BANKURA UNIVERSITY

B. Sc. Semester I (Hons) Examination 2017

COMPUTER SCIENCE

Subject Code : **11501** Course Code :SH/CSC/101/C-1

Course Title : Programming Fundamental using C /C++

Full Marks : 25 **Time : 1 hr 15 Mins**

The figures in the right hand side margin indicate marks.

1. Answers <u>any five</u> questions : **1 x 5 = 5**

a) What is variable?

b) Write differences between break and Continue statement in c language.

c) What advantage is there in defining an array size in terms of a symbolic Constant rather than a fixed integer quality?

d) Write differences between a structure and a union.

e) What is pointer variable?

f) What is inline function?

g) Define an object?

h) What is pure virtual function?

2. Answers <u>any two</u> questions : **5 x 2 = 10**

a) Write differences between call by value and call by reference. Write a C-function to Compute length of a string. 2+3=5

b) What is dynamic memory allocation? Write differences between malloc () and calloc(). Write a C-program to print the following triangle.

```
1
2   3
4   5   6
7   8   9   10
```

1+1+3 = 5

c) Write difference between while loop & do-while loop. What is conditional operator? What is pre increment operator? What is the output when the following program segment get executed ?

```
for (m = 0;  m < 3;  ++m)
Printf ("% d\n", (m % 2)? m : m + 2);
```

1+1+1+2=5

d) Explain Constructor overloading with suitable example. What is copy constructor? 3+2=5

3. Answers <u>any one</u> questions : 10 x 1 = 10

a) Write three differences between procedure oriented programming and object oriented programming. Write differences between inline function and macro. Write a C-program that reads numbers from a file and write all odd numbers into a separate file. 3+2+5=10

b) What is class? How does it accomplish data hiding? What is friend function? What is it's demerit?

Define a class to represent a bank account. Include the following members :

i) Name of the depositor.

ii) Account Number.

iii) Balance amount in the account.

<u>Member function :</u>

i) To assign initial values.

ii) To deposit an amount.

iii) To withdraw an amount after checking the balance.

iv) To display name & balance.

1+2+1+1+5 = 10

BANKURA UNIVERSITY

B. Sc. Semester I (Hons) Examination 2017

COMPUTER SCIENCE

Subject Code : **11511** Course Code : SH/CSC/101/C-1

Course Title : Programming Fundamental using C /C++ (Practical)

Full Marks : 15 **Time : 2 Hours**

The figures in the right hand side margin indicate marks.

(LNB + Viva =5, Experiment = 10)

Perform any one experiment :

1. W.A.P. to reverse a number.
2. WAP to compute the factors of a given number.
3. Write a macro that swaps two numbers WAP to use it.
4. Write a program that swaps two numbers using pointers.
5. WAP to find sum of n elements entered by the user. Allocate memory dynamically using malloc() function or new operator.
6. WAP to calculate GCD of two numbers using recursion.
7. Write a file oriented C-program that copy the content of one text file into another file after removing all whileshaces.
8. Write a function that reverses the elements of an array in place. The function must accept only one pointer value and return void. Write a C-program to test the function.
9. Write a program to generate first n fibonacci numbers.
10. Write a program to print the following triangle.

```
        1
      2   3
    4   5   6
  7   8   9   10.
```

BANKURA UNIVERSITY

B. Sc. Semester I (Hons) Examination 2017

COMPUTER SCIENCE

Subject Code : **11502** Course Code : SH/CSC/102/C-2

Course Title : Computer system Architecture

Full Marks : 25 **Time : 1 Hr. 15 Min.**

The figures in the right hand side margin indicate marks.

1. Answer <u>any five</u> questions : **1 x 5 = 5**

a) Why does NAND Gate called universal Gate?

b) What is Multiplexer?

c) What is combinational circuit?

d) Define Interrupt.

e) What is register set?

f) How many bits are occupied by the Mantissa in IEEE - 32 bit Representation?

g) What is CISC?

h) Define Instruction.

2. Answer <u>any two</u> questions : **5 x 2 = 10**

a) What is stack? Explain its use and the different operations on it. 1+2+2

b) Discuss the importance of memory reference instructions in computer with examples.

c) What are the elements of assembly language programming?

d) Apply Booth's Algorithum with following example multiplicand 10111 and multiplier 10011.

