

BIM / Fourth Semester / IT 240: Business Data Communication and Networking

Candidates are required to answer the questions in their own words as far as practicable.

Group "A"

Brief Answer Questions:

$10 \times 1 = 10$

1. Define the concept of BYOD.
2. How does client based architecture differ from client server architecture?
3. What is the purpose of modulation in analog transmission of digital data?
4. Mention any one difference between Asynchronous and Synchronous Transmission.
5. List out any one difference between Hub and Switch.
6. List any two Network layer protocol.
7. Define VLANS.
8. How can device performance be improved in a WAN?
9. What are the key features of a Cable Modem?
10. What strategies can be used to reduce network costs?

Group "B"

Short Answer Questions: (Attempt any FIVE Questions)

$5 \times 3 = 15$

11. "Wired communication has advantages over wireless communication". Justify this statement with an example.
12. What are the main differences between dedicated-circuit and packet-switched networks?
13. Discuss the concept of Internet Governance and its importance in shaping the future of the Internet.
14. Mention the responsibilities of any three layer in OSI references model.
15. Define VPN and list any two benefits of using VPN.
16. Define Routing. List any Two differences between OSPF and BGP.

Group "C"

Long Answer Questions: (Attempt any THREE Questions)

$3 \times 5 = 15$

17. The received message is 1100110111 and generator polynomial is 1011. Check whether the received message is correct or not.
18. Encode the digital bit stream 1101101 with ASK, PSK and FSK in coding techniques.
19. Explain any Five services provided by transport layer.
20. Describe the different types of networks in their scope, size, and applications.

Group "D"

Comprehensive Answer / Case / Situation Analysis Questions: **$12 \times 10 = 20$**

21. Suppose an ISP owns the block of addresses of the form 210.249.240.0 and it wants to create Six subnets from this block, with each block having the same number of IP addresses. Calculate subnet mask, usable IP range, network id and broadcast id in each subnet.
22. You have been appointed as the Network Manager of the newly opened department store which does not have a computer network. As a Network Manager your job is to setup a network. The department store have three floor. With the given requirement, design a effective network by mentioning different networking devices you will use with its purpose.



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**Full Marks: 100
Pass Marks: 50
Time: 3 Hrs.**

BIM / Fourth Semester / ACC 202 : Cost and Management Accounting

Candidates are required to answer the questions in their own words as far as practicable.

Group "A"

Brief Answer Questions:

$$10 \times 2 = 20$$

1. Write any two objective of cost accounting.
2. What is ABC analysis in stock control system?
3. Write about the relevant and irrelevant cost.
4. What is Rowan premium plan of wages payment system?
5. The difference in total cost is Rs 150,000 between the activity level of 60,000 units and 30,000 units of repairing cost. The total fixed cost is Rs 160,000.

Required: (a) Variable cost per unit (b) Total cost for 40,000 units

6. Following information are provided:

Annual requirement	50,000 units
Ordering cost per order	Rs 500
Cost of opportunity	Rs 1 per unit
Cost of rent, insurance and taxes	Rs 1 per unit

Required:

- a) Economic order quantity.
- b) The annual total cost of the optimum purchasing policy.

7. The following overheads are exacted from the company.

Welfare charge Rs 50,000

Repair charge for the assets Rs 100,000

Other information:

Department	No of employed	Value of Assets
A	40	4,00,000
B	60	6,00,000

Required: Total Overhead of departments A and B.

8. A worker has taken 150 hours to complete a job. The rate of wages per hour is Rs 40. He got a bonus is Rs 400 under the Halsey premium plan.

Required: Standard time allowed and total wages payable under the Rowan premium plan.

9. One unit of a production requires 80 kg of raw material @ Rs 16 per kg. The actual output was produced 280 units with actual material consumption 10,000 kg @ Rs 20 per kg.

Required: Material Price and Cost Variance

10. The following information is available to you:

Maximum stock level 12,000 units

Per day consumption 600 to 800 units

Reorder period 3 to 5 days

Required: (a) Re-order level (b) Re-order quantity

Group "B"

Short Answer Questions: (Attempt any SIX Questions)

$16 \times 5 = 30$

1. Differentiate between direct cost and indirect cost? With example.

2. Differentiate between Static budget and Flexible budgets.

3. What are the limitations of Cost Volume Profit Analysis?

4. The standard labour mix and actual labour mix of product AB is shown below:

Workers	Standard labour mix		Actual labour mix	
	No. of workers	Rate per hour (Rs)	No. of workers	Rate per hour (Rs)
Skilled	32	15	24	16
Semi-skilled	48	10	64	11
Unskilled	80	6	72	5
Total	160		160	

40 hours in a week needed to work and paid. Standard output per gang hour 25 units and actual output was realized 1,050 units.

