B.Sc.CSc.201-2071 ✡

Tribhuvan University
Institute of Science and Technology
2071
✡

Bachelor Level / Second Year/ Third Semester/ Science
Computer Science and Information Technology (CSc. 201)
(Computer Architecture)

Full Marks: 60
Pass Marks: 24
Time: 3 hours.

Candidates are required to give their answers in their own words as for as practicable.
The figures in the margin indicate full marks.

Long Questions:

Attempt any two questions: (2×10=20)

1 Write down the code to evaluate Y = A/B + CD + E (F/G) in three address, two address, one address and zero address instruction format.

2. Explain the mapping function. Why replacement algorithm is used in set associative mapping? Explain with example.

3 Differentiate between interrupt driven I/O with programmed I/O. Explain with example how data transfer is performed in direct memory access (DMA).

Short Questions:

Attempt any ten questions: (10×6=60)

4. Explain the floating point addition and subtraction with flowchart.

5. Comparison between RISC and CISC.

6. What are the key characteristics of computer memory system? Explain.

7 Explain input/output interface with example.

8 Compare the different types of addressing modes with example.

9. Explain the microprogram control unit with example.

10. Explain the non-restoring division algorithm with example.

11 Explain the input-output processor with block diagram.

12 Explain the data manipulation instruction with example.

13. Explain with example of Arithmetic microoperations.

14. Explain memory management hardware with example.

15 Write short notes on the following:
(a) Virtual memory
(b) Register organization.

11. Explain how file allocation table (FAT) manage the files. Mention the merits and demerits of using FAT.

12. Write short notes: **(Any two)**
a) Best Fit vs. Worst Fit
b) Swapping
c) Semaphores

B.Sc.CSc.202-2071 ✡

Tribhuvan University
Institute of Science and Technology
2071
✡

Bachelor Level / Second Year/ Third Semester/ Science — Full Marks: 60
Computer Science and Information Technology (CSc. 202) — Pass Marks: 24
(Object Oriented Programming) — Time: 3 hours

Candidates are required to give their answers in their own words as for as practicable.
The figures in the margin indicate full marks.

Long Questions:

Attempt any two questions: (2×10=20)

1. Why do we need object oriented programming? How can we use inheritance to reuse already written and tested code in programs? Discuss with suitable example. (3+3+4)

2. Discuss features of class and object. Design a class to represent a bank account with data members name, account-number, account-type, and balance and functions to assign initial values, to deposit an amount, to withdraw an amount after cheeking balance, and to display the name and balance. (4+6)

3. What is operator overloading? What are the benefits of operator overloading? How is operator overloading different from function overloading. Write a program that shows an example of function overloading. (2+2+2+4)

Short Questions:

Attempt any eight questions: (8×5=40)

4. Discuss polymorphism with example.

5. What is library function? How is it different from user defined function?

6. What is looping? Differentiate while loop with do-while loop with example.

7. Discuss the use of inline function with example.

8. What is constructor? Differentiate it with destructor.

9. Explain about accessing a member function outside a class with example.

10. Write a program that decreases an integer value by 1 (one) by overloading – operator.

11. Differentiate between abstract base classes and concrete classes.

12. What is function template? Differentiate it with class template.

13. Write a program to show exception handling.

6. Write the finite difference formula for solving Poisson's equation. Hence solve the Poisson equation

$$\nabla^2 f = 2x^2y^2$$

over the domain $0 \le x \le 3$ and $0 \le y \le 3$ with $f = 0$ on the boundary and $h = 1$. (1+7)

7. Write an algorithm and a C program for the fixed point iteration methoe to find the roots of non-linear equation. (4+8)

OR

Write an algorithm and a C program for the Lagrange's interpolation to approximate the functional value at any given x from given n data. (4+8)

B.Sc.CSc.204-2071 ✡

Tribhuvan University
Institute of Science and Technology
2071
✡

Bachelor Level / Second Year/ Third Semester/ Science
Computer Science and Information Technology (CSc. 204)
(Numerical Methods)

Full Marks: 60
Pass Marks: 24
Time: 3 hours

Candidates are required to give their answers in their own words as for as practicable.
The figures in the margin indicate full marks.
Assume suitable data if necessary.

