

B.Sc.IT 3rd Semester Examination

Course Title: Microprocessor Systems

Course Code: B.I.T-301

Nov. 2014

Max. Marks: 80

Min. Marks: 32

Time Allowed: 2.5 Hours

Note: attempt all questions from section A and Section B and only two questions from Section C

Section A: Answer each question in 20 words. Each question carries 2 marks.

1. Write about the following terms?
 - i. ✓ What is the clock frequency of 8085?
 - ii. ✓ What is a totem-pole device?
 - iii. ✓ Convert the decimal number 786 to binary form?
 - iv. ✓ Convert the binary number 110011 to decimal form?
 - v. ✓ Write about address bus of 8085?
 - vi. ✓ What is a subroutine?
 - vii. ✓ Priority interrupt
 - viii. ✓ HOLD State

Section B: Answer each question in 250 words. Each question carries 8 marks.

2. Briefly explain different digital building blocks used in digital logic? (NOT, AND, OR)
3. ✓ Explain the representation of negative integers using suitable examples?
4. ✓ Define stack and explain stack related instructions of 8085?
5. ✓ Draw and explain the timing diagram of a memory write cycle with an example?

Section C: Answer any two questions in 500 words. Each question carries 16 marks.

6. With examples explain the programming model of 8085?
7. ✓ Explain floating-point representation using suitable examples? Explain binary arithmetic of floating-point numbers using suitable examples?
8. ✓ With suitable examples explain 8085 addressing modes in detail?
9. Explain how a Programmable Interrupt Controller works?

Examination: B. Sc. IT
Title/Course No.: Mathematics-III (BIT-302)
Time Allowed: 2½ Hours

3rd Semester
Maximum Marks: 80
Minimum Marks: 32

Note: Attempt all questions from Section A & B and only two questions from Section C.

Section: A (Very short answer type questions in about 20 words each) (8 x 2 = 16)

- i) Find the fifth term in the expansion $(x+3y)^6$.
- ii) Define a sample space.
- iii) Define median. Write formula for median in case of grouped data.
- iv) Find the mode of the data
2, 4, 6, 6, 4, 3, 9, 9, 6, 1, 2, 2, 3, 4, 6
- v) Define Bipartite graph
- vi) What do you mean by isomorphism in graphs.
- vii) What is a rooted tree in a graph.
- viii) What is a chromatic number in a graph.

$$\bar{x} = \frac{\sum f_i x_i}{\sum f_i}$$

Section: B (Short answer type questions to be answered in about 250 words each) (4 x 8 = 32)

2. a) If $6P_2 = n \cdot 6C_2$ find n .
- b) In how many different ways can 4 subjects be arranged in 5 periods of a class.
3. Calculate mean and variance of the following distributions

Score	2	4	6	8	10	12	14	16
Frequency	4	4	5	15	8	5	4	5

4. Show that a simple graph with n -vertices and k -components cannot have more than $\frac{(n-k)(n-k+1)}{2}$ edges.

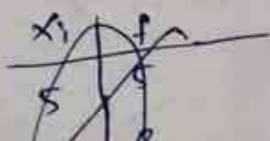
5. Show that a tree with n -vertices has $n-1$ edges.

Section: C (Long answer type questions to be answered in about 500 words each) (2 x 16 = 32)

6. If three dice are thrown simultaneously find the probability that
 - i. all of them show distinct faces
 - ii. all of them show the same face
 - iii. two of them show the same face.
7. a) Show that the sum of the degrees of a graph is even.
b) Show that the maximum number of edges among all n -vertex graph with no triangles is $\lfloor n^2/4 \rfloor$ where $\lfloor n^2/4 \rfloor$ is the greatest integer not exceeding the number $n^2/4$.
8. a) Show that a finite connected graph is Eulerian if and only if each vertex of G is of even degree.
b) Show that every tree with two or more vertices is 2-chromatic.
9. Calculate the standard deviation of the following frequency distribution.

Class	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency	5	8	7	12	28	20	16	10

- b) For any event A , show that $0 \leq P(A) \leq 1$.



$$\bar{x} = A + \frac{\sum d_i x_i}{N}$$

$$d_i = \frac{x_i - A}{h}$$

$$\frac{25-12}{10} = \frac{13}{10}$$

$$\frac{96 \times 12}{192} = 6$$

$$5P_4 = \frac{5!}{1!}$$

Examination: B.Sc. IT
 Title/Course No. : Programme in C++(BIT 303)
 Time Allowed: 2½ Hours

Semester: 3rd
 Maximum Marks: 80
 Minimum Marks: 32

Note: Attempt all questions from Section A & B and only two questions from Section C.

Section: A (Very short answer type questions in about 20 words each)

(8 x 2 = 16)

1.

