INDIAN INSTITUTE OFTECHNOLOGY KHARAGPUR

End-Autumn Semester Examination 2022-23

Date of Examination: ________________ **Session: (FN/AN)** ______ **Duration: 3 hrs. Full Marks: 90**
Subject No.: EP61203
Subject: Financial and Legal Aspects of New Technology Ventures
Department/Center/School: Rajendra Mishra School of Engineering Entrepreneurship
Specific charts, graph paper, log book etc., required
Special Instructions (if any): Answer all the questions. Make necessary assumptions, if required.

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1. Determine the present value of Rs 700 each paid at the end of each of the next six years. Assume an 8 % discount rate. (3 Marks)
2. Jai Chand is planning for his retirement. He is 45 years old today, and would like to have Rs 3,00,000 when he attains the age of 60. He intends to deposit a constant amount of money at 12 per cent each year in the public provident fund in the State Bank of India to achieve this objective. How much money should Jai Chand invest at the end of each year, for the next 15 years, to obtain Rs 3,00,000 at the end of that period? (5 Marks)
3. Assuming a 10 % discount rate, compute the present value of Rs 1,100; Rs 900; Rs 1,500 and Rs 700 received at the end of one through four years. (3 Marks)
4. A company issues 1 million new debentures of Rs 2 million; the net proceeds being Rs 1.8 million. It has a 13.5 per cent rate of interest and 7 year maturity. The company's tax rate is 52 per cent. What is the cost of the debenture issue? What will be the cost in 4 years if the market value of debentures at that time is Rs 2.2 million? (4 Marks)
5. A company sells a new issue of 10 year, 12 per cent bonds of Rs 100, each at par. It will pay interest annually and repay bonds at par on maturity. What is the cost of bonds? If the tax rate is 30 percent, what is the after-tax cost of the bond? (3 Marks)
6. You received a proposal by a new-venture name FLABI for investment. What maximum will you be interested to invest with the following information given. You are using the first Chicago method. (7 Marks)
   a. FLABI has yearly earnings of Rs 5 crores which is expected to grow at 20% for best, 10% for average and 5% for worst case of macroeconomic conditions.
   b. Your cost of capital is 10%
   c. Your researchers have suggested to you that the probabilities of best, average and worst macroeconomic conditions are 30%, 40% and 30% respectively.
   d. In this investment round they offer to dilute only 20%.
7. D is considering investing in the equity of either of the two firms- PPL and GGL- both are operating in the same industry. The balance sheet of both the companies as at March 31, 2020 and the statement of profit and loss account for the period ended on that date are presented below:
   Balance sheet as at March 31, 2020 (amount in INR)

Particulars	PPL	GGL
ASSETS		
Property, plant, and equipment (net)	100,000	150,000
Inventory	100,000	180,000
Accounts receivables	200,000	150,000
Cash and cash equivalent	10,000	15,000
Other current assets	5,000	5,000
Total assets	415,000	500,000
LIABILITIES AND EQUITY		
Bonds payable (non-current liability)	40,000	80,000

Accounts payable (current liability)	100)00	100,000
Notes Payable (current liability)	20,00	40,000
Share capital (face value INR 1)	15,00	30,000
Reserves and surplus	240)00	250,000
Total liabilities plus equity	415)00	500,000

Statement of profit and loss for the period ended on March 31, 2C0 (Amount in INR Crore, except EPS)

Particulars	PPL	GGL
A. Revenue	60()00	1,000,000
B. Costs and expenses		
Cost of goods sold	42()00	600,000
Selling expenses	82,20	242,750
Administrative expenses	60.00	100,000
Total costs and administrative expenses (B)	562420	942,750
C. Operating profit (A - B)	37,80	57,250
D. Interest expense	4,00	8,000
E. Profit before tax expense (C - D)	33,80	49,250
F. Tax expense	11,80	16,250
G. Net profit (E - F)	22,50	33,000
EPS (INR)	1.5(	1.10

Additional information:

(i) Information for past years is not available.

(ii) Expenses include depreciation PPL: INR 10,000; GGL: 15,000; the carrying amount of the property plant and equipment has not changed during the year.

(iii) During the year PPL paid dividend of INR 5,000 and GGL paid dividend of INR 6,500.

