Date of Examination: 19.04.2024, **Session: AN, Duration**: 3 Hrs **Full Marks:** 100**, Subject No.:** EP61201 **Subject:** Entrepreneurship Essentials **Department/Center/School:** RMSoEE, **Specific charts, graph paper, log book, required:** Nil, **Special Instructions (if any) :** Nil

1. GreenEco Innovations, engaged in solar power generation and distribution, has projected the following sales for the next 7 years:

Year	1	2	3	4	5	6	7
Sales (₹ Lakh)	500	600	800	1000	1100	1300	1500
Net profit	20%	20%	20%	20%	20%	20%	20%

The company has a paid-up capital of ₹5 lakh consisting of 50,000 equity shares of par value of ₹10. It has approached a VC for funding of ₹400 lakh and the VC has agreed to fund in the form of preference capital with the understanding of exiting the company at the end of the 4th year at 5X return.
During the same time, the shares of Modani Green, engaged in similar business as GreenEco, are trading in the stock market at ₹1,500 apiece. The net profit of Modani Green is ₹1500 lakh and the paid-up capital is ₹1000 lakh with a face value of ₹5 each. Estimate how many shares will be allotted to the VC by GreenEco Innovations if the VC used the VC method of valuation of startups.
The balance sheet of GreenEco Innovations just before receiving the funding is as under:

Assets	Amount in ₹
Cash	500
Inventory	1,06,000
Fixed assets	4,00,000
Total assets	**5,06,500**
Equity and Liabilities	
Equity capital	5,00,000
Reserves & Surplus	1,500
Payables	5,000
Total equity and liabilities	**5,06,500**

Prepare the balance sheet of the company immediately after the VC funding. [7+3 = 10]

*VC wants 5 X return at the end of 4th year. Net profit in 4th year = 1000*0.2 = ₹200L*

We need to estimate the P/E ratio from the Modani Green share price and earnings.

Modani share price = ₹1,500 per share.

EPS = Net profit / Number of shares = ₹1500 lakh/(₹1000 L/₹5) = 1500/200= ₹7.5 per share.

Price to earnings ratio = 1500/7.5 = 200

GreenEco is also likely to be valued by the market at 200 times the earnings(profit)

*Therefore, market value of GreenEco at the end of 4th year = Net profit*PE ratio = 200*200 = 40000 Lakh*

Present post-money value = 40,000/5 = 8,000 lakh.

Pre-money value = 8,000 – 400 (investment by VC) = 7600 lakh

Percentage holding by VC = 400/8000 = 5%. The post-money Founders' holding = 95%

If 95% of the shares = 50,000

VC is to receive = (50,000/0.95).05 = 2,633 shares*

*Equity capital will go up by 2,633*10 (face value) = ₹ 26,330*

The remaining money out of the ₹400 lakh invested by the VC, (i.e. ₹400,00,000 - ₹26,330 = 3,99,73,670/-) will be added to the existing reserves and surplus of ₹1500.

The entire money received from the VC remains in the form of cash since the company is yet to invest it in creating any assets.

Assets	*Amount in ₹*
Cash	*40,00,500*
Inventory	*1,06,000*
Fixed assets	*4,00,000*
Total assets	***4,05,06,500***
Equity and Liabilities	
Equity capital	*5,26,330*
Reserves & Surplus	*3,99,75,170*
Payables	*5,000*
Total equity and liabilities	***4,05,06,500***

2. i. A, B, and C are the co-founders of the startup BlueGen, with a paid-up capital of ₹5 lakh, consisting of 50,000 equity shares with a par value of ₹10 each. A holds 10,000 shares, B holds 15,000 shares, and C holds 25,000 shares. The company has approached a venture capitalist (VC) for funding of ₹500 lakh. The VC values BlueGen at ₹1500 lakh pre-money while providing ₹500 lakh in funding in preference capital. Subsequently, the company secured a long-term loan of ₹200 lakh from a bank. However, the company's performance deteriorated, leading to defaults on monthly loan installments, resulting in an outstanding amount of ₹250 lakh owed to the bank (bank loan amount went up to ₹250 lakh). Ultimately, the company was sold for ₹800 lakh.
   How much money the founders A, B, and C will receive under the following conditions of preference shares of the VC? Show all the calculations.
   a) 1X liquidation preference and no participation.
   b) Only participation preference.
   c) 3X liquidation and participation preference.