Attempt all questions:

1. How is the bisection method convergent to a root of an equation? Apply the bisection method to find a root of the equation

$$x\tan x - 1 = 0$$

(3+5)

2. Define interpolation. Find the Lagrange interpolation polynomial to fit the following data. Estimate the value

i	0	1	2	3
x_i	0	1	2	3
e^{x_i}	0	1.7183	6.3891	19.0855

of $e^{1.9}$ (1+6+1)

3. Derive Simpson's $\frac{1}{3}$ rule to evaluate numerical integration. Using this formula evaluate

$$\int_0^2 \left(e^{x^2} - 1\right)dx \text{ with } n = 8.$$

(4+4)

4. What do you mean by ill-conditioned systems? Solve the following system using Dolittle LU decomposition method.

$$3x_1 + 2x_2 + x_3 = 10$$
$$2x_1 + 3x_2 + 2x_3 = 14$$
$$x_1 + 2x_2 + 3x_3 = 14$$

(2+6)

5. Solve the following boundary value problem using shooting method.

$$\frac{d^2y}{dx^2} - 2x^2y = 1, \text{ with } y(0) = 1 \text{ and } y(1) = 1.$$

taken h =0.5 (8)

to them, it was not necessary that a task had to be defined in detail for the Job to be executed efficiently.

Vinay felt that these conditions were not conducive to maximize productivity. He had learnt on the production line that efficiency was the direct result of the organization and structure of tasks. If it worked in one situation it would work in another. To start with, Vinay installed a time click. He believed that punctuality of the staff and their presence during the working hour of the day waspre requisite for success. The researchers in the R and D department expressed disbelief in the decision. Prior to Vinay becoming the manager most of the researchers were recognized as being quit productive. Many of there actually kidded to work kon Saturday evenings, because the activity leavel of the plant was lower, and they could concentrate better. Without realizing this Vinay was actually telling the members to reduce their work time per unit of production by one-fourth.

On arrival for work on the following Monday, Vinay was pleased to see that all the researchers clocked in at the right time. They stayed at their desk throughout the day, and left promptly at 5.00 PM. He hoped that everything was going to be great. The employees has accepted him as their supervisor. The expectations turned out to be short-lived. People throughout the company began calling on his asking why their particular project was not finished. When be checked with the persons concerned, he found that they had been working on it but did not have the time to complete it. This was o in almost all cases.

Vinay came to the conclusion that the researchers were negligent and therefore, issues numerous letters requiring explanation. In the meanwhile, several employees resigned to deteriorate, and on useful work was being conducted in the department. When the Vice-President finally asked Vinay what was causing this inefficiency, he responded, "they were all a bunch of super-ego people but he would bring them to book". The Vice President was not sure that this was the problem. He seeks you advice.

Questions:

1. What considerations did the management have on mind while appointing Vinay as the Manager of the Research and Development Department?
2. How would you describe the leadership style of Vinay? How appropriate was this style to the management of the Research and Development Department?
3. What style of leadership can be regarded to be the most effective in a group of researchers?
4. If you were the Vice-President of Front Line Engineering Company, what action would you take to improve the situation?

Group C

Attempt any six questions: (6×6=36)

5. What are the basic functions of management.

6. Define scientific management. What are the major contributions made by F.W. Taylor, the father of scientific management?

7. Identify the areas of corporate social responsibility.

8. Discuss the types of planning.

9. Mention the major components of human resource management.

10. What is leadership? Explain the styles of leadership.

11. Explain the meaning and types of communication.

12. What is control? State the characteristics of effective control system.

Tribhuvan University
Institute of Science and Technology
2071
✡

Bachelor Level / Second Year/ Third Semester/ Science
Computer Science and Information Technology (MGT 205)
(Introduction to Management)

Full Marks: 80
Pass Marks: 32
Time: 3 hours

Candidates are required to give their answers in their own words as for as practicable.
The figures in the margin indicate full marks.

Group A

1. **Write specific answer to the following questions:** (2×10=20)

   (a) Write four principles of management.

   (b) Point out the four characteristics of the contingency theory.

   (c) Define business environment.

   (d) What is planning? List out four types of plan.

