

PURBANCHAL UNIVERSITY

2018

Bachelor in Information Technology (B.I.T.)/Fourth Semester/Final

Time: 03:00 hrs.

Full Marks: 80/Pass Marks: 32

BIT271CO: Computer Organization (New Course)

Candidates are required to give their answers in their own words as far as practicable.

Figure in the margin indicate full marks.

Group A

Answer TWO questions.

2×12=24

1. Explain about a basic instruction cycle of computer in detail.

2. What is addressing mode? What are its different types describe with the examples? Show the differences between the direct & indirect addressing modes.

3. What is Booth's algorithm? Use a proper flow chart to explain. Also perform 7×5 using Booth's algorithm.

Group B

Answer SEVEN questions.

7×8=56

4. Explain the role of DMA in I/O organization.

5. List out the differences between RISC & CISC processors.

6. What is pipelining? Explain using example.

7. Explain cache coherence problem.

8. Distinguish between programmed I/O and interrupt driven I/O highlighting one advantage and any disadvantage.

9. How can you differentiate the computer organization & computer architecture? Explain the design principle of modern computer.

10. State the differences between the hardwired & micro programming control.

11. Define the following terms:

(i) Memory hierarchy	(ii) Multiprocessor system
(iii) I/O processor	(iv) Virtual Memory

12. What do you understand by Parallel Processing? Explain characteristics of parallel processing.

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BIT292MS: Marketing Management (New Course)

Candidates are required to give their answers in their own words as far as practicable.

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Group A

Answer TWO questions.

$2 \times 12 = 24$

1. Define the concept of Marketing. Explain about Marketing Philosophies, briefly.
2. Describe briefly about consumer buying decision process.
3. Discuss the concept of Market Segmentation. Describe the basis for segmenting market.

Group B

Answer SEVEN questions.

$7 \times 8 = 56$

4. Describe briefly about the micro environment of the company.
5. Define product. Differentiate between consumer product and industrial product.
6. What is pricing? Explain about Cost-based pricing.
7. What is meant by distribution channel? Describe the function of distribution channel.
8. Discuss the concept of integrated marketing communication. Explain briefly about marketing promotion mix.
9. Describe the nature and characteristics of a service.
10. Explain the basic requirements for effective segmentation.
11. Describe briefly about business buying process.
12. Write short notes on any TWO:

$2 \times 4 = 8$

- (a) Value-based pricing (b) Marketing Positioning
(c) Marketing Mix

(2)

7. What is recurrence relation? What is the solution of the recurrence relation $a_{n-1} + 2a_{n-2}$ with $a_0 = 2$ and $a_1 = 7$.
of n =
8. What do you understand by function? Describe one-to-one and onto function with example. 8
9. How do differentiate Permutation with Combination? Find the permutation of the word COMPUTER taken all at a time.
10. What is a binary Operation? Explain the closure, associative, commutative and identity property of a binary operation.
11. What do you mean by Equivalence relation? Prove that "is equal to" is a equivalence relation on set of numbers.
12. Write short notes on any TWO. 4+4
- (a) Flow network
- (b) Predicate calculus
- (c) Counting

P Q			P A Q			(P A Q) 778.		
T	F	F	T			F		
T	F	T	F			F		
F	T	F	F			F		
F	F	T	F			F		

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Bachelor in Information Technology (B.I.T.)/Fourth Semester/Final
Time: 03:00 hrs. Full Marks: 80/Pass Marks: 32

BIT281CO: Discrete Mathematics (New Course)

Candidates are required to give their answers in their own words as far as practicable.

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Group A

2×12=24

Answer TWO questions.

- 1(a) Define multi-graph. How does it differ from simple graph?
Differentiate between connected graph and complete graph.
- (b) Let (T, v_0) be a rooted tree. Prove that
- there are no cycles in T .
 - v_0 is the only root of T .
 - each vertex in T other than v_0 has in-degree 1 and v_0 has in-degree 0.

2. Differentiate between strong induction and weak induction. Prove by mathematical induction that 3 divides $n^3 + 2n$ whenever n is a positive integer.

