

**SUGGESTED ANSWERS TO
THE QUESTIONS SET AT
CHARTERED ACCOUNTANCY PROFESSIONAL (CAP)-I LEVEL
December 2022 EXAMINATIONS**

The Institute of Chartered Accountants of Nepal (ICAN)
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Paper 1: Fundamentals of Accounting

Marks

Attempt all questions. Working notes should form part of the answer.

1. The following are the balances at the end of the Ashadh 32, 2079 (Shrawan 01, 2078 to Ashadh 32, 2079) abstracted from the books of Mr. Bishwa:

Particulars	Amount (Rs.)
Bishwa's capital	30,000
Bishwa's drawings	5,000
Furniture and fittings	2,600
Bank overdraft	4,200
Creditors	13,300
Business premises	20,000
Stock on Shrawan 01, 2078	22,000
Debtors	18,600
Rent from tenants	1,000
Purchases	110,000
Sales	150,000
Sales returns	2,000
Discounts – debit	1,600
Discounts – credit	2,000
Taxes and insurance	2,000
General expenses	4,000
Salaries	9,000
Commission – debit	2,200
Carriage on purchases	1,800
Provision for bad and doubtful debts	600
Bad debts written off	800

The following adjustments should be made:

- Stock on hand on Ashadh 32, 2079, was estimated at Rs. 20,000.
- Rent, Rs. 300, is still due from the tenant and salaries, Rs. 750, are yet unpaid.
- Write off bad debts Rs. 600, and depreciate business premises by Rs. 300 and furniture and fittings by Rs. 266.
- Make a provision of 5% on debtors for bad and doubtful debts and a provision of 2% for discounts and carry forward Rs. 700 for unexpired insurance.
- The manager is entitled to a commission of 10% on profits remaining after charging the commission.
- Cheque of Rs. 5,000 paid to Kailash, one of the creditors, was not recorded in books.

Difference, if any, in trial balance is to be treated as expense or income accordingly.

Prepare: Trading and Profit and Loss Account for the year Shrawan 01, 2078 to Ashadh 32, 2079, and Balance Sheet as at Ashadh 32, 2079.

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Answer

1)

**Trading and Profit and Loss Account of
Bishwa for the year ended Ashad 32, 2079**

Particulars	Amount	Particulars	Amount
To Opening Stock	22,000	By Sales 1,50,000	
		Less: Sales Return (2,000)	1,48,000
To Purchase	1,10,000		
To Carriage	1,800	By Closing Stock	20,000
To Gross Profit	34,200		
Total	1,68,000	Total	1,68,000
To Salaries Paid Rs. 9,000 Add: Due Rs. 750	9,750	By Gross Profit b/d	34,200
To General Expenses	4,000	By Rent Received Rs. 1,000 Add: Due Rs. 300	1,300
To Commission	2,200	By Discount Received	2,000
To Discounts	1,600	By Other Income (Suspense)	500
To Depreciation Business Premises Rs. 300 Furniture & Fittings Rs. 266	566		
To Provision for bad & Doubtful debts Required [WN2] 900 Add: Bad Debts Rs. 1,400 Less: Existing Rs. (600)	1,700		
To Provision for Discount [WN2]	342		
To Taxes & Insurance Paid Rs. 2000 Less: Prepaid Rs. (700)	1,300		
To Commission to Manager [WN3]	1,504		
To Net Profit	15,038		
Total	38,000	Total	38,000

**Balance Sheet of
Bishwa as at Ashad 32, 2079**

Liabilities	Amount Rs.	Assets	Amount Rs.
Capital Opening Balance Rs. 30,000 Add: Net Profit Rs. 15,038 Less: Drawings Rs. (5,000)	40,038	Fixed Assets Business Premises Opening Balance Rs. 20,000 Less: Depreciation Rs. (300) Furniture & Fixture Opening Balance Rs. 2600 Less: Depreciation Rs. (266)	19,700 2,334
Bank Overdraft [4,200+5,000]	9,200	Current Assets	
Creditors [13,300-5,000]	8,300	Debtors Sundry Debtors WN2 Rs. 18,000 Less: Provision for Bad & Doubtful Debts Rs. (900) 17,100 Less: Provision for discount Rs. (342)	16,758
Salary Payable	750	Stock	20,000
Commission Payable WN3	1,504	Amount due from tenant	300
		Prepaid Insurance	700
Total Liabilities	59,792	Total Assets	59,792

Working Note 1:

As the question does not give regular trial balance, it is better to first prepare a regular trial balance to locate any difference that there may be.

**Trial Balance of
Bishwa as at Ashad 32, 2079**

Particulars	Debit Amount Rs.	Credit Amount Rs.
Bishwa's Capital	-	30,000
Bishwa's Drawings	5,000	-
Furniture and Fittings	2,600	-
Bank Overdraft	-	4,200
Creditors	-	13,300
Business Premises	20,000	-
Stock on Shrawan 01, 2078	22,000	-
Debtors	18,600	-
Rent from Tenants	-	1,000
Purchases	1,10,000	-
Sales	-	1,50,000
Sales Returns	2,000	-
Discounts- Debit	1,600	-
Discounts- Credit	-	2,000
Taxes and Insurance	2,000	-

General Expenses	4,000	-
Salaries	9,000	-
Commission- Debit	2,200	-
Carriage on Purchases	1,800	-
Provision for Bad and Doubtful Debts	-	600
Bad Debts written off	800	-
Other Income - Suspense Account (Difference in trial balance)	-	500
Total	2,01,600	2,01,600

The total of the credit side is Rs. 2,01,100, whereas it is Rs. 2,01,600 for the debit side. Hence, Rs. 500 has been credited to the Suspense Account and booked as other income.

Working Note 2: Debtors, Bad Debts and Provision for Debtors

Particulars	Amount
(i) Existing Debtors	18,600
(ii) Less: Additional Bad debts written off	(600)
(iii) Debtors after Bad Debts written off	18,000
(iv) Less: Required Provision for Bad Debts (5% of (iii))	(900)
(v) Debtors after Provision for Bad Debts	17,100
(vi) Less: Required Provision for Discount on Debtors (2% of (v))	(342)
Net Debtors for Balance sheet	16,758

Working Note 3: Commission to Manager

Particulars	Amount
Profit after deduction all expenses except the Commission to Manager (Rs. 38,000 - Rs. 21,458)	16,542
Manager's commission (Rs. 16,542*10/110)	1,504

2.

- a) Mr. E and Mr. M were partners in a firm sharing profits in the ratio of 3:1. They admitted Mr. J as a new partner for $\frac{3}{8}$ th share in the profits. The new profit sharing ratio will be 3:2:3. Mr. J brought Rs. 200,000 for his capital and Rs. 50,000 for goodwill. On 32nd Ashadh, 2079, the date of Mr. J's Admission, the Balance Sheet of Mr. E and Mr. M was as follows:

Capital & Liabilities	Amount (Rs.)	Assets	Amount (Rs.)
Partners' capital:		Furniture	50,000
E's capital	350,000	Machinery	210,000
M's capital	150,000	Cash	90,000
Creditors	60,000	Debtors	80,000
Bills payable	20,000	Stock	150,000
Total	580,000	Total	580,000

It was agreed that:

- Stock to be valued at Rs. 200,000.
- Machinery will be depreciated by 12% and furniture by Rs. 6,000.
- A provision of 5% for doubtful debts will be made on debtors.

- iv. The capital accounts of all the partners were adjusted in the new profit sharing ratio. For surplus or deficiency, the current accounts were to be opened.

Prepare the Revaluation Account, Partners' Capital Accounts and the Balance Sheet of the new firm.

