PURBANCHAL UNIVERSITY
2021

Bachelor in Information Technology (B.I.T.)/Third *Semester/ Final*
Time: 03:00 hrs. Full Marks: 80 /Pass Marks: 32
BIT270CO: System Analysis & Design *(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. What do you mean by System Development Life Cycle? Explain with diagram of Waterfall and Spiral models.
2. What is the purpose of drawing a DFD? Draw a context diagram and higher level DFD for Hospital Management System.
3. What do you mean by normalization? Explain with suitable examples of 1NF, 2NF and 3NF.

Group B

Answer SEVEN questions. **7×8=56**

4. Explain briefly the different types of Information Systems used in organizations.
5. What is an Entity Relationship Diagram? Draw ERD for Library Management System.
6. Explain Decision Table and Decision Tree with suitable examples.
7. What is the importance of feasibility study in system analysis. Explain briefly the different types of feasibility study.
8. What are different types of coupling and cohesion. Explain file organization with its different methods.
9. What do you mean by system installation? Explain with figure different types of system installation methods.
10. What do you mean by OOAD? Explain state diagram and use case diagram using suitable example.
11. Write short notes on any TWO:
    (a) Software quality (b) System Testing
    (c) Payback and NPV method of cost/benefit analysis.

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

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

BIT272CO: Microprocessor & Assembly Language *(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 the functional block diagram of 8085 microprocessor with suitable diagram.
2. Draw the block diagram of 8255 PPI. Explain each block briefly. 6+6
3. Design address decoding circuit which interface two (4K × 8) RAM and 8KB ROM with 8085 microprocessor. Define address space also. 8+4

Group B

Answer SEVEN questions. **7×8=56**

4. What is Microprocessor? Explain brief evolution history of microprocessor. 2+6
5. Draw the timing diagram of Mov A,B and explain it.
6. What is Interrupt? Explain the different types of interrupts in 8085 microprocessor. 2+6
7. Write a program in 8-bit Microprocessor to store 60h, 2Ah, 7Ch and 10h in the memory location starting from 3000h. Add these data and store the result in 4000h. Explain all the steps.
8. Explain various addressing modes of 8085 microprocessor.
9. What are the functions of DMA? Explain the basic operation of it with diagram. 2+6
10. Explain the application of flags in the microprocessor. Discuss different types of flags in 8086 microprocessor. 2+6
11. Describe various types of parallel communication.
12. Write short notes on any TWO: 4+4
    (a) Fetch execution overlap
    (b) Higher series of Intel processors
    (c) RS232C

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

BIT273CO: Data Structure & Algorithm *(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. What is graph? Explain Kruskal's algorithm with example.
2. What sorting? Explain Radix sort with example.
3. Write algorithms for following singly linear linked list operations: (Insertion/deletion from the first node, insertion/deletion before a given node).

Group B

Answer SEVEN questions. **7×8=56**

4. Write an algorithm with example to evaluate given postfix expression implementing stack.
5. How circular queue removes the deficiency of linear queue? Explain.
6. What is balanced tree? Explain Huffman Coding algorithm. 2+6
7. Explain pre-order and post-order tree traversal algorithms with example.
8. What is searching? Explain binary search method with example.
9. Discuss the efficiency of different sorting algorithms. Explain heap sort. 4+4
10. Explain Insertion sort with example. 8
11. What do you mean by keys in searching? Discuss collision resolution techniques in searching. 2+6
12. Explain Dijkstra's algorithm to find shortest path in a graph with example.

Contd. ...

13. Write short notes on any TWO: 4+4

(a) Priority queue

(b) Hashing

(c) Doubly linked list and its advantages

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

BIT275CO: User Interface Design *(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 standard menu and system menu. Write the advantages of toolbars over menus. 8+4
2. Describe unified file model. Why interoperability is needed? 8+4
3. Define selection. Compare the followings with examples. 2+5+5
   (a) Discrete and concrete selection.
   (b) Additive and group selection.

Group B

Answer SEVEN questions. **7×8=56**

4. What are user's goals? Write the features of user interface design. 4+4
5. What is task coherence? What are its two principles? 2+6
6. Explain how idiomatic paradigm solves the problems of technology paradigm and metaphor paradigm.
7. Mention problems in modeless dialog boxes. Discuss how cascading of dialog boxes is performed. 3+5
8. What do you mean by bounded and unbounded entry gizmos? Explain with examples.
9. What are the problems of drag-and-drop operation? What are their solutions? 5+3
10. Explain tree view gizmo with example.
11. Write short notes on any TWO: 4+4
    (a) Sensible interaction
    (b) Window pollution
    (c) Software design vs interface design

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Bachelor of Information Technology (B. I. T.)/Third Semester/*Final*

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

BIT280CO: Numerical Methods *(New Course)*

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

The figures in the margin indicate full marks.

Group A

Answer TWO questions. **2×12=24**

1. Apply Runge-Kutta fourth order method to find an appromimate value of y for x=0.2, with step size 0.1, *if* $\frac{dy}{dx} = 2x + 2y^2$, given that y=1 when x=0.

2. Solve the system of equations:

   x+2y+3z=14, ~~2x+5y+2z=18~~, 3x+y+5z=20 by factorization method. $2x + 5y + 2z = 18$

3(a) Determine the constants a and b by the method of least squares such that $y = ae^{bx}$ fits the following data: 6

X	2	4	6	8	10
Y	4.077	11.084	30.128	81.897	222.62

(b) Find the cubic polynomial which takes the following values y(0) =1, y(1)=0, y(2)=1 and y(3) = 10. Also obtain the value y(4) by Newton forward difference formula. 6

Group B

Answer SEVEN questions. **7×8=56**

4. Given the table of value as

X	2.5	3.0	3.5	4.0	4.5
Y(X)	9.75	12.45	15.70	19.52	23.75

Contd. ...

Estimate y(3.9) using Newton backward difference formula.

5. Use Lagrange's formula to find the form of f(x), given that

X	0	2	3	6
f(x)	648	704	729	792

6. The distance(s) covered by a car in a given time (t) is given in the following table:

Time(minutes)	12	14	16	18	20
Distance(Km)	14	18	23	25	34

Find the acceleration of the car at t=17 minuts.

7. Find the value of $\int_0^1 1/(1+x)\ dx$ by Simpson's 1/3 rule. Hence estimate the approximate the value of ln2.

8. Find the root of the equation $x^2+4\sin x=0$, correct to four places of decimal by using Newton-Raphson method.

9. Find the positive root of the $x^3-x-1=0$, correct to two decimal places by Bisection method.

10. Fit a straight line to the following data considering y as dependent variable.

x	1	2	3	5	7
y	4	7	9	20	24

11. Write a program to fit a straight line for the set of given data points using least square method.