- i) ✓ Scope Resolution Operator (::) ✓
- ii) ✓ Function Prototype ✓
- iii) ✓ Inline member function ✓
- iv) ✓ Default Constructor ✓
- v) ✓ Hybrid Inheritance ✓
- vi) ✓ Compile-time or run time ✓
- vii) ✓ Pure virtual function ✓
- viii) ✓ Abstract class ✓

Section: B (Short answer type questions to be answered in about 250 words each)

(4 x 8=32)

2 ✓

Explain the difference between "Call by pointer" and "call by reference" ✓

Using Code segments explain the meaning and purpose of static data members and static member functions in C++ ✓

4 ✓

Write the short notes and explain with relevant examples the following. ✓

- a) Const Arguments ✓
- b) Function overloading

5 ✓

With examples, explain the use of private, public and protected keywords in C++ ✓

Section: C (Long answer type questions to be answered in about 500 words each)

(2 x 16= 32)

6.

Write a program to explain the concept of static and dynamic binding of member functions of a class.

7 ✓

WAP in C++ to multiple the two 2D Matrix of nxn and display the output in matrix form. ✓

8.

Give the brief description with relevant examples of the following?

- a) Data abstraction b) Encapsulation c) Polymorphism.

9 ✓

Using array within class, write a program to carry out implementation of stack. ✓

////////

Push, Pop,
top

Set size(m)
getdata()
show()
multiply(A, B);
show();

Examination: B.Sc. IT

Title/Course No. : System Analysis and Design (BIT 304)

Time Allowed: 2½ Hours

Semester: 3rd

Maximum Marks: 80

Minimum Marks: 32

Note: Attempt all questions from Section A & B and only two questions from Section C.

Section: A (Very short answer type questions in about 20 words each)

(8 x 2 = 16)

1. Explain the following terms:

- i) ✓ SDLC
- ii) ✗ System Model
- iii) ✓ Structured walk-through
- iv) ✓ Prototyping
- v) ✓ CASE
- vi) ✓ Object Modeling
- vii) ✓ Alpha testing
- viii) ✓ Unit testing

Section: B (Short answer type questions to be answered in about 250 words each)

(4 x 8=32)

- 2. ✗ Why is Systems analysis necessary?
- 3. ✓ What are the different feasibility parameters of a system?
- 4. ✓ Explain in detail
 - a) ✓ Object Modeling
 - b) ✓ Functional Modeling

5. ✗ How software quality and productivity is measured? ✗

Section: C (Long answer type questions to be answered in about 500 words each)

(2 x 16= 32)

- 6. ✗ Why is a life cycle needed for the development of information system?
- 7. ✗ Explain E-R diagram and system Flow Chart with the help of suitable examples.
- 8. What is the purpose of developing use cases during systems analysis? What role does iteration play in developing use cases?
- 9. Explain in detail various software quality and productivity measurement techniques.

////////

B. Sc. IT Programme

October, 2013

3rd Semester

Subject: Microprocessor Systems (BIT-301)

Time Allowed: 2 ½ Hours

Maximum Marks: 80

Min Pass Marks: 32

Note: Attempt all questions from Section A & B and only two questions from Section C.

Section-A: (Very short answer type questions to be answered in about 20 words)

Marks: 8x2=16

1.
 - i) What is an instruction?
 - ii) What is meant by machine code?
 - iii) How many signed integers can be represented within 16 bit?
 - iv) What is BCD?
 - v) Why is the data bus bidirectional?
 - vi) Specify the control signals used in 8085 MPU.
 - vii) Define Memory Read Cycle.
 - viii) List the vectored interrupt inputs of 8085 in the order of priority along with their call locations.

Section-B: (Short answer type questions to be answered in about 250 words)

Marks: 4x8=32

2.
 - a) Give the relative merits and demerits of Assembly language and higher level languages.
 - b) Compare digital and analog signals.
3.
 - a) Subtract the number $(347.5)_{10}$ from $(829)_{10}$ in binary. Represent the result back in decimal.
 - b) Add the decimal numbers 254 and 511 using BCD addition.
4. Discuss various addressing modes of Intel 8085 with suitable examples.
5. Draw and explain the timing diagram for op code fetch.

Section-C: (Long answer type questions to be answered in about 500 words)

Marks: 2x16=32

- a) What is an open collector device? What are its advantages?
- b) Write a note on device loading.
- a) Explain IEEE representation of single and double precision floating point numbers. Also show how special values are specified by the standard.
- b) A machine stores floating point number in 7-bit words. The first bit is used for the sign of the number, the next three for the biased exponent, and the next three for the magnitude of the mantissa (with an assumed 1). What is represented by 0010110 in decimal?

Draw the labeled pin diagram of 8085 and give the description of various pins.

Draw and explain the block diagram of 8259 interrupt controller.

(4)

B. Sc IT Programme

October, 2013

Maximum Marks: 80

Min Pass Marks: 32

Semester
Subject: Mathematics-III (BIT-302)
Time Allowed: 2 ½ Hours

3344

Note: Attempt all questions from Section A & B and only two questions from Section C.