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- b) M/s Hima Electronics Pvt. Ltd. consigned 250 televisions costing Rs. 55,000 per television to M/s Rupandehi Traders at Butwal on 1st Magh, 2078. M/s Hima Electronics Pvt. Ltd., made payments for transportations Rs. 108,000, insurance cost Rs. 80,100, loading cost Rs. 39,300. Five televisions were fully damaged in transit. As per the accounts sales provided by the M/s Rupandehi Traders dated Ashadh end, 2079 showed that 205 Televisions were sold at the rate of Rs. 69,500 each. M/s Rupandehi Traders incurred Rs. 41,000 for local taxes. Rs. 51,000 for unloading charges, and Rs. 105,000 for other direct cost. M/s Rupandehi Traders incurred Rs. 75,000 for rent expenses. M/s Rupandehi Traders is entitled 6% commission on sales. Insurance company admitted only Rs. 51,000. You are required to prepare consignment account and M/s Rupandehi Trader's Account in the books of M/s Hima Electronics Pvt. Ltd.

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Answer

2 a)

In the Books of E & M
Partners' Revaluation Account

Dr.		Cr.	
Particulars	Amount Rs.	Particulars	Amount Rs.
To Machinery A/C	25,200	By Stock A/C	50,000
To Furniture A/C	6,000		
To Provision for Doubtful Debts A/C	4,000		
To Profit on Revaluation Transferred to E's Capital A/C 11,100			
M's Capital A/C 3,700	14,800		
Total	50,000	Total	50,000

In the books of M/S E, M & J
Balance Sheet as at 32.03.2079 after J's Admission

Capital & Liabilities	Amount Rs.	Assets	Amount Rs.
Creditors	60,000	Cash (90000+200000+50000)	340,000
Bills Payable	20,000	Stocks	200,000
E's Current A/C	211,100	Debtors	76,000
M's Current A/C	20,367	Furniture	44,000
Partners' Capital		Machinery	184,800

E's Capital A/C	200,000		
M's Capital A/C	133,333		
J's Capital A/C	200,000		
Total	844,800	Total	844,800

Working Notes:

1. Calculation of Sacrificing RatioE's Sacrifice $3/4 - 3/8 = 3/8$ M's Sacrifice $1/4 - 2/8 = \text{Nil}$

Only E Sacrifices his share of profit

Premium of Goodwill is given to E only

2. Calculation of Partners' New Capitals

(a) Total Capital of the Firm = Capital of the New partner/Share of Profit of New Partner

$$= 200000 \times 8/3 = 1600000/3$$

(b) New Capital of Partners

E's Capital = $1600000/3 \times 3/8 = 200,000$ M's Capital = $1600000/3 \times 2/8 = 133,333$ **In the Books of E, M & J****Partners' Capital Accounts****Dr.****Cr.**

Particulars	E	M	J	Particulars	E	M	J
To, Partners' Current A/C	211,100	20,367	-	By, Balance b/d	350,000	150,000	-
To, Balance c/d	200,000	133,333	200,000	By, Revaluation A/C	11,100	3,700	-
				By Cash A/C-Capital	-	-	200,000
				By Cash A/C-Goodwill in Cash by Mr. J	50,000	-	-
Total	411,100	153,700	200,000	Total	411,100	153,700	200,000

2 b)

In the Books of M/S Hima Electronics Pvt. Ltd.
Consignment Account to M/S Rupandehi Traders
For the period from 01 Magh, 2078 to 32 Ashadh, 2079

Particulars	Amount Rs.	Amount Rs.	Particulars	Amount Rs.	Amount Rs.
To, Goods sent on Consignment A/C		13,750,000	By, M/S Rupandehi Traders		14,247,500
			By, Insurance Co.		51,000
To, Bank/Cash A/C			By, General Profit & Loss A/C		228,548
Transportation	108,000		(Abnormal Loss)		
Transit Insurance	80,100				
Loading Charges	<u>39,300</u>	227,400	By, Consignment Stock		2,268,547
To, M/S Rupandehi Traders					
Unloading Charges	51,000				
Local Taxes	41,000				
Rent Expenses	75,000				
Other Direct Expenses	105,000				
Commission on sales	<u>854,850</u>	1,126,850			
To, General Profit and Loss A/C		1,691,345			
		16,795,595			16,795,595

Working Notes:

1. Abnormal Loss:

Cost of 5 Television 275,000
 (5 Unit @ Rs. 55,000)

Add: Proportionate
 expenses incurred by the
 M/S Hima Electronics Pvt.
 Ltd.

(5 Units X 227,400/250) 4,548

	279,548
Less: Insurance Claim	<u>51,000</u>
Total abnormal loss	228,548

2. Valuation of Stock

40 Unit @ Rs 55,000	2,200,000
Add: Proportionate expenses incurred by the M/S Hima Electronics Pvt. Ltd.	

(40 Units X 227,400/250)	36,384
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Add: Proportionate expenses incurred by the M/S Rupandehi Traders	<u>32,163</u>
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(40 Units X 197,000/245)	2,268,547
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Proportionate Expenses incurred by M/S Rupandehi Traders for the purpose of valuation of closing stock

Unloading	51,000
Local Taxes	41,000
Other Direct cost	<u>105,000</u>
Total	<u>197,000</u>

Rupandehi Traders A/C

To Consignment (sales)	14,247,500	By Consignment	
		- Unloading charges	51,000
		- Local taxes	41,000
		- Rent expenses	75,000
		- Other direct expenses	105,000
		By Consignment	854,850
		By Balance c/d	13,120,650
	14,247,500		14,247,500

3.

- a) Prepare Receipts and Payments Account and Income and Expenditure Account of Malpi Youth Club for the year ended 31st Chaitra, 2078 from the following:

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Particulars	Amount(Rs.)
Subscription collected (including Rs. 4,000 for 2077)	30,000
Donation received (not to be capitalized)	2,000
Subscription (outstanding at the end of the year)	6,000
Rent paid	1,800
Purchase of furniture (life 10 years) on 1.1.2078	1,000
Purchase of sports equipment	2,500
Purchase of magazines and newspapers	1,200
Sale of old furniture on 1.1.2078 (book value Rs. 300)	500
Cash and bank balance as on 1.1.2078	6,800
Investments purchased	4,000
Interest on investment received	1,000
Bank charges	20
Postage, telegrams and telephones	1,800
Printing & stationery (one bill of Rs. 300 for last year)	1,000
Printers bill not yet paid	500
Entrance fees (50% to be capitalized)	1,400
Legacies received (to be capitalized)	2,000
Secretary's allowances (including Rs. 200 for last year)	1,800
Outstanding allowances (Secretary)	300

- b) What is Deferred Revenue Expenditure? How is it treated in financial statement?

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Answer

3 a)

**Receipt and Payments Account
for the year ended 31st Chaitra 2078**

Dr.		Cr.	
Particulars	Amount	Particulars	Amount
To cash and bank balance b/d	6,800	By Rent	1,800
To subscription	30,000	By Furniture	1,000
To Donations	2,000	By Sports equipment	2,500
To Sale of old furniture	500	By Magazines and newspaper	1,200
To Interest on Investments	1,000	By Investments	4,000
To Entrance Fees		By Bank Charges	

To Legacies	1,400		20
	2,000	By Postage, Telegram and Telephone	1,800
		By Printing and Stationary	1,000
		By Secretary's allowances	1,800
		By Cash and Bank balance c/d	28,580
	43,700		43,700

**Income and Expenditure Account
for the year ended 31st Chaitra 2078**

Dr.			Cr.		
Particulars		Amount	Particulars		Amount
To Rent		1,800	By Subscription	30,000	
To Magazine and Newspaper		1,200	Less: Outstanding at the beginning of the year	<u>(4,000)</u>	
				26,000	
To Bank Charges		20	Add: Outstanding at the end of the year	<u>6,000</u>	32,000
To Postage, telegrams and telephones		1,800	By Donations		2,000
To Depreciation on Furniture (Rs. 1000 x 1/10)		100	By Profit on sale of Furniture (Rs. 500-Rs. 300)		200
To Printing & Stationary	1,000		By Interest on Investments		1,000
Less: Outstanding at the beginning of the year	<u>(300)</u>		By Entrance Fees		700
	700				
Add: Outstanding at the end of the year	<u>500</u>	1,200			
	=				
To Secretary's Allowances	1,800				
Less: Outstanding at the beginning of the year	<u>(200)</u>				
	1,600				
Add: Outstanding at the end of the year	<u>300</u>	1,900			
To Surplus transferred to Capital Fund		27,880			
		35,900			35,900

- 3 b) It is the expenditure which is for the time being, deferred from being charged against profits. It refers to expenditure for which payment has already been made but the amount paid is carried forward on the presumption that it will be of benefit over a subsequent period(s). Deferred revenue expenditure do not create any asset but its benefit is expected to defer to more than 1 accounting period.