   (e) What do you understand by individual and group decision making.

   (f) Define human resource management and list out the components of human resource management.

   (g) Point out the four factors of hygiene factors of Herzberg's hygiene theory.

   (h) Mention about conflict resolution.

   (i) What is management information system?

   (j) Write full form of CSR, QC, SWOT and CPM.

Group B

Answer any two questions, but question no. 4 is compulsory. (2×12=24)

2. What is decision-making? What processes would you commonly follow for making organizational decision? Explain.

3. Define organization. Explain about line organization and line and staff organization structure.

4. Read the following case carefully and answer the questions:

   Vinay was appointed four months ago as the manager of the research and development department of frontline engineering company. The vice president of the company who took the decision, strongly believed that R and D department would use with advantage the expertise of the person who was experienced in production problems. Vinay had been a production supervisor and had an excellent reputation for getting the jobs done. He was quite systematic in his working and was known for his ability to solve problems prior to their reaching the higher authorities. The main emphasis of the department was to conduct practical research for the purpose of developing marketable products. Top management believed that Vinay would do well in this assignment in view of his sound production background.
   Vinay could never believe how unorganized the researchers could be. They would come to work at 10.00 AM and leave at 3.00 PM. He did not realize tat many of them worked till last at night. Threes employees were all dedicated researchers and professionals in their won right. According

CSC201-2069✡

Tribhuvan University
Institute of Science and Technology
2069
✡

Bachelor Level / Second Year/ Third Semester/ Science
Computer Science and Information Technology (CSc. 201)
(Computer Architecture)

Full Marks: 80
Pass Marks: 32
Time: 3 hours.

Candidates are required to give their answers in their own words as for as practicable.
The figures in the margin indicate full marks.

Long Questions:

Attempt any two questions: (2×10=20)

1. Explain the non-restoring division algorithm with example.
2. What do you mean by Memory system? Explain the characteristics of Memory systems of computer.
3. Explain the Data transfer and manipulation instruction with example.

Short Questions:

Attempt any ten questions: (10×6=60)

4. Differentiate between fixed point representation and floating point representation.
5. Explain the arithmetic logic shift unit.
6. What do you mean by computer register and computer instructions? Explain.
7. Differentiate between Hardwired control and microprogram control unit.
8. Explain the types of instruction format and compare each of them.
9. What do you mean by DMA controller? What the three register is used in DMA controller? Explain.
10. What is Virtual Memory? What are the major differences between Address space and Memory space?
11. What do you mean by stock organization? What are the major differences between register stack and Memory stack?
12. Explain the logical and Bit manipulation instruction with example.
13. What are the characteristics of CISC and RISC processes? Explain.
14. What do you mean by interface? What are the major differences between I/O bus and Memory bus?
15. Write short notes on the following:
    (a) Parity generator
    (b) Array multiplier

CSc.205-2069✡

Tribhuvan University
Institute of Science and Technology
2069
✡

Bachelor Level / Second Year/ Third Semester/ Science
Computer Science and Information Technology (MGT 205)
(Introduction to Management)

Full Marks: 80
Pass Marks: 32
Time: 3 hours.

Candidates are required to give their answers in their own words as for as practicable.
The figures in the margin indicate full marks.

Group A

(2×10=20)

1. Write specific answer to the following questions:

   (a) Write four components of internal environment and explain any one of it.

   (b) Make a list of Roles of Manager in an organization.

   (c) What is MBO? Write down four steps of MBO process.

   (d) What is Communication? Write four barriers to Communication.

   (e) Define organization and mention its five features.

   (f) Give the meaning of Line and staff organization structure. Present the line and staff organization in graphical form.

   (g) What is the theory developed by Douglas McGregor? Draw a figure of hierarchy of Needs in ladder form.

   (h) What do you understand by the principle of Span of Control and principle of authority and responsibility under principles of management?

   (i) Give the full form of QC, TQM, MIS, DSS, PERT, CPM.

   (j) Point out the four barriers to effective Communication and the four techniques to improve them.

Group B

(2×12=24)

Answer any two questions, but question no. 4 is compulsory.