3. What is Logic? Define Proposition and Propositional variable.
Verify if $((P \wedge Q) \wedge \neg Q)$ is a contradiction.

Group B

7×8=56

Answer SEVEN questions.

4. What do you mean by infix, prefix and postfix notations.
Construct binary tree for the following algebraic expression and write the infix notation from the tree.

$$((X+Y)*2)+((X-Y)/3)$$

5. Prove the following by mathematical induction

$$1^2 + 2^2 + 3^2 + \dots + n^2 = \frac{n(n+1)(2n+1)}{6}$$

6. Let $A = \{a, b, c, d\}$ and $R = \{(a, a), (a, b), (b, c), (b, b), (c, a), (c, b), (c, c), (d, d)\}$ be the relation on A . Draw the matrix M_R of the relation R . Also construct the diagraph of R and list in-degrees and out-degrees of all the vertices of the diagraph.

Contd. ...

(2)

9. Explain about FDM with block diagram. 8
10. Describe in detail with necessary diagram about the Superheterodyne radio receiver for commercial AM broadcasting. 8
11. Explain about optical fiber communication with necessary blocks. 8
12. Write short notes on any TWO. $2 \times 4 = 8$
- (a) Direct method of FM generation
 - (b) Need of modulation
 - (c) Types of signal

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BIT231EC: Communication System (New Course)

Candidates are required to give their answers in their own words as far as practicable.

Figure in the margin indicate full marks.

Group A

SGR

$2 \times 12 = 24$

Answer TWO questions.

1. What do you mean by Unit step signal? Explain with mathematical expression. Explain the block diagram of analog communication system with necessary blocks. **$2+2+8$**
2. What is the modulation index of DSB-AM wave? Differentiate between DSB-AM & DSB-Sc wave. Derive the relation $P_t = P_c (1+m_a^2/2)$ starting from the standard AM equation. **$2+4+6$**
3. Draw two block diagrams to show the relationship between the FM & PM and explain each block diagrams. An AM signal has % modulation of 79 and contains each side band power of 112 watt. Calculate the total power contained in the signal. **$3+4+5$**

Group B

Answer SEVEN questions.

$7 \times 8 = 56$

4. Explain about balanced modular for the modulation of DBS-Sc wave. **8**
5. What is PCM? Explain with block diagram. **8**
6. Draw the line coding formats for 10110110101 according to: **8**
- (i) Unipolar NRZ (ii) Polar RZ
- (iii) Bipolar RZ (iv) Manchester
7. Explain about ASK with block diagram. **8**
8. State and explain with mathematical expression about the Nyquist sampling theorem **8**

Contd. ...

(3)

11. Describe `` elements with example. Describe CSS Box Model. 3+4

12. What is cookie? In how many ways function can be defined? Write the JavaScript program to show the usage of **for** the **for-in** statements. 2+2+3

13. Write notes on any TWO: 2×3.5=7

(a) Document Object Model (DOM)

(b) Garbage Collection

(c) Literals and Reserve Words

(d) Free Software



(2)

- ✓(b) What is client-side scripting? What are advantages of JavaScript? 2+3
- 3(a) Write a JavaScript program that changes the background color of <div> element on user click. 6
- (b) Write a program in JavaScript which copies the text from one textbox to second textbox within the form. 6

Group B

Answer EIGHT questions.

8×7=56

- ✓4. What is regular expression? Explain with example. 7
- ✓5. Write the HTML code describing the basic structure of HTML5. 7
- ✓6. What is open source license? Differentiate between source software and proprietary software. 3+4
- ✓7. Explain JSON with example. Differentiate between table-based design and table-less design. 3+4
8. Write a JavaScript program that **prompt** the user to enter his/her **UserName** and **Password** and 7

1. If UserName is not entered:

Display "Enter UserName"

2. If Password is not entered:

Display "Enter Password"

3. If both UserName and Password is not entered:

Display UserNeme/Password

4. If UserName equals "admin" and Password equals "admin123"

Display: Welcome! You are Logged In"

otherwise: Display "Sorry! Try Again!"