Section: A (Very short answer type questions to be answered in about 20 words)

Marks: 8x2=16

1. i) Find the 4th term of $(x + \frac{1}{x})^8$ in the simplified form.
- ii) Prove that probability of the impossible event is zero.
- iii) If Mode of a distribution is 60 and its mean is 66. Find the median of the distribution?
- iv) The mean of a set of numbers is \bar{x} . If each number is multiplied by K , then find the new mean.
- v) Determine the number of edges in a graph with 6 nodes, two of degree 3 and four of degree 2.
- vi) a) Define the terms (a) Graph, (b) Self-loop.
- vii) Give an example of a graph which is regular and (a) of degree 0, (b) of degree 1.
- viii) Prove that every connected graph G has at least one spanning tree.

Section: B (Short answer type questions to be answered in about 250 words)

Marks: 4x8=32

2. Compute $(99)^5$ by using Binomial Theorem.
3. Find the Median for the following distribution

Class	:	1-11	11-20	21-30	31-40	41-50
No. of items	:	10	21	51	45	26
4. Prove that in a simple graph with n vertices the maximum number of edges is $\frac{n(n-1)}{2}$.
5. Define graph coloring. Write a short note on four color problem.

Section: C (Long answer type questions to be answered in about 500 words)

Marks: 2x16=32

6. a) Prove that with usual meanings $n_{c_r} + n_{c_{r-1}} = n + 1_{c_r}$
 - b) If A and B are any two events, such that $P(A)=0.42$, $P(B)=0.48$ and $P(A \text{ and } B)=0.16$. Find $P(A \text{ or } B)$.
 7. Calculate the Mean deviation from the
a) arithmetic mean of the following series 20,22,27,30,31,35,40,45,48
b) Calculate the standard deviation from the following data:

Class-interval:	10-20	20-30	30-40	40-50
Frequency:	15	10	13	21
- Prove that a simple graph with n vertices and K components can have at most $\frac{(n-k)(n-k+1)}{2}$ edges.
- a) Prove that a finite connected graph is Eulerian if and only if each vertex had even degree.
 - b) Prove that a tree with n vertices has $n - 1$ edges.
- *****

①

B. Sc IT Programme

3rd Semester

Subject: Title: Programming in C++ (BIT-303)

Time Allowed: 2 ½ Hours

October, 2013

Maximum Marks: 80

Min Pass Marks: 32

Note: Attempt all questions from Section A & B and only two questions from Section C.

Section-A: (Very short answer type questions)

Marks: 8x2=16

- i) What is an Object?
- ii) Indicate anyone difference between structure of C and structure of C++?
- iii) Give one example of Polymorphism.
- iv) Give one example of Data hiding?
- v) What are the main features of friend function?
- vi) Give one example of pointer arithmetic.
- vii) Give one advantage of inline function.
- viii) What does mean by static binding?

Section-B: (Short answer type questions)

Marks: 4x8=32

1. Define the Following Terms with the help of suitable examples:
 - a) Polymorphism
 - b) Encapsulation
2. Write an object oriented program to generate prime numbers?
3. Write a program to demonstrate the * operator overloading.
4. Write a program to demonstrate dynamic binding.

Section-C: (Long answer type questions)

Marks: 2x16=32

6. a) What are the main advantages are of object oriented programming over procedural programming? Explain.
b) How can reusability of code be achieved? Explain.
7. a) Explain while and do-while statements with the help of syntax and examples.
b) Write an object oriented program to generate first 20 numbers multiple of 3 and 5.
8. Write an object oriented program to demonstrate Constructors and Destructors.
9. What is inheritance? Write a program to demonstrate single and multiple inheritance.

B. Sc IT Programme

3rd Semester

Subject: Title: System analysis and Design (BIT-304)

Time Allowed: 2 ½ Hours

October, 2013

Maximum Marks: 80

Min Pass Marks: 32

Note: Attempt all questions from Section A & B and only two questions from Section C.

Section-A: (Very short answer type questions)

Marks: 8x2=16

- 344
- i) Which step of SDLC performs cost/benefit analysis?
 - ii) List the tools used during system analysis?
 - iii) In an ER-Diagram, a weak entity is defined as?
 - iv) Define MIS?
 - v) The relationship among elements within a module is called as?
 - vi) Define testing?
 - vii) Define Case tool?
 - viii) Give few roles of system analyst?
- 36/10/13

Section-B: (Short answer type questions)

Marks: 4x8=32

2. What do you mean by SDLC? Describe the different phases of SDLC?
3. What is the main difference between a flow chart and DFD? What is the difference between a physical DFD and a logical DFD?
4. Define an object. Why is object-oriented modelling used in practice?
5. What do you mean by testing? Also discuss its types.

Section-C: (Long answer type questions)

Marks: 2x16=32

6. Discuss SDLC in detail?
 7. Define DFD? Design a DFD for School Management System. Make Necessary assumptions if needed?
 8. What is case tool? What are different types of case tools? Discuss the use of Case tools in designing of information systems?
 9. a) Explain planning and scheduling in software project management?
b) What is need of system testing? Explain any different testing techniques and their basic objectives?
-