3. Answer <u>any one</u> question : **1 x 10 = 10**

a) Explain different organizations of cache memory. Explain working of a cache memory. 4+6=10

b) Explain working of DMA data transfer. Compare it with programmed I/o and interrupt driven data transfer. 4+(3+3)=10

BANKURA UNIVERSITY

B. Sc. Semester I (Hons) Examination 2017

COMPUTER SCIENCE

Subject Code : **11512** Course Code : SH/CSC/102/C-2

Course Title : Computer system Architecture (Practical)

Full Marks : 15 **Time : 2 Hours**

The figures in the right hand side margin indicate marks.

(LNB + Viva =5, Experiment = 10)

1. Attempt <u>any one</u> :

1) Implement Half-Adder using Basic Gates.

2) Implement Full-Adder using NAND Gates.

3) Implement 8 x 1 MUX using IC 74153.

4) Implement J.K. Flip-Flop using NAND Gates.

5) Implement S-R Flip-Flop using NAND Gates.

6) Implement 4 x 1 Multiplexer using NAND Gates.

7) Implement 4-bit Binary Adder using IC 7483.

8) Implement the function F = ABC + DEF using IC 7411.

9) Implement Full subtractor using NAND gates.

10) Implement XOR Gate using NOR Gates.

BANKURA UNIVERSITY
B. Sc. Semester I (Hons) Examination 2017
COMPUTER SCIENCE

Subject Code : **11503** Course Code : SH/CSC/103/GE-1

Course Title : Computer Fundamentals theory

Full Marks : 25 **Time : 1 Hr. 15 Min.**

The figures in the right hand side margin indicate marks.

1. Answer <u>any five</u> question : **1 x 5 = 5**

a) What type of computers are especially used in research and development?

b) Convert $(9AD.CE)_{16}$ to binary.

c) Define : operating system

d) Name two system software

e) What is application software ?

f) Distinguish between RAM and ROM.

g) Write full form of : SMPS, ALU

h) What is an embedded system?

2. Answer <u>any two</u> question : **5 x 2 = 10**

a) Computer : $(23.2)_8 = (?)_2 = (?)_{16} = (?)_{10}$

b) Discuss some services provided by an operating system.

c) Describe Von Neumann Architecture in brief.

d) Describe mobile computing in brief.

3. Answer <u>any one</u> question : **10 x 1 = 10**

a) Describe various input and output devices in brief.

b) Discuss on memory organization of a computer in brief.

BANKURA UNIVERSITY
B. Sc. Semester I (Hons) Examination 2017
COMPUTER SCIENCE

Subject Code : **11503** Course Code : SH/CSC/103/GE-1

Course Title : Introduction to programming

Full Marks : 25 **Time : 1 Hr. 15 Min.**

The figures in the right hand side margin indicate marks.

1. Answer <u>any five</u> question : **1 x 5 = 5**

a) Name the generation of computers to which VLSI technology belongs.

b) Name the model on which present day computers based.

c) Write full forms of : ALU, CPU.

d) What is structured programming?

e) What is flow chart?

f) What is procedure oriented programming?

g) What do you mean by array?

h) What is pointer?

2. Answer <u>any two</u> question : **5 x 2 = 10**

a) Discuss various generations of computers in brief.

b) Describe the basic computing model in brief.

c) Write a short note on decision table.

d) Distinguish between recursive and iterative method.

3. Answer <u>any one</u> question : **10 x 1 = 10**

a) Write a program in a C for computing Fibonacci series upto n terms :

i) Using recursion.

ii) Without using recursion.

b) i) Write a program in C to determine the maximum and minimum of 4 given itegers.

ii) Write a program in C for prime number checking. 5+5=10

BANKURA UNIVERSITY
B. Sc. Semester I (Programme) Examination 2017
COMPUTER SCIENCE

Subject Code : **11504** Course Code : SP/CSC/101/C -1A
Course Title : Problem solving using computer

Full Marks : 25 **Time : 1 Hr. 15 Min.**

The figures in the right hand side margin indicate marks.

1. Answer <u>any five</u> question : **1 x 5 = 5**

a) What is date processing?

b) What is decision table?

c) Write two differences between primary memory and secondary memory.

d) What is register?

e) Write two differences between data & information.

f) Write full form of ENIAC & UNIUAC.

g) What is variable?

h) What are the uses of '**' and % operations in Python?