Required: Calculate the Labour variances. (Rate, Mixed, Yield, Efficiency, and Cost)

15. The following information are provided to you:

The company is running at 100% capacity and produced 20,000 units of output with the following costs data:

Particulars	Amounts (Rs.)
Direct material costs	240,000
Direct labor costs	160,000
Manufacturing costs (60% fixed cost)	200,000
Selling expenses (60% variable)	80,000
Administrative overhead (100 % fixed)	60,000

Required: (a) Flexible budget for 80% and 90% output to be attained in the next month.
 (b) Profit of product, if profit is 25% on cost.

16. Alfa Beta manufacturing company has sufficient idle capacity therefore, it would like to see the possibility of manufacturing a component used in its final products. The company has been buying the component from an outside supplier at the rate of Rs.120 per unit. The other data have been given below:

Annual needed / Production units	20,000 units
<i>Estimated cost for one unit of output:</i>	
Direct material cost per unit	Rs 50
Direct labour cost per unit	Rs 30
Manufacturing overheads per unit	Rs 20

The company has followed a system of defining its plant capacity in terms of direct labour hours. The normal capacity is 50,000 DLH. The annual budgeted fixed manufacturing overhead is Rs 400,000. One unit of output requires two direct labour hours.

Required: Differential cost analysis to decide whether the company should continue to buy the component.

17. A Manufacturing Company with a normal capacity of production of 350,000 units supplied the following information for the year have been given below:

Production units	300,000
Sales units	280,000
Opening stock units	50,000
Selling price per unit	Rs 30
Direct material cost per unit	Rs 7
Direct labour cost per unit	Rs 5
Manufacturing variable overhead cost per unit	Rs 2
Fixed manufacturing cost	Rs 700,000
Fixed selling and administrative expenses	Rs 350,000
Variable selling and administrative cost per unit	Rs 1

Required:

a) Income Statement under Absorption Costing.
 b) Reconciliation statement.

14+1

Group "C"

Long Answer Questions: (Attempt any THREE Questions)

$3 \times 10 = 30$

18. "The objectives of management accounting are far wider than that of financial accounting." Comment on this statement.

19. "The main objective of inventory management is to supply all kind of inventory regularly in such a manager that there is no shortage of materials and production may not have to be stopped", discuss.

20. Following is the information about the Bisal Hotel in Kathmandu:

- Total number of single rooms = 50 (100% for 2 months and 60% for 10 months)
- Total number of double rooms = 40 (60% for 4 months and 50% for 8 months)

Annual expenses and other information are given below:

- ✓ Room attendants staff salary = Rs 50,000 per month.
- ✓ Administrative 3 staff salary = Rs 30,000 per month per staff.
- ✓ Laundry and Other staff 2 salary = Rs 20,000 per month per staff.
- ✓ Electricity charge = Rs 120,000 per year.
- ✓ Communication and telephone = Rs 12,000 per month
- ✓ Repair charge = Rs 40,000 per year.
- ✓ Insurance premium = Rs 120,000 per year.
- ✓ Depreciation on furniture = 25% of Rs 500,000.
- ✓ Depreciation on building = 5 % of 9,000,000.
- ✓ Miscellaneous expenses = Rs 120,000 per year.
- ✓ Profit 25% on the cost of sales.

Assumed that the double bad room shall be regarded as 1.50 of the single room for the fixing the rate of the room.

Required: ~~(a)~~ Statement of operating cost

~~(b)~~ Room charge for single and double rooms per day.

21. A manufacturing company record has the following trading results for two periods.

Particulars	(Rs.)
Sales in units	40,000
Selling price per unit	30
Variable cost per unit	20
Operating Profit	Rs 100,000

Required:

- a. Contribution margin per unit and contribution margin ratio
- b. Fixed cost

- c. Break-even point in units and Rs.
- d. Margin of safety ratio
- e. Sales in Rs. to earn a desired profit after tax of Rs 120,000 if the tax rate is 40%.
- f. Required sales in Rs. if desired Profit Rs 200,000.
- g. How many units must be sold to earn profit 10% on sales? $[2+1+2+1+2+1+1]$

Group "D"

Comprehensive Answer / Case / Situation Analysis Questions: $[20]$

22. The Monaj manufacturing company is planning to prepare the functional budget for the decision purpose from the following information:

Total sales for 7 months are 200,000 units. Selling price per unit of Rs 60.