Deferred revenue expenditure, despite being in the nature of revenue expenditure, is carried initially in the Balance Sheet under Assets side. Then every year, certain portion is written off to the Profit & Loss A/c as expenses thereby reducing the asset. Deferred revenue expenditure is treated as a fictitious asset in the Balance sheet.

Few examples of it is as under:

- i. Preliminary expenses (Legal, registration) at the time of Starting of company,
- ii. Heavy advertisement to launch a new product,
- iii. Research and Development costs,
- iv. High cost training provided to staffs.

Paper 2: Part A: Mercantile Laws

Marks

Attempt all questions.

1. Answer the following questions:

- a) At what condition registration of partnership firm registered under Partnership Act, 2020 may be cancelled? Describe. 5
- b) Discuss the difference between the Partnership firm and limited company. 5

Answer

1 a) As per the section 11B (1) of the partnership Act 2020 the concerned Department may cancel registration of the partnership firm registered under the Act, in any of the following conditions.

- In case a firm registered for undertaking commercial operations does not renew its certificate within the prescribed time limit.
- In case the partners of the firm request the appropriate Department for permission to dissolve the firm along with appropriate reasons for doing so.
- In case the concerned firm does not submit the particulars demanded by the appropriate Department under Section 11A within the prescribed time limit.
- In case a firm relating to industry closes down the industry after commencing operations with or without furnishing information to the appropriate Department.
- In case a firm relating to industry does not renew its certificate within the prescribed time limit after the expiry of time limit for renewal, or renews its certificate but does not submit to the appropriate Department progress report in writing concerning the construction of the factory, purchase of machinery, tools or equipment required for the establishment and operation of the industry or concerning necessary actions undertaken to operate the industry according to the conditions stipulated in the certificate.
- In case the firm does anything in contravention of the Act, or the Rules framed there under.

Before canceling the registration of a partnership firm under the above mentioned circumstances, the appropriate Department must provide reasonable opportunity to the concerned firm to submit its explanations.

1 b)

Basis	Partnership	Limited company
Governing act	Partnership Act, 1964 (2020)	Companies Act, 2063
Legal status	It does not have a legal personality distinct from personality of its partners.	It is separate entity distinct from its promoters.
Agency	Mutual agency is the basis of partnership i.e. every partner is an agent if the other partners as well as the firm.	There is no mutual agency between the shareholders of the company.

Extent of liability	The liability of partners is unlimited. If there is a loss or the firm is unable to pay liability incurred in normal course of business, then it shall be recovered from the personal property of the partners.	The liability of shareholder is limited to the amount, if any, unpaid on his shares.
Transfer of share	No partner is entitled to sale or transfers his share of the partnership to others freely, for which approval from all the other partners is required.	The share may be transferred by a shareholder subject to the provisions of the Memorandum and Articles of association.
Number of members	The minimum numbers of partners in a partnership is two. However, the maximum number has not been prescribed in the Act.	The minimum number of shareholder in a private limited company is one and minimum number of shareholders in public limited company is seven. Maximum number of shareholder in private limited company is hundred and no limit of maximum shareholder in a public limited company.
Duration of existence	A firm shall be dissolved immediately, upon the death of a partner or upon the adjudication of a partner as an insolvent for being unable to pay back the debt of the creditor.	A company has perpetual existence unless it is liquidated or dissolved.
Minimum capital	Not prescribed.	The minimum paid-up capital for a public company shall be ten million rupees whereas no limit has been prescribed for private limited company.

2. Answer the following questions:

- a) What is the voidable contract? What are the grounds that a contract becomes voidable? Describe. 5
- b) What is caveat emptor? Discuss the exception to the doctrine of caveat emptor. 5
- c) What do you mean by contract of guarantee? Explain the essential elements of contract of guarantee. 5

Answer

- 2 a) An agreement which is enforceable by law at the option of one or more of the parties thereon but not at the option of the other or others is a voidable contract. As per section 518 (1) of National civil code 2074, voidable contract is one which can be declared void when the innocent party to the contract seeks intervention of the court. Section 518 (1) mentions following grounds in which the aggrieved party can seek legal remedy to declare the contract as void:

- Contract concluded through coercion
A person shall be deemed to have indulged in coercion if he/she, with the objective of compelling any person to accept any contract against his/her will, withholds or threatens to withhold property belonging to him /her or threatens to defame him/her or life or body, or takes or threatens to take any other action in contravention of prevailing law.
- Contract concluded by undue influence
Undue influence means influence exercised by a person upon another person who is under his/her influence and is amenable to his /her personal benefit or interest.
- Contract concluded by fraud
A party to be a contract or his/her agent shall be deemed to have committed fraud if he/she leads the other party or his/her agent to believe or takes any action to believe the particular matter is true, although he/she knows that it is false, or suppresses any information in his/her possession, or indulges in any other fraudulent act punishable under prevailing law, with the intention of deceiving the opposite party or his/her agent.
- Contract concluded through misrepresentation or deceit.
Any of the following act shall be taken as deceit:
 - i. Submission of false particulars on any matter without reasonable basis for doing so,
 - ii. Misleading any party so as to aggrieve him/her
 - iii. Causing any wrong deliberately on the matter of contract.
 - iv. Contract is made for the different topic than that is brought in to confidence.

2 b)

Caveat Emptor is a Latin term meaning “*let the buyer beware*”. It casts responsibility of checking and confirming the condition, fitness and suitability of goods upon the buyer, except in some particular cases. Once a buyer is satisfied with the product suitability, then he has no subsequent right to reject such product. A buyer should inspect the goods using his skill and knowledge and make sure that the goods are fit and proper. If any defect is found, the buyer should mention the defect to the seller and reject the goods and not enter into the contract of sale. However, if the buyer has already inspected goods but did not reject them even when they were defective, he cannot subsequently return the goods. The seller is in no way responsible for the bad selection of the buyer.

Except otherwise provided in the contract, the seller shall not be deemed to have given a warranty to the effect that the goods sold or to be sold has been of a specific quality.

Exception of the doctrine of caveat emptor:

Where the doctrine of Caveat Emptor applies the buyer cannot claim damage nor reject the goods. So the doctrine of caveat emptor does not apply in every sale transaction. It means the buyer does not lose his right against the seller in every sale transaction. They are as follows:

1. In case of misrepresentation by the seller: If the seller, while selling the goods, commits any misrepresentation, the doctrine of caveat emptor does not apply. The buyer does not lose his right.
2. In case of latent defects: If the goods contain latent defects, the doctrine of caveat emptor does not apply because the buyer is not bound to trace out the latent defects.

3. In case the goods do not correspond to the sample: If the seller sells the goods on the basis of the sample, but the sold goods does not match with the sample, the doctrine of caveat emptor does not apply.
4. In case the goods do not correspond the description: If the seller sells the goods on the basis of the description but the sold goods do not match with the description, the doctrine of caveat emptor does not apply.
5. In case the goods do not have merchantable quality: If the sold goods do not have merchantable quality, the doctrine of caveat emptor does not apply.
6. In case of goods does not fit a particular purpose: If the buyer buys the goods for a particular purpose, but the goods does not match with that purpose of the buyer.

- 2 c) A contract of guarantee is a contract to perform the promise, or discharge the liability of a third person in case of his default.

A contract relating to guarantee shall be deemed to have been concluded in case it provides that if any person (debtor) defaults in the repayment of the loan obtained by him/her or defaults in fulfillment of the obligation accepted by him/her, it shall be repaid or fulfilled by a third person (surety) .