[5]

Answer

a. *1X liquidation: Since bank is a secured creditor, it will receive its dues of ₹250 lakh leaving behind ₹550 lakh. The VC will take their 1X, i.e. ₹500 lakh* *and the rest ₹50 lakh will be distributed among the cofounders. A: 20% of 50 = ₹10 lakh, B: 30% of 50 = ₹15 lakh, and C: 50% of 50 = ₹25 lakh.*

b. *Only participation: % holding by the VC = 500/(500+1500) = 25% of equity. After the bank takes away ₹250 lakh, the remaining ₹550 lakh will be distributed among VC and co-founders. Co-founders receive = 75% of 550 = ₹412.5 lakh (A, B, and C receive 20%, 30%, and 50% of ₹412.5 lakh)*

c. *After the bank takes away ₹250 lakh, the VC is to receive 3X first and then 25% of the rest. However, 3X = 3*500 = ₹1500 lakh. So, the VC will take the entire ₹550 lakh and the co-founders will receive nothing.*

ii. The company ABC Pvt. Ltd. operates in a competitive market. The suppliers to the company have more bargaining power than the company. The following are the current financials of the venture. You have been hired as a consultant to advise the company to turn it profitable. What would you suggest? Show your recommendations with calculations. [Hint: Use break-even point and demand-supply knowledge. Say, a 1% reduction of price leads to 25% increase in sales. Must draw the curves to justify.] [5]

Sales:	4500 units	Unit variable cost:	₹90
Unit selling price:	₹100	Fixed cost:	₹50,000

Answer:

The break-even point = 50,000/(100 – 900) = 5,000 units

By selling 4,500 units, the company has been incurring loss. There may be several possibilities to make the company profitable, such as reduce variable cost, increase sales, reduce fixed cost. However, as the suppliers have better bargaining power and no data is available on possibility of reduction of fixed cost, the only option available before the company is to reduce the price if that leads to significant increase in sales. For example, if the price is reduced by 1%, the sales increases by 25%, i.e. to 5,625 units. The new break-even point is = 50,000/(99-90) = 5,555 units. So, the business reaches break-even point and makes some profit.

3. The company ABC Pvt. Ltd. has a choice of adopting either of the two different technologies. The technology characterized as automatic is associated with high capital investment, low wastage, high productivity, low maintenance, and low labour requirement. The features of semi-automatic technology are lower capital, low productivity, high labor requirement, and more maintenance. Draw the graphs showing how the break-even point may be different for the two approaches. Is it necessary that automatic plants will always have a lower break-even point or vice versa (is there a consistent relationship between automation and break-even points.)? Explain clearly and comprehensively. [7+3 = 10]

4. ABC Electronics is a company that specializes in designing and manufacturing innovative gadgets and electronics products. Founded by a group of IITians, ABC Electronics has gained a reputation for its cutting-edge technology and sleek designs. The company recently developed a new smartwatch called "SmartWrist," equipped with advanced health monitoring features, fitness tracking capabilities, and seamless connectivity with smartphones. With its stylish design and user-friendly interface, the SmartWrist has generated significant buzz in the market.

   As the marketing team at ABC Electronics prepares to launch "SmartWrist", they face a crucial decision: identifying the appropriate market segment to target. With a diverse range of potential customers, including parents for children's location tracking, tech-savvy millennials, fitness enthusiasts, busy professionals, and health-conscious individuals, the team must carefully evaluate their options to maximize the smartwatch's success. Each market segment presents unique opportunities and challenges. For example, targeting millennials may require a focus on social media marketing and trendy aesthetics, while appealing to fitness enthusiasts may involve emphasizing the smartwatch's health-monitoring features and compatibility with fitness apps.

   Due to the expense associated with stylish aesthetics, accommodating multiple use cases, and targeting various segments, the company aims to concentrate solely on one demographic as its primary audience initially. This approach enables the development of tailored promotional packages to capture a significant portion of the broader market. Leveraging its robust health monitoring features and advanced technology, the company provides a distinctive value proposition to consumers.

   As the marketing team debates the best approach, they consider factors such as consumer demographics, psychographics, lifestyle preferences, purchasing behaviour, sizes of different market segments, and competition analysis. They also conduct market research surveys and focus groups to gather insights and feedback from potential customers. Ultimately, the marketing team must decide which market segment offers the greatest potential for sales and profitability while aligning with ABC Electronics' brand identity and product positioning strategy.

   Identify the most appropriate market segment for ABC Electronics' "SmartWrist" smartwatch based on the above story and also explain why do you think so. Please note that the question does not ask you to write the definition of market segmentation. [10]

   For ABC Electronics' "SmartWrist" smartwatch, the best initial market segment would likely be health-conscious tech-savvy millennials and fitness enthusiasts.