- ✓9. What is web browsers and web servers? Write a JavaScript program that checks the content entered in a form's **Text** element. If the text is entered in the lower case, convert to upper case. 3+4
10. Differentiate between Static and Dynamic Web Page. What is Array in JavaScript? Show the difference between slice () and splice () with program example. 2+2+3

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Time: 03:00 hrs.

Full Marks: 80/Pass Marks: 32

BIT274CO: Web Technology-I (New Course)

Candidates are required to give their answers in their own words as far as practicable.

Figure in the margin indicate full marks.

Group A

Answer TWO questions.

$2 \times 12 = 24$

- 1(a) What is local and global scope of variable? Write the JavaScript program to display the following output:(use switch statement).

This page says:	x
Select your choice (1-7):	
1. Sunday 2. Monday 3. Tuesday 4. Wednesday 5. Thursday 6. Friday 7. Saturday	OK

User is prompted to enter his/her choice and

If choice is (1-6) : Display "Sad! , Today Is Not Holiday" and

If choice is 7: Display "Hurry Today Is Holiday".

- (b) Write a program that validates the form with the use of regular expression. 5

- 2(a) Write the Html code for the following output that makes use of <table> tag and its associated child tag and properties. 7

Firstname	Lastname	Age
Jill	Smith	50
Eve	Jackson	94
John	Doe	80

Contd. ...

(3)

12. Write short note on any TWO:

- (a) Check pointing
- (b) Domain Relational Calculus
- (c) Nested Sub query
- (d) Trigger



(2)

Group B

7x8=56

Answer SEVEN questions.

4. What is meant by transaction in case of database system? Describe about ACID properties and the state of a transaction.
5. Highlight the importance of security in DBMS and also explain about encryption techniques.
6. What is normalization? Convert the following table up to 2NF.

Student

<u>Sid</u>	<u>Sname</u>	<u>Course-id</u>	<u>Units</u>
101	Shyam	BE- 101	4
101	Shyam	BE -109	3
102	Hari	CE-111	2
103	Samir	CE- 117	1
105	Gita	BE -101	4

7. Explain about the steps used in query processing and query optimization techniques with neat diagram.
8. Define database language. Consider the table given below.

Employee

Eid	Ename	Eaddress	epost

Now give an expression in SQL for each of the following.

- (a) Add new column named Edob.
(b) Change the data type of Eid to varchar.
(c) Remove column epost
(d) Change the column name of Ename to Emp_Name.

9. Why is concurrency control needed? Check whether the given schedule is conflict serializable or not?

S₁:r₂(X);r₁(Y);w₂(X);r₂(Y);r₃(X);w₁(Y);w₃(X);w₂(Y);

10. What is concurrency control? Explain types of locks and two phase locking protocol.

11. Explain SELECT, PROJECT, CARTISIAN PRODUCT and NATURAL JOIN relational operation with examples.

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Time: 03:00 hrs. Full Marks: 80/Pass Marks: 32

BIT276CO: Database Management System (New Course)

Candidates are required to give their answers in their own words as far as practicable.

Figure in the margin indicate full marks.

Group A

$2 \times 12 = 24$

Answer TWO questions.

- 1(a) What is DBMS? Make comparison of DBMS over Conventional Data processing file system. 6
- (b) Define data Independence. Difference between physical and logical data Independence. 6
- 2(a) Construct an ER Diagram of your college database with set of teachers, students and subjects. Use aggregation in your ER diagram 8
- (b) Define the term Relation, Tuple, domain, degree and Cardinality. 4
3. Write sql statements for following queries in reference to relation Employee provided. 8

EID	Emp_Name	Start Time	Salary
E101	Krishna	10.00	10000
E102	kripa	11.00	12000
E103	Susma	9.30	11000
E104	Binita	10.30	9000

- (i) Create the following table with EID as primary key and insert the value provided.
- (ii) Display the name of employee whose name start from letter 'k' and salary is greater than 11000.
- (iii) Delete the entire contents of table so that new data can be inserted.
- (b) What is referential integrity? Assume two tables and write sql to couple two table using foreign key. 4

Contd. ...