In case a third party has provided guarantee and in case the person who has to repay the loan does not repay it or fulfill the obligation to be fulfilled, the person providing guarantee for such loan or obligation shall repay the loan or fulfill the condition according to the contract.

Essential elements of a contract of guarantee are:

- i) Tripartite agreement
There are three contracts in contract of guarantee.
 - a. Contract between debtor and creditor
 - b. Contract between creditor and surety
 - c. Contract between debtor and surety
- ii) Consent of three parties: There must be consent of all the three parties.
- iii) Must be in writing: Contract relating to guarantee must have been made in writing.
- iv) Existence of liability: There must be an existing debt or liability whose performance is guaranteed.
- v) Essentials of valid contract: contract of guarantee must fulfill all the essentials of a valid contract like: free consent, lawful consideration, lawful object, legal relationship, meeting of minds etc.
- vi) Guarantee not to be obtained by misrepresentation: Contract of guarantee should not be obtained by misrepresentation. If it is obtained by misrepresentation, it is invalid.
- vii) Guarantee not to be obtained by concealment of material fact: Contract of guarantee should not be obtained by concealment of material fact. If it is obtained by concealment of material fact, it is invalid.

Paper 2: Part B: Fundamentals of Economics

Marks

Attempt all questions.

1. Long Answer Questions:

- a) "Economics is the science of scarcity and choice." Justify. 5
- b) Define production function. Explain the concept of short run production function with the help of law of diminishing return. (1+4=5)

Answer

- 1 a) Lionel Robbins, the professor of London school of economics has given scarcity definition of economics. It is the modern definition of economics which is universally accepted. In the definition, he has given emphasis on allocation of resources. In his words "Economics is a science that studies human behavior as a relationship between limited resources and unlimited wants which have alternative uses." As a result, all human wants cannot be fulfilled. There is need of allocation of resources.

According to Robbins's, human wants are unlimited. These unlimited wants are not possible to satisfy at a time. If one want is satisfied, another arises in our mind immediately. Thus, there is a chain of wants, one want chasing another. There are no ends of human needs. If one want is fulfilled another arise immediately. Human wants are unlimited but the means to satisfy them are limited. Wants are more than means. Resources are limited whose supply is less than demand. Limited resources are like money, wealth, etc. Human wants are unlimited but the means to satisfy these wants are scarce. The scarce means have alternative uses. For example, money can be used to buy food, a book or to go to the cinema hall etc.

All wants are not equally urgent. They differ in urgency. Some wants are more urgent than the other ones. So, more urgent wants need more satisfaction and others can wait. Current wants are more important than future wants. For example, food is more important than mobile phone.

Although human wants are unlimited, all the wants are not equally important or urgent. More important wants have to be choiced immediately and less important can be postponed. So, human beings make a choice of wants to derive maximum satisfaction. So, according to Robbins's, choice making is really an economic problem.

Thus, economics is fully concentrated with solving the problems created by scarcity. It is the universal problem and exist in both developed and developing countries. Overall subject matters of economics are related with solving the problem of scarcity. It deals with what to produce, how to produce, how much to produce, for whom to produce, how to achieve full employment and how to achieve high economic growth. all those problems are the related to scarcity.

From above writing one can say economics is the science of scarcity and choice.

- 1 b) Production function is related to the technological aspect of production process. It can be defined as a technical/mathematical/ physical/functional relationship between inputs and output. It is related to the study of how inputs are transformed into output at a given time period. There are two types of production function: short run and long run production function.

Short run production function explains the relationship between inputs and outputs when some inputs are fixed and some are variable. During the period output can be

changed only by changing variable inputs such as labour. It is explained by the law of variable proportion. Law of Variable Proportion states that as we combine more and more of the variable factor along with the fixed factor.

Assumptions of the Law:

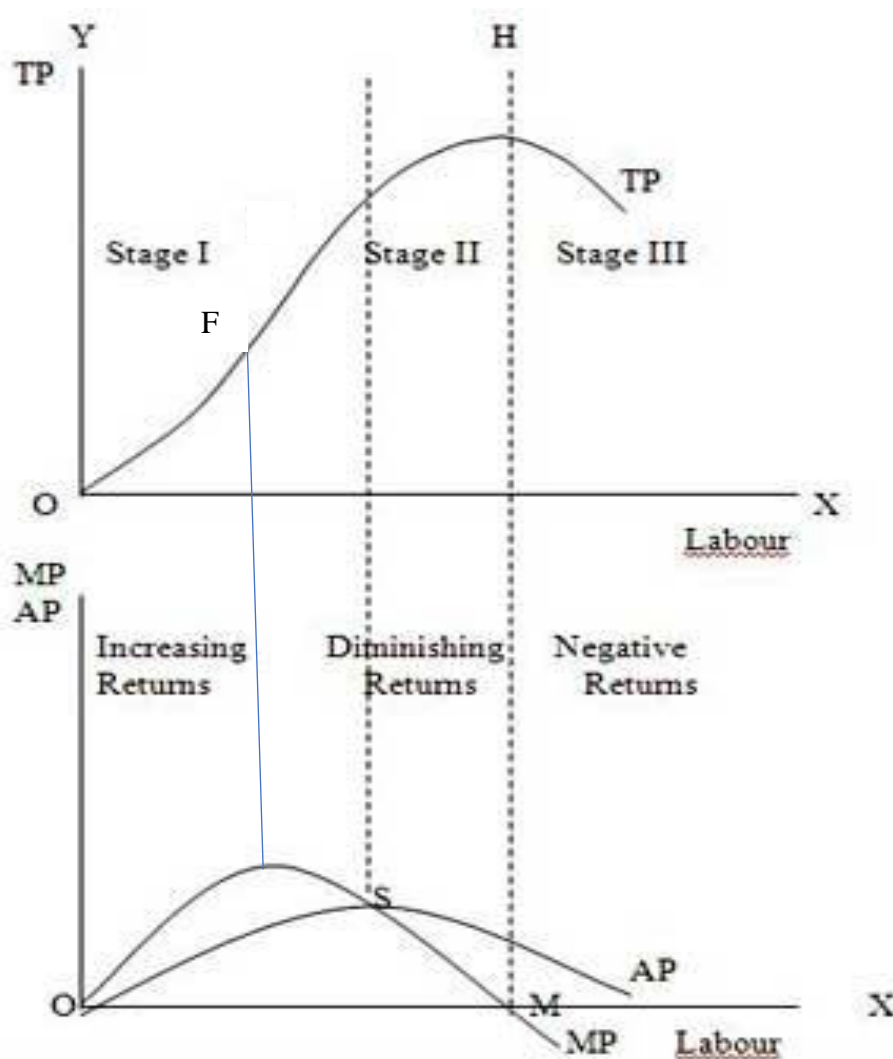
- (i) State of technology is constant.
- (ii) All units of the variable factor are homogenous.
- (iii) There must always be some fixed input.
- (iv) Possibility of combining fixed and variable inputs in different proportion etc.

It is shown in the given schedule:

Units of labour	TP	AP	MP	Stages
0	0	0	-	Increasing returns
1	10	10	10	
2	24	12	14	
3	39	13	15	
4	52	13	13	
5	60	12	8	Decreasing returns
6	60	10	0	
7	56	8	-4	Negative returns

Three Stages of Production:

- (i) Stage of Increasing Returns
- (ii) Stage of Diminishing Returns
- (iii) Stage of Negative Returns



i. Stage of Increasing Returns: -

In this stage, total product increases at an increasing rate until MP increases. This is because the efficiency of the fixed factors increases as additional units of the variable factors are added to it. In the figure, from the origin to the point F, slope of the total product curve TP is increasing i.e. the curve TP is concave upwards up to the point F, which means that the marginal product MP of labor rises. The point F where the total product stops increasing at an increasing rate and starts increasing at a diminishing rate is called the point of inflection. Corresponding vertically to this point of inflection marginal product of labor is maximum, after which it diminishes. This stage is called the stage of increasing returns because the average product of the variable factor increases throughout this stage. This stage ends at the point where the average product curve reaches its highest point.

ii. Stage of Decreasing Returns: -

In this stage, total product continues to increase but at a diminishing rate until it reaches its maximum point H where the second stage ends. In this stage both the marginal product and average product of labor are diminishing but are positive. This is because the fixed factor has its optimal use at this stage and becomes inadequate relative to the quantity of the variable factor. At the end of the second stage, i.e., at point M marginal product of labor is zero which corresponds to the maximum point H of the total product curve TP. This stage is important because the firm will seek to produce in this range.