Other detailed information is given below:

Month	Falgun	Chaitra	Baisakha	Jestha	Ashad	Shrawan	Bhadra
Sales in units	25,000	30,000	30,000	30,000	20,000	30,000	35,000

Purchase: One unit of finished goods required 2 kg of raw material at the cost of Rs 10 per kg.

Wages: Per unit of finished goods will need 3 labour hours and the cost per labour hour will be Rs 2.

Overhead: Variable manufacturing overhead will be Rs 5 per unit of production and fixed manufacturing cost Rs 120,000 per year. Administrative expenses 5% of sales and selling expense @ Rs 2 Per unit sold.

Inventory management policy:

Raw materials are required to meet of the next month's consumption of material and finished goods are 80% of the following month's sales units.

Required:

Following the four-month Budget from Baishak to Shrawan:

- a. Sales Budget
- b. Production budget
- c. Material consumptions and purchase budget
- d. Labour cost budget
- e. Manufacturing overhead budget
- f. Operating expenses budget (Administrative expenses and selling expense)
- g. Cost of goods sold budget
- h. What is the operating budget? What are the main component? $[2+3+4+2+2+2+2+3]$



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November 2024

Full Marks: 60
Pass Marks: 30
Time: 3 Hrs.

BIM / Fourth Semester / IT 220: Database Management System

Candidates are required to answer the questions in their own words as far as practicable.

Group "A"

Brief Answer Questions:

$[10 \times 1 = 10]$

1. Define Relational Calculus.
2. Who is Database administrator?
3. What are the conditions required for Lossless Decomposition in DBMS?
4. What do you mean by Tuple in DBMS?
5. List any two advantage of using No SQL Database.
6. Define indexing.
7. What do you mean by Data Mining?
8. What is the difference between Shared lock and Exclusive lock?
9. What is the use of Check constraint in SQL?
10. Give an example of ternary relationship in DBMS.

Group "B"

Short Answer Questions: (Attempt any FIVE Questions)

$[5 \times 3 = 15]$

11. List the differences between centralize and client-server architecture in Database Management System.
12. How weak entity set can be identified by strong entity set? Illustrate with an example.
13. Write the difference between Tuple Relational Calculus and Domain Relational Calculus.
14. Explain the advantages of using Distributed Databases over Centralized Database systems.
15. Explain different types of set operation in Database.
16. How Database can be recovered from catastrophic failures? Explain.

Group "C"

Long Answer Questions: (Attempt any THREE Questions)

$[3 \times 5 = 15]$

17. What are the different types of Attributes use in ER? Explain.
18. Define Serializable Schedule. Explain two phase locking techniques with example.
19. Define Anomaly. How normalization helps to remove different types of Anomaly from database? Explain with example.

20. From the following relation.

Doctor (D_id) Name, Age, Address, department)

Write Relation Algebra.

- To find all Name who works in 'Cardio' department
- To list all the Doctor
- To list Name of Doctor whose age is greater than 50 and works in 'oncology' department
- To delete the records whose age is less than 25.
- To insert new Doctor detail.

Group "D"

Comprehensive Answer / Case / Situation Analysis Questions:

$12 \times 10 = 20$

21. Consider the given relations

Manager (MID, Name, Salary, Age)

Mangers (MID, BID)

Branch (BID, Address, Phone)

Write SQL for following:

- Write DDL statement to create above relation.
- Find the Name of manager whose salary is more than 100,000 and age is less than 30.
- Find the Name and Age of manager who manages Baneshwor Branch.
- Insert details of New Branch.
- Increase the salary of the manager by 30% who works at Humla branch.
- Display the detail of branch which are outside Kathmandu.

22. ABC is a non-life insurance company which deals with various type of insurance policies, such as health, vehicle and property insurance. Each policy has a unique policy-number, coverage-details, premium amount and expiry date. Policies are associated with customer who have a unique customer_ID, Name, Contact_information and address. The company also Tracks claims made against each policy, where each claim has a claim_ID, date_of_filing, claim_amount and status. Draw the ER Diagram showing all entities, attributes, relationship and cardinalities.

BIM / Fourth Semester / ECO 206: Economics for Business

Candidates are required to answer the questions in their own words as far as practicable.

Group "A"

Brief Answer Questions:

[10 × 2 = 20]

1. What is scarcity in economics?
2. What are the factors that cause rightward shift of demand curve of online banking service?
3. How is elasticity of supply computed by arc method?
4. Derive linear demand curve if autonomous demand is 10 and slope of the demand curve is 2.
5. Write any four examples of explicit costs.
6. Give any two examples of variable inputs used in cloth production.
7. Define oligopoly market with two examples.
8. State the types of investment.
9. What are the components of current account of balance of payment?
10. Calculate the inflation rate of Nepal for 2022/23 as GDP deflator is 186 in 2021/22 and 203 in 2022/23.

