.7	22.09	12	-7.5	56.25	-35.25
8	24	8.7	75.69	28	8.5	72.25	73.95
9	16	0.7	0.49	16	-3.5	12.25	-2.45
10	14	-1.3	1.69	15	-4.5	20.25	5.85
	153		Σ= 200.10	195		Σ=262.50	94.50

$\overline{R_1} = \frac{153}{10} = 15.30$

$\overline{R_2} = \frac{195}{10} = 19.50$

$$\text{Covariance} = \frac{\sum_{i=1}^{N} [R_1 - \overline{R_1}][R_2 - \overline{R_2}]}{N} = 94.50/10 = 9.45$$

Standard Deviation of Security 1

$$\sigma_1 = \sqrt{\frac{(R_1-\overline{R_1})^2}{N}}$$

$$\sigma_1 = \sqrt{\frac{200.10}{10}} = \sqrt{20.01}$$

$\sigma_1 = 4.47$

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Standard Deviation of Security 2

$$\sigma_2 = \sqrt{\frac{(R_2 - \overline{R_2})^2}{N}}$$

$$\sigma_2 = \sqrt{\frac{262.50}{10}} = \sqrt{26.25}$$

$\sigma_2 = 5.12$

Alternatively, Standard Deviation of securities can also be calculated as follows:

Year	R_1	R_1^2	R_2	R_2^2
1	15	225	24	576
2	10	100	20	400
3	12	144	18	324
4	8	64	14	196
5	18	324	22	484
6	16	256	26	676
7	20	400	12	144
8	24	576	28	784
9	16	256	16	256
10	14	196	15	225
	153	2541	195.00	4065

Standard deviation of security 1:

$$\sigma_1 = \sqrt{\frac{N\sum R_1^2 - (\sum R_1)^2}{N^2}}$$

$$\sigma_1 = \sqrt{\frac{10\times 2541 - (153)^2}{10^2}} = \sqrt{\frac{25410 - 23409}{100}}$$

$$\sigma_1 = \sqrt{\frac{2001}{100}} = \sqrt{20.01}$$

$\sigma_1 = 4.47$

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Standard deviation of security 2:

$$\sigma_2 = \sqrt{\frac{N\sum R_2^2 - (\sum R_2)^2}{N^2}}$$

$$\sigma_2 = \sqrt{\frac{10 \times 4065 - (195)^2}{10^2}} = \sqrt{\frac{40650 - 38025}{100}}$$

$$\sigma_2 = \sqrt{\frac{2625}{100}} = \sqrt{26.25}$$

$\sigma_2 = 5.12$

Correlation Coefficient

$$r_{12} = \frac{Cov}{\sigma_1 \sigma_2} = \frac{9.45}{4.47 \times 5.12} = 0.413$$

(b) (i) The pay-off of each leg shall be computed as follows:

Cap Receipt

Max {0, [Notional principal x (LIBOR on Reset date – Cap Strike Rate) x (No. of days in settlement period/ 365)}

Floor Pay-off

Max {0, [Notional principal x (Floor Strike Rate – LIBOR on Reset date) x (No. of days in settlement period/ 365)}

Statement showing effective interest on each payment date

Reset Date	LIBOR (%)	Date of Payment	Days	Interest Payment (₹) LIBOR+0.50%	Cap Receipts (₹)	Floor Pay-off (₹)	Effective Interest
31-12-2018	7.00	30-06-2019	181	18,59,589	0	0	18,59,589
30-06-2019	8.00	31-12-2019	184	21,42,466	0	0	21,42,466
31-12-2019	6.00	30-06-2020	182	16,16,120	0	0	16,16,120
30-06-2020	4.75	31-12-2020	184	13,19,672	0	62,842	13,82,514
31-12-2020	4.25	30-06-2021	181	11,77,740	0	1,85,959	13,63,699
30-06-2021	5.25	31-12-2021	184	14,49,315	0	0	14,49,315
Total			1096				98,13,703

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(ii) Average Annual Effective Interest Rate shall be computed as follows:

$$\frac{98,13,703}{5,00,00,000} \times \frac{365}{1096} \times 100 = 6.54\%$$

(c) Despite being a country of many cultures and communities traditionally inclined to business and entrepreneurship, India still ranks low on comparative ratings across entrepreneurship, innovation and ease of doing business. The reasons are obvious. These include our old and outdated draconian rules and regulations which provides a hindrance to our business environment for a long time. Other reasons are red-tapism, our time-consuming procedures, and lack of general support for entrepreneurship. Off course, things are changing in recent times.

Angle Investors invest in small startups or entrepreneurs. Often angle investors are among the entrepreneur's family and friends.

Though angel investors usually represent individuals, the entity that actually provides the fund may be a limited liability company, a business, a trust or an investment fund, among many other kinds of vehicles.

OR

As per Government Notification, an entity shall be considered as a Startup:

i. Upto a period of ten years from the date of incorporation/ registration, if it is incorporated as a private limited company (as defined in the Companies Act, 2013) or registered as a partnership firm (registered under section 59 of the Partnership Act, 1932) or a limited liability partnership (under the Limited Liability Partnership Act, 2008) in India.

ii. Turnover of the entity for any of the financial years since incorporation/ registration has not exceeded one hundred crore rupees.

iii. Entity is working towards innovation, development or improvement of products or processes or services, or if it is a scalable business model with a high potential of employment generation or wealth creation.

Provided that an entity formed by splitting up or reconstruction of an existing business shall not be considered a 'Startup'.

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