- iii. In the stage, total product declines and therefore the TP curve slopes downward. As a result, marginal product of labor is negative and the MP curve falls below the X-axis. In this stage the variable factor (labor) is the over utilization of the fixed factor. AP also decreases but never becomes zero.

Thus, if we increase only the unit of one variable input by keeping all other inputs fixed finally total, average and marginal productivity of input will be diminished.

2. Short Answer Questions (Any Five):

- a) What do you mean by cross elasticity of demand? Explain its types. 3
- b) Define average revenue (AR) and marginal revenue (MR). Explain the relationship between linear AR and MR curves in different market. (1+2=3)
- c) Define free trade. Explain any four disadvantages of free trade. (1+2=3)
- d) Explain any four basic problems faced by medium and large scale industries in Nepal. 3
- e) Write any six determinants of supply of tomatoes in Nepal and explain any two of them. 3
- f) Explain any six importance of service sector in economic development of Nepal? 3

Answer

- 2 a) Cross elasticity is defined as the proportionate change in quantity demand of one good (say X) due to proportionate change in price of another good (say Y). It is related to two goods which have some relation between them.

If X and Y are two goods, then

$$ec = \frac{\text{Proportionate change in quantity of X}}{\text{Proportionate change in price of Y}} \left(= \frac{\% \Delta QX}{\% \Delta PY} \right)$$

Symbolically,

$$ec = \frac{\left(\frac{\Delta QX}{QX} \right)}{\left(\frac{\Delta PY}{PY} \right)} = \frac{\Delta QX}{\Delta PY} \times \frac{PY}{QX}$$

Where,

ec = Cross elasticity

ΔQX = Change in quantity of X

ΔPY = Change in price of Y

PY = Original price of Y

QX = Original quantity of X

Types of Cross Elasticity of Demand

- i. Positive Cross Elasticity ($ec > 0$)

If change in price of Y and quantity of X move in same direction, ec is said to be positive, i.e.

$PY \uparrow \quad QX \downarrow$

$PY \downarrow \quad QX \uparrow$

If two goods X and Y are substitutes, ec is said to be positive. Coke and Pepsi can be taken as substitutes.

ii. Negative Cross Elasticity ($ec < 0$)

If change in price of Y and quantity demand of X move in the opposite direction, ec is said to be negative; i.e.

$$PY \uparrow \quad QX \uparrow$$

$$PY \downarrow \quad QX \downarrow$$

If two goods X and Y are complements, ec is said to be negative. Mobile set and sim card can be taken as complementary goods.

iii. Zero Cross Elasticity ($ec=0$)

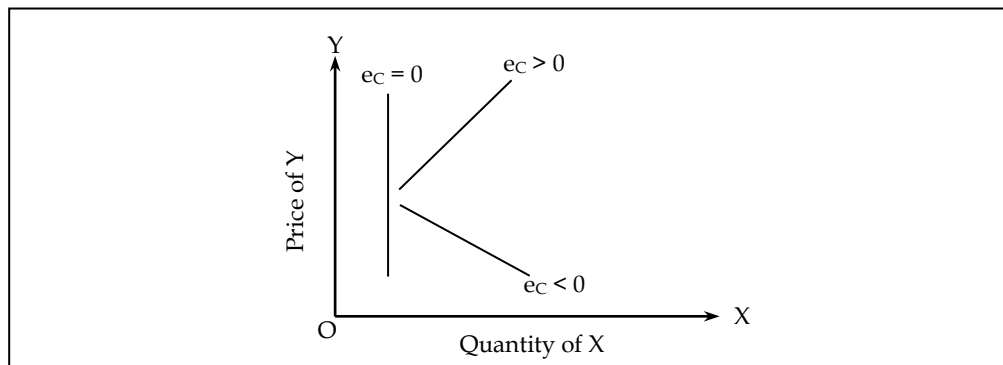
If change in price of Y leads to no change in quantity of X, ec is said to be zero, i.e.,

$$PY \uparrow \quad \Delta QX = 0$$

$$PY \downarrow \quad \Delta QX = 0$$

If two goods X and Y are independent, ec will be zero. Book and seed for a farmer or a student can be independent (or unrelated goods).

The various degrees of cross elasticity can be shown by the following combined figure:



2 b) Revenue refers to the sales receipts that a firm receives after selling the output at a given price

Average Revenue (AR)

Average revenue is the revenue per unit output sold. It is calculated by dividing the total revenue (TR) by the total output sold (Q). In other words, it is the per unit price (P).

$$\text{So, } AR = \frac{TR}{Q} \text{ or } AR = \frac{P \times Q}{Q} = P = \text{Per unit price}$$

Marginal Revenue (MR)

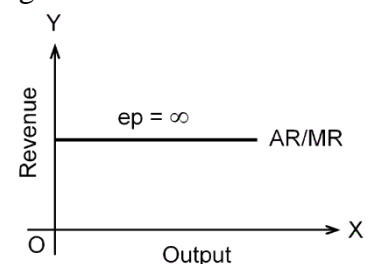
Marginal revenue is the ratio of change in the total revenue (TR) with change in the total sales quantity (Q). In other words, it is defined as the addition made to the total revenue by selling one more unit of the output. It reflects the rate of change in total revenue with respect to change in output. Thus,

$$\text{So, } MR = \frac{\Delta MR}{\Delta Q} \text{ or, } MR = TR_n - TR_{n-1}$$

Relation between AR and MR

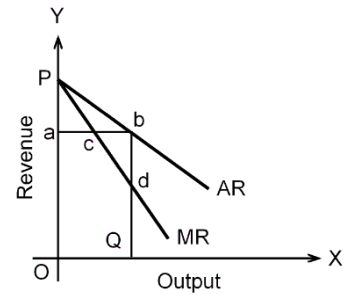
The relation between linear AR and MR is explained below.

- Under perfect competition, price remains constant as output increases. Hence, when AR curve slopes horizontally or



parallel to X-axis, the MR curve coincides with the AR curve.

2. Under imperfect competition, both AR and MR slopes downward. When AR curve slopes downwards linearly to the right, the MR curve will cut any line perpendicular drawn to the Y-axis halfway from the average revenue curve. It is due to the fall in price at same at any level of output. In the figure, ba is the perpendicular drawn from AR to the Y-axis. Point c is the center (middle point) of ba and MR cuts ba at c. Thus, $ac = cb$.



- 2 c) Free trade refers to a condition of international trade when all kinds of artificial controls on international trade, such as tariffs, quotas, etc. are absent. Free trade policy is also known as the laissez- faire policy, i.e., the policy of government non-interference in foreign trade. Under such a policy, all barriers to the international movement of goods are removed and the trade between the countries is allowed to take its natural course.

The following are the disadvantages of free trade:

i. Unrealistic Policy

Free trade policy is based on the assumption of laissez-faire or government non-intervention. Its success also requires the pre-condition of perfect competition. But, such conditions are unrealistic and do not exist in the actual world.

ii. Non-Cooperation of Countries

Free trade policy works smoothly if all the countries cooperate with each other and follow this policy. If some countries decide to gain more by imposing import restrictions, the system of free trade cannot work.

iii. Economic Dependence

Free trade increases the economic dependence on other countries for certain essential products such as food, raw materials, etc. Such dependence proves harmful particularly during war time.

iv. Political Slavery

Free trade leads to economic dependence and economic dependence leads to political slavery. For political freedom, economic independence is necessary. This requires abandonment of free trade.