Group "B"

Short Answer Questions: (Attempt any SIX Questions)

[6 × 5 = 30]

11. How does a manager of IT company use the microeconomics in business decision making?
12. Demand function of peda is $Q_d = 60 - 1.5P$ and supply function of peda is $Q_s = 0.5P$ where Q is the quantity of peda in thousand units and P is price of peda in rupees. Find the equilibrium price and quantity of peda and price elasticity of demand of peda at equilibrium price.
13. Explain the determinants of demand.
14. Short run production function of a firm is $Q = 20L + 5L^2 - L^3$. Market price of the product is Rs 125 and market wage rate is Rs 1,500. Calculate the profit maximizing level of output (Q) of the product and number of labor (L) employed.
15. Describe the concept of cost-plus pricing.
16. Explain the recession phase of business cycle.
17. How is GDP computed by value-added method? Explain it with suitable examples.

Group "C"

Long Answer Questions: (Attempt any THREE Questions)

$3 \times 10 = 30$

18. How does a profit maximizing firm employ optimal level of labor and capital under given total cost outlay?
19. Explain the behaviour of TFC, TVC and TC curves.
20. Complete following table assuming marginal propensity to save (MPS) = 0.25 and derive linear consumption function and saving functions.

Disposable income (Rs in billion)	Consumption (Rs in billion)	Saving (Rs in billion)	Average propensity to consume	Average propensity to save	Marginal propensity to consume
0	1,500				
2,000					
4,000					
6,000					
8,000					

21. Demand function of biscuit producing firm is $Q = 1000 - 10P$, and total cost function is $TC = 12Q + Q^2$, where Q = output in thousand packets, P = price in rupees. Find the equilibrium level of output, price, total cost, total revenue and profit of the firm.

Group "D"

Comprehensive Answer / Case / Situation Analysis Questions:

10

22. Read the following situation and answer the following questions:

A report of Nepal Rastra Bank (NRB) shows that inflation rate moderated to 4.82 percent in mid-March 2024 compared to 7.44 percent a year ago. Exports decreased by 4.0 percent which was 29.1 percent a year ago while imports decreased by 2.7 percent which was lower to each year by 19.1. Moreover, balance of payment remained surplus of Rs 327.55 billion against a surplus of Rs 142 billion in the previous year. Gross foreign exchange reserves increased to Rs 1,872.82 billion in mid-March 2024 from Rs 1,539.36 billion in mid-July 2023. But Nepali currency vis-à-vis the US dollar depreciated 0.73 percent during the review period. Broad money supply increased by 7.7 percent as compared to an increase of 5.1 percent in the previous year. NEPSE index stood 2108.73 in mid-March 2024 compared to 1953.06 in mid-March 2023. According to the World Bank, Nepal's economy will grow by 3.9 percent in the current fiscal year. Another research report showed that competitiveness of Nepal's information technology (IT) services industry has grown tremendously in the past few years. Nepal's e-commerce is experiencing over 40 percent growth per annum while IT service export is more than 500 million US dollar.

On the other side of economy, private sector has been continuously expressing dissatisfaction on current economic situation of the country. According to the private sector umbrella organizations, the country is facing a severe economic crisis as

agricultural and industrial productions are falling, the trade deficit along with the unemployment is growing, the stock market is tumbling, the real estate business is sputtering, and restaurants and hotels apart from several other business activities are declining. As a result, overall demand is shrinking. There is extreme frustration among businessmen and they are planning to escape instead of investing. Industries are either getting closed or are running far below their capacity. The cement industry, for example, is running below 30 percent of its capacity. The shutters of small and medium businesses are being closed. Foreign investors are closely observing the corruption and scandals in Nepal.

In this situation, Government of Nepal has given certain incentives to the export industries. It approved a new customs bill that waives customs duty to the export industries on the import of industrial raw materials. Moreover, NRB has launched cautiously accommodative monetary policy for 2023-24 to make the economy buoyant by maintaining price and external sector stability.

Questions:

- a. Is Nepalese economy suffering from recession or moving toward recovery situation? Give your critical arguments.
- b. Suggest the monetary and fiscal policy measures to address the current economic situation of Nepal.
- c. Suppose you are a manager of an IT firm. Do you want to expand or contract your firm within these macroeconomic indicators and situations? Give logic to support your decision.

[7+7+6]



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BIM / Fourth Semester / IT 241: Operating System

Candidates are required to answer the questions in their own words as far as practicable.