   - *The product features perfectly align with the aspiration of the people under this segment.*
   - *They are already known to appreciate such products.*
   - *These people have the purchasing power to afford the product.*
   - *It would be easy to reach out to this segment using social media marketing.*
   - *Creating a brand targeting and properly positioning in this segment can potentially lead to sustainable growth.*

5. Please answer the next six questions serially in one place of the answer script. Ensure that your answers to these questions are written together and clearly marked to distinguish them from answers to other questions.

a. Assume that you are one of the co-founders of ABC Electronics (as in Q. 4). Write a 30-second elevator pitch for the company. Take some time to think before writing. Pitching is to convince the audience to invest in your company. [7]

Welcome to ABC Electronics, where innovation meets style. Founded by a group of visionary IITians, we specialize in crafting cutting-edge gadgets and electronics products. Our latest creation, the SmartWrist, is set to revolutionize the wearable tech industry. With advanced health monitoring features, seamless connectivity, and sleek design, the SmartWrist is generating excitement across diverse market segments. As our marketing team prepares for launch, we're focused on identifying the perfect audience. Whether it's tech-savvy millennials, fitness enthusiasts, or busy professionals, we're committed to delivering tailored solutions that cater to their needs. By concentrating on one demographic initially, we're poised to capture a significant share of the market. With our commitment to innovation and customer satisfaction, ABC Electronics offers a smart choice for today's discerning consumers.

b) i. As a computer science engineer with a promising app idea, you aim to build a successful business model. When is the optimal time to assemble a team of three co-founders: immediately, after refining the idea, post-development of the first prototype, or after the product is validated? Justify your choice.
ii. Additionally, discuss the ideal backgrounds for your co-founders.
iii. Suppose you don't find suitable co-founders, what alternative(s) would you try? Explain your choices. Answer in one sentence each. [7]

Ideally, cofounders are to be identified as early as possible since members joining late may find it difficult to share the same vision and may not fit well with the culture of existing team.
Different cofounders should possess complementary skills such as marketing, operations, and finance, to fill the gaps and some may have unique experience of launching a new product and growing a business.
It is better to go solo than have unsuitable cofounders. One way to fill the knowledge gap is to hire talented employees and give them shares.

c) Highlight the significant impact of design thinking on the development of new products. Please note that the question does not ask to write the STEPS in applying design thinking. [7]

Design thinking begins with empathizing that helps to understand the problem intended to be solved with the proposed product. Thus, empathizing, helps to define the critical elements of the product helping to better conceive the various parameters of the product.

d) How do entrepreneurs frequently identify opportunities? Explain with at least two examples discussed in the class. [7]

Entrepreneurs often spot opportunities through personal experiences or by recognizing serious pains and empathy. For instance, Phanindra Sama faced challenges booking a bus ticket during a festival, inspiring him to create an app for advance ticket bookings, leading to the birth of Red Bus. Similarly, while traveling, Blake Mycoskie observed a lack of footwear for poor school children in underdeveloped countries, prompting him to devise a solution: charging the affluent for shoes to provide free pairs to those in need. This initiative led to the creation of the now unicorn company TOMS Shoes.

e) How much capital should startups raise, and why should they avoid raising more funds than necessary? What happens if they are not capable of raising adequate funds? Provide examples to illustrate your points. [7]

Startups should raise precisely the amount of capital needed to reach the next defined milestone. Excess funds often lead to extravagance and wastefulness, diminishing competitiveness and hastening the depletion of resources. Conversely, underfunding can result in incomplete execution or suboptimal operations due to insufficient working capital, leading to underperformance. Byju's, for example, raised significantly more funds than necessary and paid exorbitant prices for assets, hindering their path to profitability. Similarly, Aerion's failure stemmed from their inability to secure adequate funding in a timely manner.

f) A, B, and C are the co-founders of the startup BlueGen, with a paid-up capital of ₹5 lakh, consisting of 50,000 equity shares with a par value of ₹10 each. A holds 10,000 shares, B holds 15,000 shares, and C holds 25,000 shares. The three cofounders have personal assets of ₹5 lakh, ₹10 lakh, and ₹15 lakh respectively. The company has raised a loan of ₹20 lakh from a bank. However, the company's performance deteriorated, leading to defaults on monthly loan installments, resulting in an outstanding amount of ₹22 lakh owed to the bank (bank loan amount went up to ₹22 lakh). Ultimately, the company was sold for ₹10 lakh. How much money the bank will receive if

i. BlueGen is a private limited company?
ii. BlueGen is a partnership firm?

Explain your reasoning. [5]

Answer:

i. The liabilities of a member of a limited liability company is limited to their shares in the business. Therefore, the personal assets of the co-founders will not be available to lenders. The bank will recover only ₹10 lakh realised by selling the assets of the company.

ii. In this case, the bank will have access to the personal assets of the founders and will recover the entire dues of ₹22 lakh (₹10 lakhs by selling the company assets and remaining ₹12 lakh by selling personal assets of the founders.