- 2 d) The medium and large scale industries of Nepal are facing infinite problems. If these problems are solved then the industrial sector of Nepal can grow faster. Some of the major problems of these industries can be described as follows.

i. Lack of Capital

For the establishment of medium and large scale industries, huge amount of capital is required. But such a huge amount of capital is not sufficient in the country. Therefore, the development of medium and large scale industries is lagging behind.

ii. Limited Market

The production of medium and large scale industries is huge. But the market of these goods is very limited in Nepal and almost negligible in foreign countries.

Hence, small size of market is also one of the major problems of industrial development in Nepal.

iii. Lack of Transportation and Communication

Transportation and communication are pre-requisites for industrial development. But in the case of Nepal these sectors are not sufficiently developed. Hence, it is impossible to develop the medium and large scale industries in Nepal.

iv. Lack of Raw Materials

Due to the traditional farming system and frequent natural calamities, the agro-based and forest-based industries are not getting the required amount of raw material. As a result, it should be imported from abroad. Hence, lack of raw material is also the major problem of industrial development.

2 e) The determinants of supply of tomatoes are as follows:

1. Price of the tomato
2. Price of factors
3. Government policy
4. Numbers of seller
5. Technological improvement
6. Weather condition

Price of tomatoes

Price of the tomatoes in the market positively affects the quantity supplied of the tomatoes. When price increases, farmers get more profit. This encourages the farmers to plant more tomatoes which increases the quantity supplied of the tomatoes.

Technological improvement in tomato plantation

Technological improvement increases the productivity of the tomato and thereby reduces the cost of production. This increases the profit of the producers and encourages the farmers to expand the area of tomato plantation. Thus the technological improvement positively affects the supply of the tomatoes.

2 f) The service sector, also known as the tertiary sector, involves a variety of services produced within the economy. Some of which are trade, transportation, accommodation and food service, communication, financial, public service, health, and recreation activities. During past decades, the service sector has undergone a great evolution and holds the highest share in the country's GDP. The importance of service sector in economic development of Nepal are (**consider any six**):

- 1. Promotes industrialization:** The service sector provides various facilities such as transportation, banking, electricity, repair, or communication in support of the distribution of the manufactured goods which directly affects the development of an industry in a country. For example-transport systems help to carry laborer, raw material and finished goods to their destination, communication networks are required to make a market for the product.
- 2. Growth of Agriculture:** By providing network facilities, service sectors help in the development of agricultural products such as helping in the transport of raw material and finished goods from one place to another.
- 3. Increase in the productivity of the goods:** The service sector helps in providing appropriate technical knowledge to the workers as well as provide them with proper medical facilities. Moreover, the service sector also facilitates an organized network of communication and transport systems which helps in increasing mobility and information among the workers. This results in an increase in the productivity.
- 4. Growth of Market:** This sector provides various services catering to the needs of both primary and secondary sectors and thus helps in providing a market for the finished

goods as well as raw materials or semi-finished goods for both i.e. agriculture and industries.

- 5. Removes regional disparities:** The service sector has made it possible to connect every small town and village through a well-organized system of communication and transport. Moreover, the expansion of education, medical as well as banking services in various backward areas of the country has helped in removing the regional imbalances and disparities throughout the nation.
- 6. Creates Employment Opportunities:** Service sector creates employment opportunities for the people of the country. Before 1983, Agriculture and construction sectors were major job creators in the country. But after 1991, several sub-sectors like trade, hotels, restaurants, and transport, etc. created a lot of employment opportunities. Now within the service sector, employment opportunity is highest in finance, insurance, and business services, followed by trade, hotels and restaurants, and transport, etc.
- 7. Contribution Toward Human Development:** Service sector encourages some valuable services like health services, educational facilities, IT-enabled services, skill development, health tourism, sports, cultural services, etc. which is a valuable contribution toward human development and improvement of quality of life of the people which directly helps in the growth of economy.

Paper 3: Part A: Fundamentals of Management

Marks

Attempt all questions.

3. Long Answer Questions:

(2×5=10)

- a) Explain business environment. Describe the internal environmental forces.

Solution:

Business environment consist of all those factors which influence the development, performance and outcome of a business. Business environment is the result of number of interacting and constantly changing social, political, legal and economic forces. These forces keep on changing, and thus, present the firm with opportunities and threats for its operation.

According to Keith Davis, “Business environment means the aggregate of all conditions, events and influences that surround and affect a business”.

Business environment is dynamic. It keeps on changing whether in terms of technological improvement, shifts in consumer preferences or entry of new competition in the market. It is the sum total of all things to business firms and, as such, is aggregative in nature. It includes both specific and general forces. Specific forces affect enterprises in their day-to-day working. General forces have impact on all enterprises and affect an individual firm only indirectly. Business environment is largely uncertain as it is very difficult to predict future happenings, especially when environment changes are taking place too frequently as in the case of information technology or fashion industries.

The internal environment is the environment that has a direct impact on the business. There are some internal factors which are generally controllable because the company has control over these factors. It can alter or modify such factors as its personnel, physical facilities, organization and functional means, like marketing, to suit the environment. Strength and weakness are the outcome of internal environment. Strength is inherent capacity that can be used to gain strategic advantaged over its competitors. Weakness is an inherent limitation that creates strategic disadvantage for organization in relation to competitors.

- a. **Organizational Resources:** Organizational resources include physical, financial, informational, human and technological. Resources availability sets a limit on the activities of business organization. Human resources are the most strategic resources that mobilize all other resources available in the organization.
- b. **Goals, Policies, Strategies:** Goals are the end results or desired outcomes. It may be multiple. The primary goal of business org is to earn profit. All the activities of organization are guided by its goal. Policies are the guidelines for future course of action. It guides decision making process. Business org operate within the policy guideline framework. Strategies provide long term direction or roadmap for future activities. They are broad action plan. It follows from the goals and policies.
- c. **Management structure and nature:** The structure of the organization also influences the business decisions. Structure is the design of jobs and relationship. It defines authority-responsibility relationships, span of control, chain of command

etc. The structure and style of the organization may delay a decision making or some other may help in making quick decisions. The organizational structure like the composition of board of directors influences the decisions of business as they are internal factors.

- d. **Organizational Culture:** It refers the shared norms, values, beliefs, expectations and practice that are shared in common. This guides behavior of individual, group and all human resource in the organization. The value system of the founders and organization itself has important role on the choice of business, the mission and the objectives of the organization, business policies and practices.

- b) Define system perspective of management and describe its four important features.

Solution:

The term system refers an integrated set of elements functioning as a whole. Based on definition stated above, the system perspective of management assumes that managers can better understand the importance of business environment and the level of interdependence among sub systems within the organization, if viewing it as system.

The organization system involves five basic elements. They are environment, inputs, processing, outputs and feedback. These five elements are inter-related and interdependent each other and they act together from the achievement of organizational goals. Such as organization, system collects required resources as inputs to produce outputs form external to internal environment. Convert the inputs into outputs (goods and services and other) by using transformation process. After completing the process, organization sends back the outputs in external environment for consumption. At last an organization collect response about products and services from external environment. The responses may be positive or negative. An organization improves its inputs and process according to the feedback they received.

Features of system perspective of management

1) Organization is an open system: Organizations interact with it external environment for its successful operation. Organizations who makes the mistake of ignoring their environment and behaving as though their environment is not important may fail.

2) Synergy: Organization system creates synergy between organizational units and department. It means organizational units (subsystems) may often be more

successful working together than working alone. Which is essential to optimum utilization of resources for the achievement of better results.

3) Subsystem: A broader organization system have several departments and units. Such as production, marketing etc. They have own system and work as subsystem of broader system. If all subsystems perform their responsibility perfectly, the whole system will be perfect.

4) Entropy: A broader organization system may failure, if there entropy appear there. It means entropy leads to system decline. It is the measure of the disorder of a system. It appears in the system, when an organization does not monitor feedback from its environment and make appropriate adjustment, system may fail.

4. Short Answer Questions (Any Five):

(5×3=15)

- a) Discuss about ‘managerial skill and roles’
- b) Discuss about democratic leadership style.
- c) Define the social-cultural environment of organizations.
- d) Define the term stakeholder and mention any three important stakeholders of ICAN.
- e) Goal succession
- f) Middle level management.