2. Define Management. Explain how Hawthorne experiments have contributed to the development of management thought.

3. What is controlling? As a manager of an organization, what types of control system would you recommend and why?

4. Read the case given below carefully and answer the question:

   Ravi general manager of a commercial bank believes on management b objective. He used to involve subordinates in planning and decision making. He has given autonomy to his employees to accomplish their job themselves but willing to help then if they need. He has been very successful in his activities in this respect. He hired Ashok, a fresh MBA form Kathmandu University. Ashok was good at academic performance. Ashok was posted in the loan department. Ravi motivated Ashok to work independently, maintaining

his fait in the philosophy of participative management. He discussed the job assigned to him to be achieved within the specified time. Ashok, however, failed to complete the job in time. Later on, Ravi revised target after consultation with Ashok. However, specified targets were not achieved. Ravi meet Ashok and blame him for his non-performance. He was warned for better performance or ready for termination. Ashok was surprised for a while but later on with courage said, sir, though I like you, but I feel hesitant working with you. I sometime do not know what to do next. It takes me longer if I could benefit from your experience by having you tell me each day what steps to take next. He furter told Ravi that in his previous job also, his supervisors used to help him like that. On hearing this Ravi became wordless and speculated what to do with Ashok.

Questions:

1. What would you suggest improving Ashok's performance?
2. Was Ravi's decision to terminate Ashok's was the right way to handle the situation?
3. Does Ravi should discard his believe in MBO? Give your view.

Group C

(6×6=36)

Attempt any six questions:

5. Explain Behavioural Science Theory with its contributions and limitations.
6. What is management ethics? What role does ethics play in organization? Explain.
7. What is Decentralization? Explain its merits.
8. Why is human resource management important in an organization? Describe briefly its components.
9. Explain Managerial Grid Theory of leadership with the help of a figure.
10. Define Motivation. Explain Maslow's theory of motivation.
11. Define communication. Explain its major barriers.
12. Discuss the types of control system.

CSC204-2069✡

Tribhuvan University
Institute of Science and Technology
2069
✡

Bachelor Level / Second Year/ Third Semester/ Science
Computer Science and Information Technology (CSc. 204)
(Numerical Method)

Full Marks: 60
Pass Marks: 24
Time: 3 hours.

Candidates are required to give their answers in their own words as for as practicable.
The figures in the margin indicate full marks.
Assume suitable data if necessary.

Attempt all questions:

1. Derive the formula to solve nonlinear equation using secant method. Using your formula estimate a real root of following nonlinear equation using secant method correct up to two decimal places $x^2 + 1nx = 3$. (3+5)

2. Estimate $f(3)$ from the following data using Cubic Spline interpolation.

x	1	2.5	4	5.7
$f(x)$	-2.0	4.2	14.4	31.2

(8)

OR

Find the best fitting quadratic polynomial from following data using least square approximation.

x	-2	-1.2	0	1	1.2	2.5	3	4.5	6.3
$f(x)$	10.39	2.96	-2.0	-2.63	-2.46	0.83	3.1	12.8	30.4

3. (a) For the function $f(x) = e^x\sqrt{\sin x + 1nx}$ estimate $f'(6.3)$ and $f''(6.3)[takeh = 0.01]$ (4)

(b) Evaluate $\int_1^2 (1nx + x^2 \sin x)dx$ using Gaussian integration 3 point formula. (4)

4. Solve the following set of equations using Gauss elimination or Gauss Jordan method.

$$3x_1 + 5x_2 - 3x_3 + x_4 = 16$$
$$2x_1 + x_2 + x_3 + 4x_4 = 9$$
$$3x_1 - 4x_2 - x_4 = 1$$
$$2x_1 + x_2 - 3x_3 + 9x_4 = 5$$

(8)

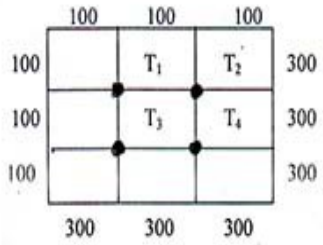
5. How can you solve higher order differential equation? Explain. Solve the following differential within $0 \le x \le 1$ using Heun's method. (3+5)

$$\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2xy = 1 \text{ with } y(0) = 1 \text{ and } y'(0) = 1(takeh = 0.5).$$