2. Answer <u>any two</u> question : **5 x 2 = 10**

a) Write differences between top-down & bottom-up approach of programming. Draw a flow chart to calculate the sum of first 10 Fibonacci numbers. 2 + 3=5

b) Draw the block diagram of a Computer system and explain the functions of each unit. 2+3=5

c) What is loop? What types of loops are available in python programming? Explain while loop with an example. 1+1+3=5

d) What is interpreter? Write a Python program to generate first 10 prime numbers. 1+4=5

3. Answer <u>any one</u> question : **10 x 1 = 10**

a) What is meant by generation of a Computer? Briefly describe each generation of Computer along with key features. Write properties of a good algorithm. 1+6+3=10

b) What is Operator? Explain operators and operands with example. What types of operators are in python? Briefly describe any three types of operators. 1+2+1+6=10

BANKURA UNIVERSITY
B. Sc. Semester I (Programme) Examination 2017
COMPUTER SCIENCE

Subject Code : **11514** Course Code : SP/CSC/101/C -1A

Course Title : Problem solving using computer (Practical)

Full Marks : 15 **Time : 2 Hours**

The figures in the right hand side margin indicate marks.

(LNB + Viva =5, Experiment = 10)

Perform <u>any one</u> experiment

1) W.A.P. in python to display first n-terms of Fibonacci Series.

2) W.A.P. in python to find factorial of a given number.

3) Write a program in python to find sum of following series for 20 terms.

$1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \text{---} + \frac{1}{n}$

4) W.A.P. in python to Calculate the product of two 3 x 3 matrices.

5) W.A.P. is python to generate first n prime numbers.

6) Write a menu driven program in Python to Convert a given temperature from Fahrenheit to Celsius and vice versa depending upon user's choice.

7) W.A.P. in Python to display the following pyramid.

```
                1
            2   1   2
        3   2   1   2   3
    4   3   2   1   2   3   4
5   4   3   2   1   2   3   4   5
```

8) W.A.P. to sum the following series

$\frac{1}{3} + \frac{3}{5} + \frac{5}{7} + \frac{7}{9} + \text{---} \frac{97}{99}$.

BANKURA UNIVERSITY
B. Sc. Semester I (Hons) Examination 2017
COMPUTER SCIENCE

Subject Code : **11513** Course Code : SH/CSC/103/GE-1
Course Title : Computer Fundamentals (Practical)

Full Marks : 15 **Time : 2 Hours**

The figures in the right hand side margin indicate marks.

1. Perform <u>any one</u> experiment : **10 x 1 = 10**

a) Prepare your CV in Ms word.

b) Prepare the title page of a Book in Ms word with the following information :

Book title, Author name and affiliation, publisher name and office address, year, edition.

c) Prepare an Excel sheet regarding the semester students with computer science generic, containing the following information : Roll No., Name, % of attendance, % of marks Populate the sheet with at least 5 records and then determine :

i) Maximum marks in %

ii) Average attendance in %

iii) Roll No. and Name of students who scored < 30% marks

d) Prepare an Excel sheet regarding the patient admitted to a hospital over a span of time, containing the following information :

Patient Name, Patient Id, Disease, Attending doctor.

Populate the sheet with at least 5 records and then determine :

i) Name(s) of patient(s) suffering from fever

ii) Name(s) of attending doctor(s)

ii) List of various diseases reported

BANKURA UNIVERSITY
B. Sc. Semester I (Hons) Examination 2017
COMPUTER SCIENCE

Subject Code : **11513** Course Code : SH/CSC/103/GE-1

Course Title : Introduction to programming

Full Marks : 15 **Time : 2 Hours**

The figures in the right hand side margin indicate marks.

(LNB + Viva =5, Experiment = 10)

1. Write <u>any one</u> program in c to : **10 x 1 = 10**

a) Compute the sum of digits of a given integer.

b) Compute the sum of first n natural numbers.

c) Determine the largest of n given integers.

d) Computer the factorial of a given natural number using recursion.

e) Write a C-program to check whether a given number is prime or not.

f) Write a C-program to reverse a 3 digit number.

g) Write a C-program to generate the first 10 fibonacci numbers.

h) Write a C-program to calculate the sum 1 + ½ + ⅓ + ¼ + --- + ⅟n. n should be supplied from user.