Group "A"

Brief Answer Questions:

$[10 \times 1 = 10]$

1. List out any two examples of open source operating system.
2. What is the need of message passing?
3. List the classical IPC problems.
4. What is the purpose of Resource allocation graph?
5. What do you mean by physical address space?
6. Define TLB.
7. List out any two methods of implementing files.
8. Define the term memory mapped I / O.
9. What is RAID Technology?
10. List out any two mobile operating system.

Group "B"

Short Answer Questions: (Attempt any FIVE Questions)

$[5 \times 3 = 15]$

11. What is busy waiting solution to race condition? Why disabling interrupt is not a better way to gain mutual exclusion?
12. Describe the advantages of distributed operating systems over centralized operating systems.
13. Describe fixed partition memory allocation strategy.
14. Explain various types of file access methods.
15. Explain any one method of Handling I/O operations.
16. Describe any three approach of securing operating system.

Group "C"

Long Answer Questions: (Attempt any THREE Questions)

$[3 \times 5 = 15]$

17. Define the term multi-threading. Compare user level thread with kernel level thread with its advantages and disadvantages.

18. Calculate average waiting time and average turnaround time of the given set of processes in table below using RR scheduling algorithm for quantum size 5 and using shortest Job First. Assume all the processes arrive at the same time.

Process	Execution Time
A	8
B	14
C	19
D	7
E	15

19. A disk has 8 sectors per track and spins at 600 rpm. It takes the controller time 10ms from the end of one I/O operation before it can issue a subsequent one. How long does it take to read all 8 sectors using the following interleaving system?

- (a) No interleaving
- (b) Single interleaving
- (c) Double interleaving

20. Consider a swapping system in which memory consists of the following hole sizes in memory order: 10 KB, 4 KB, 20 KB, 18 KB, 7 KB, 9 KB, 12 KB, and 15 KB. Which hole is taken for successive segment requests of

- (a) 12 KB
- (b) 10 KB
- (c) 9 KB

for best fit and worst fit.

Group "D"

Comprehensive Answer / Case / Situation Analysis Questions:

$12 \times 10 = 20$

- 21. Define Paging. Explain how a logical address is converted into physical address using a multilevel page table with suitable example.
- 22. What is deadlock? Explain various conditions for deadlock. Explain any one process for recovery from deadlock.



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Full Marks: 60
Pass Marks: 30
Time: 3 Hrs.

BIM / Fourth Semester / IT 239: Web Technology II

Candidates are required to answer the questions in their own words as far as practicable.

Group "A"

Brief Answer Questions:

[10 × 1 = 10]

1. List out any four control statements used in PHP.
2. How do you create a constant in PHP?
3. What does strlen() function do?
4. What function is used to get the number of elements in an array?
5. What does passing arguments mean?
6. List out any two importance of HTTP authentication.
7. What is the \$_POST superglobal used for?
8. What function is used to get the contents of an entire file?
9. How do you destroy a session in PHP?
10. What is the use of exception handling?

Group "B"

Short Answer Questions: (Attempt any FIVE Questions)

[5 × 3 = 15]

11. Differentiate between dynamic and static websites
12. Explain PHP Traits with example.
13. Explain the advantage of using PHP session.
14. Explain interface with an example.
15. Write a PHP function to print the contents of an array using for each loop.
16. Explain any one PHP server side framework.

Group "C"

Long Answer Questions: (Attempt any THREE Questions)

[3 × 5 = 15]

17. Explain Exception handling in PHP with example.
18. Illustrate PHP static properties with example.
19. Write a PHP function that accepts array named 'age' as an argument and returns the average age.
20. Write a PHP source code to append the contents at the end of the file and display the contents of the file into a browser.

Group "D"

Comprehensive Answer / Case / Situation Analysis Questions: **$12 \times 10 = 20$**

21. Write a PHP program to create a CMAT registration form with the following requirements.

- Name (Textbox): required, should be at least 8 characters long
- Email(Textbox): required, should be in correct format
- Mobile Number(Textbox): required, should be exactly 10 character long in number
- Date of Birth(Textbox): required, should be in MM-DD-YYYY format
- Program Choice(Drop Down Menu): required
- Gender(radio button): required

The form contains a Submit Button, which on click, performs the above validations and stores the form data into the database if the submitted data is valid and displays the validation error on invalid data. Assume all required assumptions on database.

22. Explain indexed and associative array with an example. Write a PHP function that accepts multidimensional array named 'CountryCities' with country as keys and cities as values. Also, Display the countries and cities in PHP nested list format.