CSC204-2069✡

6. (a) How can you obtain numerical solution of a partial differential equation? Explain. (3)

(b) The steady-state two-dimensional heat-flow in a metal plate is defined by $\frac{\partial^2 T}{\partial x^2} + \frac{\partial^2 T}{\partial y^2} = 0$. Given the boundary conditions as shown in figure below, find the temperatures at interior points T_1, T_2, T_3 and T_4. (5)



7. Write an algorithm and C-program code to solve non-linear equation using Newton's method. Your program should read an initial guess from keyboard and display the followings if the solution is obtained: (5+7)

- Estimated root of the equation
- Functional value at calculated root
- Required number of iterations

CSc.202-2069✡

Tribhuvan University
Institute of Science and Technology
2069
✡

Bachelor Level / Second Year/ Third Semester/ Science
Computer Science and Information Technology (CSc. 202)
(Object Oriented Programming)

Full Marks: 60
Pass Marks: 24
Time: 3 hours.

Candidates are required to give their answers in their own words as for as practicable.
The figures in the margin indicate full marks.

Section A

Attempt any two questions: (2×10=20)

1. Differentiate between structural programming approach and object oriented programming approach. Explain the inheritance, polymorphism with example.

2. How is a member function of a class defined? Define friend function. What are the merits and demerits of using friend function? Explain.

3. Define constructor, list some of the special properties of the constructor functions.

Section B

Attempt any eight questions: (8×5=40)

4. Explain the do | while structure.

5. Explain the Inline function with example.

6. How is dynamic initialization of objects achieved?

7. What are the importance of destructors?

8. What is an operator function? Explain with syntax.

9. Explain with example, how you create space for array of objects using pointers?

10. Explain the features of I/O system supported by C++.

11. Differentiate between overloaded functions and function templates.

12. What are the main advantages of using exception handling mechanism in a program?

13. Write major difference between overriding and overloading.

SET A

Tribhuvan University

Institute of Science and Technology

Bachelor Level/Second Year/Third Semester/Science — Full Marks: 60

Computer Science and Information Technology (CSc.203) — Pass Marks: 24

(Operating System) — Time: 3 hours

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

The figures in the margin indicate full marks.

Section A

Attempt any two questions: (2*10=20)

1. What is semaphore? Explain the producer consumer problem. Write the algorithm for the producer consumer problem using semaphore.
2. Consider the five processes A,B,C,D and E being active in the system with their arrival time and service time as given below:

Process	Arrival time (in seconds)	Service time (in seconds)
A	0	10
B	0	18
C	5	3
D	15	8
E	12	5

Schedule the above process using

a. FCFS

b. SJF preemptive

c. Round Robin (quantum 3 seconds)

Also calculate their respective throughput and response time.

3. Disk request come into the disk driver for cylinders 5,18,35,10,9,13 in order. Disk arm is currently at position 14. Assuming a seek time of 2 milliseconds , calculate the average seek time for the disk arm satisfying the following disk scheduling algorithm.
   a. FIFO
   b. SSTF
   c. SCAN
   d. C-SCAN

Section B

Attempt any eight questions: (8*5=40)

4. Explain why operating is considered as a virtual machine and a resource manager?
5. How does process differ from the program? Explain the process states with the help of the block diagram.
6. Describe the Peterson's solution for the mutual exclusion.
7. What are the conditions for the deadlock? Explain briefly how deadlock can be recovered.
8. Differentiate between physical address and virtual address. Explain the conversion of virtual address into physical address by MMU with example.
9. What is TLB? Explain the working mechanism of TLB with diagram.
10. What are the goals of I/O software? Explain the functions of device drivers.
11. Consider a Hard Disk with 8500 rpm having 400 sectors per track. If the track to track seek time is 400 microseconds. Calculate the cylinder skew.
12. Compare the advantage and disadvantage of contiguous file allocation and linked list file allocation.

1CSc. 201-2068□□IOST, TU **Downloaded from: http://www.bsccsit.com**

Tribhuvan University
Institute of Science and Technology
2068
□□
Bachelor Level/ Second Year/ Third Semester/Science Full Marks: 80
Computer Science and Information Technology (CSc 201) Pass Marks: 32
(Computer Architecture) Time: 3 Hours
Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.