(iv) The share price as on date is: PPL: INR 30 and GGL INR 20

Required: (Marks: 25)

(a) Calculate the following financial ratios: (i) ROA and ROE (ii) current ratio and quick ratio; (iii) solvency ratios; (iv) profitability ratios; (v) turnover ratios (vi) P/E ratio. Use year-end figures for average. Assume marginal tax rate at 30 per cent.

(b) Compare the financial position and economic performance of PPL and GGL and advise on which company's equity, D should invest.

8. The CC& Co. reported net profit for the year ended on Mrch 31, 2021, at INR 100,000. It recognised income tax expense at INR 20,000. Depreciation for the year was recognised at INR 10,000. During the year accounts receivables increased by INR 2,000, inventories reduced by INR 3,000, prepaid rent decreased by 1,000, accounts payable increased by INR 3000, and income tax payable decreased by INR 500.

Required: (Marks: 5)

Calculate cash flows from operating activities using the indirect method.

9. The following costs relate to a manufacturing organization:

Sales commissions	Sales manager sary
Production supervisor salary	Factory rent
Corporate office expenses	Materials used in manufacturing

Direct manufacturing labor	Plantmanager salary

Required: (Marks: 10)

Classify each of the costs as being a product cost on period cost following absorption costing method. Also classify the costs as variable or fixed with respect to thevolume of production. What inferences do you draw about the correspondence between the two concepts?

10. Tom and Lynda own Hercules Gym. Membersip costs $100 per month. Tom and Lynda estimate variable costs at $35 per membership per month and fixed csts at $40,950 per month. They currently have 950 members.
Required: (Marks: 7)
    a) How many members does Hercules ned to break even?
    b) Suppose Hercules' income tax rate is 5%. How many members does Hercules need to report after-tax profits of $11,375?
    c) Using Hercules' contribution margin rtio, calculate the revenue required to earn an after-tax profit of $11,375.
    d) What is Hercules' margin of safety?
11. Mountain Maples is a mail-order nursery dediated to growing, selling, and shipping beautiful Japnese Maple trees. Mountain Maples offers two distinctivetypes of Japanese Maples: Butterfly and Moon fire. The trees are sold after five growing seasons, and revenue and cost data for each tree type (for the most recent year) are as follows:

	Butterfly	Moonfire
Quantity sold	800	1,600
Selling price per tree	$200	$100
Variable cost per tree	$100	$50

Mountain Maples' fixed costs for the most recnt year were $75,000.

Required: (Marks: 8)
    a) How many Japanese Maples must Mountan Maples sell in a year to break even? At this sales volume, how many Butterfly and Moonfire trees are sold?
    b) At the current product mix, how many Butterfly trees must Mountain Maples sell in a year to earn a profit of $50,000?
    c) Assume that Mountain Maples product mix changes to 50% Butterfly and 50% Moon-fire. How does this information change your answer to part (a)?
12. Casey Corporation provides you with the following data:

	Ryan Construction	Wilson Builders	Cost per activity unit
Sales	$400,000	$400,000	
Contribution margin ratio	30%	25%	
Volume-related costs			$0.27 per sales $
Number of orders	50	20	$450 per order
Number of deliveries	150	40	$100 per delivery

Casey further informs you that their ABC sytem has identified three primary cost pools - (1) the volume of sales; (2) the number of orders, and (3) the number of deliveries--as the cost drivers when allocating indirect costs to determine customer profitability.

Required: (Marks: 5)

Calculate the profit earned from Ryan Construtiion and from Wilson Builders.

13. A partial comparative balance sheet and statement of profit and loss information of VB & Co. are placed below:

(Amount in INR)

	2020-2021	2019-2020
Inventory	90,000	100,000
Accounts receivables (net)	350,000	250,000
Short Term Investment	50,000	40,000
Cash and cash equivalents	70,000	60,000
Total current assets	560,000	450,000
Accounts payables (the only current liability)	80,000	60,000

Revenue	2,000,000	1,800,000
Cost of goods sold	1,400,000	1,300,000
Gross margin	600,000	500,000

The accounts receivables and inventory as of March 31, 2019, wereINR 300,000 and 80,000 respectively. Accounts payable, the only current liability, was 60,000.

Required: (Marks: 5)

a) Compute the DII, DSO, DPO and Cash Conversion Cycle for eacıof the years 2020-2021 and 2019-2020 and comment.