7. ABC Electronics has developed an innovative product and is ready to raise funds from an angel. Prepare a project report for the company writing only couple of lines

on all key items and prepare (*this should have 10 marks*) i. the projected profit and loss account, ii. The total project cost, iii. show with estimate whether the company has achieved financial closure and offer your comments on the same. Use the following data: (All amounts are in Rupees). [10+6+4 = 20]

i.	The company's first year SOM is 5,000 units of product to be sold at ₹50 apiece.
ii.	Selling and marketing expenses @10% of sales
iii.	Purchase of land: ₹1,00,000
iv.	Raw materials consumed (65% of sales)
v.	Administrative overhead expenses @5%
vi.	Direct labour cost @10% of sales
vii.	Purchase of machinery: ₹10,00,000
viii.	Opening and closing stock of finished goods: ₹12,000 and ₹13,833 respectively
ix.	Founders' contribution to equity: 5,00,000
x.	Contingencies: @5% of fixed and working capital
xi.	Startup expenses (incurred prior to commercial operation): ₹50,000
xii.	Factory overhead or manufacturing overhead @5% of sales
xiii.	Power and fuel: 2% of sales
xiv.	Packaging: 1% of sales
xv.	Bank has committed a long-term loan of ₹6,00,000
xvi.	Construction of factory shed: ₹7,00,000
xvii.	Other operating expenses: @1% of sales
xviii.	Interest payment on bank loan: ₹500
xix.	Income tax @20%
xx.	Construction of office building: ₹5,00,000
xxi.	The company wants to maintain cash of ₹2,000
xxii.	Cost of electric connection, drainage system, sanitary, etc.: ₹2,50,000
xxiii.	The angel is expected to invest ₹20,00,000
xxiv	Suppliers' Credit for long-term assets: ₹1,00,000
	The following information may be used wherever necessary:
xxiv.	Holding period for raw materials: 30 days
xxv.	Holding period for goods-in-process: 5 days
xxvi.	Holding period for finished goods: 20 days
xxvii.	Holding period for receivables: 60 days
xxviii.	Holding period for payables: 45 days

Projected profit & loss account

Gross profit = Sales – cost of the goods sold

Cost of the goods sold = Opening stock of finished goods + cost of production during the year – closing stock of finished goods.

Sales = 5,000 units X ₹50 per unit = ₹2,50,000

Cost of production:

Raw materials consumed @65% of sales	*1,62,500*

Direct labor cost @10%	*25,000*
Packaging @1%	*2,500*
Factory/ manufacturing overhead @ 5%	*12,500*
Power and fuel @ 2%	*5,000*
Total cost of production for the year	*2,07,500*

Cost of production of the goods sold *= 12,000 + 2,07,500 - 13,833 = ₹ 2,05,667*

Gross profit = 2,50,000 – 2,05,667 = ₹ 44,333

Operating expenses

Marketing and selling expenses @ 10%	*25,000*
Administrative overhead expenses @5%	*12,500*
Other operating expenses: @1%	*2,500*
Total operating expenses	*40,000*

Cost of sales = cost of production of the goods sold + operating expenses = 2,05,667 + 40,000 = ***2,45,667***

Operating profit = 44,333 – 40,000 = ₹ 4,333

Profit before tax = operating profit – interest = 4,333 – 500 = ₹ 3,833

Income tax = 20% of 3,833 = ₹ 766

Net profit = 3,833 – 766 = ₹ 3,066

Project cost

Fixed capital investment

Purchase of land	*1,00,000*
Construction of factory shed	*7,00,000*
Purchase of machinery	*10,00,000*
Construction of office building	*5,00,000*
Cost of electric connection, drainage system, sanitary, etc	*2,50,000*
Startup expenses	*50,000*
Total fixed capital investment	*26,00,000*

Working capital requirement

Items	*Holding period (days)*	*Amount (₹)*
*Raw materials requirement (162500/300*30)*	*30*	*16,250*
*Goods-in-process (2,07,500/300*5)*	*5*	*3,458*
*Finished goods (2,07,500/300*20)*	*20*	*13,833*
*Receivables (2,45,667/300*60)*	*60*	*49,133*

Sub-total		*82,674*
*Payables (1,62,500/300*45)*	*45*	*24,375*
Cash (lump sum)		*2,000*
Working capital requirement		*60,299*

Total project cost

Fixed capital investment	*26,00,000*
Working capital investment	*60,299*
Sub total	*26,60,299*
Contingencies	*1,33,014*
Total project cost	*27,93,314*

Funding arrangement

Equity capital by founders	*5,00,000*
Funding by angel investor	*20,00,000*
Bank loan commitment	*6,00,000*
Suppliers' credit for fixed assets	*1,00,000*
Total funding	*32,00,000*

The project has achieved financial closure. However, since the funding arrangement is more than the required capital the company should reduce its dependence on costly bank loan by at least ₹4,00,000.