Long Questions:

Attempt any two questions: (2x10=20)

1. Explain the restoring division algorithm with example.

2. What do you mean by I/O interface? Explain the I/O bus and Interface module.

3. What do you mean by memory organization? Explain the memory management hardware with example.

Short Questions:

Attempt any ten questions: (10x6=60)

4. Explain the error detection code with example.

5. Differentiate between logic microoperations and shift microoperations.

6. Explain the I/O instruction with example.

7. What do you mean by memory mapping? Explain.

8. What do you mean by control memory? Explain the microinstructions and microoperation format.

9. What do you mean by addressing modes? Differentiate between indexed addressing modes and base register addressing mode.

10. Explain the Booth algorithm. Multiply 3 x 5 using booth algorithm.

11. Differentiate between isolate and memory mapped I/O.

12. Explain the I/O processor with block diagram.

13. Explain data transfer instruction with example.

14. Differentiate between RISC and CISC processor.

15. Write short notes on the following:

(a) Interrupt cycle

(b) DMA

1CSc. 201-2067□□IOST, TU **Downloaded from: http://www.bsccsit.com**

Tribhuvan University
Institute of Science and Technology
2067
□□
Bachelor Level/ Second Year/ Third Semester/Science Full Marks: 80
Computer Science and Information Technology (CSc 201) Pass Marks: 32
(Computer Architecture) Time: 3 Hours
Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.

Long Questions:
Attempt any two questions: (2x10=20)

1. Explain the Micro program sequence with example.
2. Explain with example of Data manipulation instructions.
3. Explain the non-restoring Division algorithm, flow chart hardware implementation with example.

Short Questions:
Answer any ten questions: (10x6=60)

4. What do you mean by instruction format? Explain.
5. Differentiate between Hardwired and Micro program control unit.
6. What do you mean by logic micro-operations?
7. Differentiate between direct and indirect addressing modes.
8. Explain with example of Data transfer instructions.
9. What are the major differences between RISC and CISC architecture.
10. Explain the subtraction algorithm with signed 2's compliment.
11. Differentiate between isolated I/O and Memory Mapped I/O.
12. What is DMA transfer? Explain.
13. What is the role of input-output processor (IOP) in computer system? Explain.
14. What is memory management hardware? Explain.
15. Write short notes on the following:
a. Sequential memory hierarchy.
b. Random memory hierarchy.

 Downloaded from: http://www.bsccsit.com

Tribhuvan University
Institute of Science and Technology
2066

Bachelor Level/ Second Year/ Third Semester/Science Full Marks: 80
Computer Science and Information Technology (CSc 201) Pass Marks: 32
(Computer Architecture) Time: 3 Hours
Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.

Long Questions:
Attempt any two questions: (2x10=20)

1. Explain the different types of addressing modes and compare each other.

2. What are the major differences between I/O bus and interface modules? What are the advantage and disadvantage of each?

3. What are the three possible modes to transfer the data to and from peripherals? Explain.

Short Questions:
Answer any ten questions: (10x6=60)

4. Differentiate between parity checker and parity generator.

5. What do you mean by shift micro-operations? Explain.

6. Explain the computer instruction with example.

7. Mention the type of interrupt and explain it.

8. What do you mean by field decoding? Explain.

9. Write down the following equation in three address, two address and one address instruction.

( ) (/)

10. Explain the characteristics of RISC and CISC.

11. Explain the booth algorithm with example.

12. What is the main function of DMA? Mention the three points DMA configurations.

13. What are the different types of I/O commands? Explain.

14. Differentiate between associative page table and replacement.

15. Write short notes on the following:
a. Memory space

b. Address space

1CSc. 205-2068□□IOST, TU **Downloaded from: http://www.bsccsit.com**
Tribhuvan University
Institute of Science and Technology
2068
□□
Bachelor Level/ Second Year/ Third Semester/Science Full Marks: 60
Computer Science and Information Technology (MGT 205) Pass Marks: 24
(Introduction to Management) Time: 3 Hours
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 (1x10=10)
1. Write specific answer to the following questions:

(a) Who is credited for Hawthorne Studies?