2a. Answer:

Managers' skills are the ability of managers to perform a given task effectively and efficiently. The success of the managers depends upon their managerial skills rather than personality traits. Successful managers are those who have enough managerial skills in their area. In this context, Robert L. Katz identified three kinds of skills for managers. They are technical skill, human skill and conceptual skill.

A role is an organized set of behaviors. Managers fulfill a variety of roles. Henry Mintzberg, a prominent management researcher, says that what managers do can best be described by looking at the roles they play at work. There are three types of roles which a manager usually applies in any organization. They are interpersonal, informational and decisional.

2b. Answer:

Democratic leadership style is widely known as the participative or employee oriented leadership. It is a compromise between autocratic and laissez faire leadership. Democratic method is followed while finding problems and their solutions. The leader consults the subordinates, collects opinions, suggestions and by mutual discussion, the decision is drawn. All the members of the group are supposed to be important contributors to the final decision. Upward and downward

both types of communication come into existence. Democratic leadership style is based on decentralization of authority and power to subordinates in decision making. Here are some advantages of democratic leadership style.

- a. Sound decision: In this style of leadership, as the lower levels are also participated in the decision making process. The ideas, opinions, knowledge and experiences of different people are accumulated for decision making. So, better decision is possible.
- b. Widely accepted system: It is democratic era. Any kind of action done in democratic way is very widely accepted. It provides satisfaction to the people.
- c. Wider communication: Upward, downward, horizontal, all kinds of communication is held in this leadership. All the people are well informed about organization's policy, programme and decision.
- d. Staff satisfaction: As it considers the opinion of lower level people, their knowledge, skill and experiences are utilized for the betterment of organization. People satisfy much in this leadership.

2c. Answer:

The socio-cultural dimension is one of the component of organizations' general environment. It refers to trends, developments and changes in attitudes, behavior, and values in society. It is closely related to population, lifestyle, culture, tastes, customs, and traditions. These factors are created by the community and often are passed down from one generation to another. They may be changes according change in customers' time, income, education, employment etc.

Thus, organizations need to consider those socio-cultural factors when formulating organizational goals, & strategies and their implementation. Without considering those factors, organizations could not satisfy the customer needs and achieve its objectives.

2d. Answer:

The term stakeholder refers any individual, group, or party that has an interest in an organization and the outcomes of its actions. They can be internal or external to an organization. Internal stakeholders are people whose interest in a company comes through a direct relationship, such as employment, ownership, or investment.

External stakeholders are those who do not directly work with a company but are affected somehow by the actions and outcomes of the business. Suppliers, creditors, and public groups are all considered external stakeholders.

Institute of Chartered Accountants of Nepal (ICAN) is the only professional accountancy organization in Nepal. The institution mainly involves conducting professional examinations; issuing Chartered Accountant Membership Certificates and

Certificates of Practice; setting rules of professional conduct and many more. Thus, major three stakeholders of this institution are students, members and the governing body.

2e. Answer:

The organization should either formulate new goals when the established goals are achieved or the existing goals cannot be achieved because of the environmental situation. The management should assess the environment factors with the help of various statistical methods. With correct method and future prediction the old goals should be changed or modified. This process is known as goal succession. It is the intentional review and modification of existing goals.

The goals should be flexible enough to bring modification in the changed environmental context.

2f. Answer:

Middle level management consists of departmental heads which are generally classified under middle level management and deputy heads of departments and sectional heads, area managers etc. it is basically concerned with the task of implementing the policies and plans laid down by the top management. The important functions of middle management are as follow

- Interpreting the policies framed by top management
- Assigning duties and responsibilities for timely execution of the plans
- Motivating personnel to achieve higher productivity
- Preparing the organizational set-up in their respective departments.
- Comparing and issuing instructions to the supervisors under their control.
- Coordinating with other departments so as to ensure a smooth running of the entire organization
- Reporting to feedback to top management
- Collecting information and reports on performance
- Making recommendation to top management for the better implementation of plans and policies

Paper 3: Part B: Commercial Mathematics and Statistics

Marks

Attempt all questions.

1.

- a) Substitute a single future claim payable 2 years for the sum of two future claims. One for Rs. 6000 due in 4 years and the other for Rs. 12000 due in 5 years. Allow compound interest at 3% p.a.

4

Solution:

Given,

First case

$$A_1 = 6000, n = 4 \text{ years}, r = 3\%, P_1 = ?$$

$$\text{Now, } P_1 = \frac{A_1}{\left(1 + \frac{r}{100}\right)^n} = \frac{6000}{\left(1 + \frac{3}{100}\right)^4} = \text{Rs. } 5330.92$$

Second case

$$A_2 = 12000, n = 5 \text{ years}, r = 3\%, P_2 = ?$$

$$\text{Now, } P_2 = \frac{A_2}{\left(1 + \frac{r}{100}\right)^n} = \frac{12000}{\left(1 + \frac{3}{100}\right)^5} = \text{Rs. } 10351.31$$

Sum of two claims

$$P = P_1 + P_2 = \text{Rs. } 5330.92 + \text{Rs. } 10351.31 = \text{Rs. } 15682.23$$

 $r = 3\%$ $n = 2 \text{ years}$ $A = ?$

$$\text{Now, } A = P \left(1 + \frac{r}{100}\right)^n = 15682.23 \left(1 + \frac{3}{100}\right)^2 = \text{Rs. } 16637.28$$

- b) A company manufactures different types of electrical appliances. It has been radio advertising its products. The following table shows amounts of radio time (x in minutes) and the number of electrical appliances sold (y) over the last six days.

x	25	18	32	21	35	29
y	16	11	20	15	26	28

Calculate Karl Pearson's Correlation Coefficient between two series and interpret the result.

4

Solution:

X	Y	U = X - A (A = 25)	V = Y - B (B = 20)	U^2	V^2	UV
25	16	0	-4	0	16	0
18	11	-7	-9	49	81	63
32	20	7	0	49	0	0
21	15	-4	-5	16	25	20
35	26	10	6	100	36	60

29	28	4	8	16	64	32
		$\Sigma U = 10$	$\Sigma V = -4$	$\Sigma U^2 = 230$	$\Sigma V^2 = 222$	$\Sigma UV = 175$

$$\text{Correlation coefficient} = r = \frac{n\Sigma UV - (\Sigma U)(\Sigma V)}{\sqrt{[n\Sigma U^2 - (\Sigma U)^2]} \sqrt{[n\Sigma V^2 - (\Sigma V)^2]}}$$

$$= \frac{6 \times 175 - 10(-4)}{\sqrt{6 \times 230 - (10)^2} \sqrt{6 \times 222 - (-4)^2}}$$

$$r = 0.84$$

There is high degree of positive correlation between radio(x) and the number of electrical appliance sold(y).

Alternative Method

X	Y	X ²	Y ²	XY
25	16	625	256	400
18	11	324	121	198
32	20	1024	400	640
21	15	441	225	315
35	26	1225	676	910
29	28	841	784	812
$\Sigma X=160$	$\Sigma Y=116$	$\Sigma X^2=4480$	$\Sigma Y^2=2462$	$\Sigma XY=3275$

$$r = \frac{\Sigma XY}{\sqrt{\Sigma X^2 \Sigma Y^2}}$$

$$X = X - \bar{X}$$

$$Y = Y - \bar{Y}$$

$$r = \frac{n\Sigma XY - \Sigma X \Sigma Y}{\sqrt{n\Sigma X^2 - (\Sigma X)^2} \sqrt{n\Sigma Y^2 - (\Sigma Y)^2}}$$

$$= \frac{19650 - 18560}{\sqrt{26880 - 25600} \sqrt{14772 - 13456}}$$

$$= \frac{1090}{35.78 \times 36.28}$$

$$= 0.839$$

- c) Construct the cost of living index number for 1985 on the basis of 1979, from the following data using family budget method.

4

Commodity	Price in base year 1979	Price in 1985	Value weight in base year 1979
Wheat	15	20	300
Rice	20	24	160
Sugar	160	200	320
Ghee	40	40	160

Solution:

construction of cost of living index number

Commodity	Price in 1979	Price in 1985	$P = \frac{P_1}{P_0} \times$	$W = P_0 Q_0$	PW
-----------	---------------	---------------	------------------------------	---------------	----

	(p ₀)	(p ₁)	100		
Wheat	15	20	400/3	300	40000
Rice	20	24	120	160	19200
Sugar	160	200	125	320	40000
Ghee	40	40	100	160	16000
				$\Sigma W = 940$	$\Sigma PW = 115200$

Here, required cost of living index number = $\frac{\Sigma PW}{\Sigma W} = \frac{115200}{940} = 122.55$

- d) Find the missing frequency in the following distribution if N = 100 and median is 32.

4

Marks	0-10	10-20	20-30	30-40	40-50	50-60	Total
No. of Students	10	?	25	30	?	10	100

Solution :

Let us assume that, number of students having marks in the range 10 – 20 and 40 – 50 are ‘x’ and ‘y’ respectively.

Marks	Frequency (f)	Cumulative Frequency (cf)
0-10	10	10
10-20	x	10+x
20-30	25	10+x+25 = 35+x
30-40	30	35+x+30 = 65+x
40-50	y	65+x+y
50-60	10	65+x+y+10 = 75+x+y

Now, we have been given that, there are 100 students,

$$\therefore \Sigma f = 100$$

$$\Rightarrow 75 + x + y = 100$$

$$\Rightarrow x + y = 25 \dots \dots \dots (1)$$

We know that, median = $L + \frac{(N/2 - cf/f) \cdot h}{f}$

We have been given that median = 32, which lies in the range 30 – 40. Therefore, 30 – 40 is the median class. So,

$$L = 30$$

$$N = 100$$

$$f = 30$$

$$cf = 35 + x$$

$$h = 10 - 0 = 10$$

Substituting these values in the formula for median, we get,

$$\Rightarrow 32 = 30 + \frac{100/2 - (35+x)/30}{30} \cdot 10$$

$$\Rightarrow 2 = 50 - 35 - x/3$$

By cross – multiplication, we get,

$$\Rightarrow 6 = 15 - x$$

$$\Rightarrow x = 9$$

Substituting $x = 9$ in equation (1), we get,

$$\Rightarrow y = 25 - x$$

$$\Rightarrow y = 25 - 9$$

$$\Rightarrow y = 16$$

Hence, the missing frequencies are 9 and 16.

2.

- a) Three numbers are in A.P. and their sum is 30. If 2, 8, 38 be added to them respectively, they form a G.P. Find the numbers of an A.P.

3

Solution:

Let $(a - d)$, a and $(a + d)$ be the three numbers in A.P.

Given that their sum = 30

$$\therefore (a - d) + a + (a + d) = 30$$

$$\text{or, } 3a = 30 \quad \text{or, } a = 10$$

If 2, 8 and 38 be added to them respectively, they form a G.P.,

So, $(a - d + 2)$, $(a + 8)$, $(a + d + 38)$ are in G.P.

i.e. $(10 - d + 2)$, $(10 + 8)$ and $(10 + d + 38)$ are in G.P. [$\because a = 10$]

i.e. $(12 - d)$, 18, $(48 + d)$ are in G.P.

$$\therefore 18 = \text{G.M.} = \sqrt{(12 - d)(48 + d)}$$

$$\text{or, } 18^2 = (12 - d)(48 + d) \quad \text{or, } 324 = 576 + 12d - 48d - d^2$$

$$\text{or, } d^2 + 36d - 252 = 0 \quad \text{or, } d^2 + 42d - 6d - 252 = 0$$

$$\text{or, } (d + 42)(d - 6) = 0 \quad \therefore d = -42 \quad \text{or } 6$$

So,

when $a = 10$ and $d = -42$, the three numbers in an A.P are 52, 10, -32

when $a = 10$ and $d = 6$, the numbers in an A.P are 4, 10, 16.

- b) How many numbers of three digits all different and less than 500, greater than 500 can be formed from the integers 1, 2, 3, 4, 5, 6?

3

Solution:

In a number less than 500, the digits in the hundredth place should be either 1 or 2 or 3 or 4 so it can be chosen in 4 ways.

The digits in tenth and unit places can be chosen from the remaining 5 integers in $5P_2$ ways.

$$\text{Total number of 3 digits less than 500} = 4 \times 5P_2 = \frac{4 \times 5!}{(5-2)!} = \frac{4 \times 5 \times 4 \times 3!}{3!} = 80$$

In a number greater than 500, the digit in the hundredth place should be either 5 or 6. So it can be chosen in 2 ways.

The digit in tenth and unit places can be chosen in $5P_2$ ways.

$$\begin{aligned} \text{Total number of 3 digits more than 500} &= 2 \\ \times 5P_2 &= \frac{2 \times 5!}{(5-2)!} = \frac{2 \times 5 \times 4 \times 3!}{3!} = 40 \end{aligned}$$

- c) During a study of auto accidents, the Traffic Police of valley found that 65% of all accidents occur at night, 48% are alcohol related and 35% occur at night and alcohol related.
- What is the probability that an accident was alcohol related given that it occurred at night?
 - What is the probability that an accident occurred at night given that it was alcohol related?

3

Solution:

Given,

$$P(N) = \text{prob. of an accident occur night} = 65\% = 0.65$$

$$P(A) = \text{prob of an accident are alcohol related} = 48\% = 0.48$$

$$P(N \cap A) = \text{prob. of an accident occur at night and alcohol related} = 35\% = 0.35$$

- (i) Probability that an accident was alcohol related given that it occurred at night.

$$P(A/N) = \frac{P(A \cap N)}{P(N)} = \frac{0.35}{0.65} = \frac{7}{13}$$

- (ii) Probability that an accident occurred at night given that it was alcohol related.

$$P(N/A) = \frac{P(N \cap A)}{P(A)} = \frac{0.35}{0.48} = \frac{35}{48}$$

Examiner's Commentary on Students' Performance in December 2022 Examinations

Paper 1: Fundamentals of Accounting

List of Questions	Specific Comments on the Performance of the Students
Question no. 1	a. Most of the students solved this question but few failed to calculate commission to Manager.
Question no. 2	a. Most of the students failed to complete Partnership MCQS. b. Most of the students failed to calculate closing stock and Abnormal loss on consignment costing.
Question no. 3	a. Most of the students failed to have proper knowledge about Receipts Payment/Revenue and Expenditure.

Paper 2: Part A: Mercantile Laws

List of Questions	Specific Comments on the Performance of the Students
Question no. 1	a) Answers by many students were satisfactory. But few students seemed to be confused in cancellation and dissolution of partnership form.
Question no. 2	a) Many students performed well but few were confused on essential elements of Valid contract of Guarantee and rules of Guarantee.

Paper 2: Part B: Fundamentals of Economics

List of Questions	Specific Comments on the Performance of the Students
Question no. 1	a. Few analysis on Robins theory, how to produce and current issues. b. Table , figure and law was not properly explained at some part.
Question no. 2	a. Lack of clear knowledge on types of cross elasticity. b. Satisfactory performance. c. Satisfactory performance. d. Satisfactory performance. e. Satisfactory performance. f. Average performance.

Paper 3: Part A: Fundamentals of Management

List of Questions	Specific Comments on the Performance of the Students
Question no. 1	a. Internal environmental factors were not illustrated by many students. b. System Approach/Perspective of Management was not clear to many students.
Question no. 2	a. Few students did not answer the role of manager. b. Satisfactory performance. c. Satisfactory performance. d. The term stakeholder was misunderstood as shareholder. e. Satisfactory Performance.

Paper 3: Part B: Commercial Mathematics and Statistics

List of Questions	Specific Comments on the Performance of the Students
Question no. 1	Most of the students did not give the answers of Q.No 1(a) and 1(b). Regarding Q.No 1(c) students performed well.
Question no. 2	Some students did not have knowledge on permutation, combination, and conditional probability.