(b) Write a definition of organization.

(c) What is Total Quality Management?

(d) Write down the function of HRM.

(e) What do you understand by Principle of Unity of Command?

(f) List three advantages of Line and Staff Organization.

(g) Write any three Hygiene Factors as described in Herzberg‟s Motivation Hygiene Theory.

(h) What is conflict?

(i) What is control?

(j) What can be understood by „9, 9‟ in explaining Managerial Grid Theory?

Group B (2x10=20)
Answer any two questions, but question no 4 is compulsory.
2. Explain the System Approach in detail.

3. Discuss in detail the types of planning.

4. Read the case given below carefully and answer the question:

Mr. Thapa is a Branch Manager of Development Bank. It is a regional bank starting its operation from Surkhet. The bank has its clear policies; the Executive Chairperson of the bank provides close supervision; the salary given to Mr. Thapa meets his daily requirements and other conditions are found satisfactory.
Mr. Thapa usually comments on his work environment as follows: 1CSc. 205-2068□□IOST, TU
Downloaded from: http://www.bsccsit.com

“I don‟t like this work as the executive use us to earn money and forbid us to grow. We are being used as a machine and nobody cares about what I want and what I like. They are only concerned to earn money.”

Questions: What do you understand by motivation? Explain analyzing the case which motivation theory helps describing Mr. Thapa‟s behavior.

Group C (6x5=30)

Attempt any six questions:

5. What is Corporate Social Responsibility? Briefly discuss.

6. Describe the steps in planning.

7. What is programmed and non-programmed decision making? Explain briefly.

8. Describe how conflict can be resolved.

9. Describe the communication process.

10. Why MIS is important for organization?

11. Describe the components of technological environment.

12. What is MBO? Explain briefly.

 Downloaded from: http://www.bsccsit.com

Tribhuvan University
Institute of Science and Technology
2067
□□
Bachelor Level/ Second Year/ Third Semester/Science Full Marks: 60
Computer Science and Information Technology (MGT 205) Pass Marks: 24
(Introduction to Management) Time: 3 Hours
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 (1x10=10)

1. Write specific answer to the following questions:

a. What is the theory developed by Douglas McGregor?

b. What is leadership?

c. What is MBO?

d. What is programmed decision making?

e. What do you understand by the principle of order under principle of management?

f. List any three limitations of functional organization.

g. What is conflict?

h. What is quality control?

i. What is flexible plan?

j. What is Management Information System?

Group B (2x10=20)
Answer any two questions, but question no 4 is compulsory.

2. Discuss in detail the Corporate Social Responsibility?

3. Describe in detail the Managerial Grid Theory.

4. Read the case given below carefully and answer the question:

Mr. Sharma is a Section Officer of District Administration Office (DAO) of Kaski. He is transferred to DAO of Koshi. He is on the process of leaving Kaski.
Other employees of Koshi, who haven‟t seen Mr. Sharma before starts discussing about Mr. Sharma‟s character and qualities. They know much information about Mr. Sharma including his weakness in performing assigned tasks. 1CSc. 205-2067□□IOST, TU **Downloaded from: http://www.bsccsit.com**

Questions: Describing the role of communication, explain how the employees of Koshi might have received the information of Mr. Sharma before his joining that office.

Group C (6x5=30)

Attempt any six questions:

5. Describe briefly the system concept in management.

6. What role do ethics play in organization? Briefly explain.

7. Describe why planning is important?

8. Describe what do you understand by decentralization?

9. What do you understand by hierarchy of planning?

10. Briefly describe the contribution of behavior science theory in management.

11. Discuss the functions of management.

12. Why quality assurance is important in management? Explain briefly.

 Downloaded from: http://www.bsccsit.com

Tribhuvan University
Institute of Science and Technology
2066

Bachelor Level/ Second Year/ Third Semester/Science Full Marks: 60
Computer Science and Information Technology (MGT 205) Pass Marks: 24
(Introduction to Management) Time: 3 Hours
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 (1x10=10)

1. Write specific answers to the following questions:

(a) Who is the father of Scientific Management?

(b) Write a definition of management.

(c) What is the ethics in management?

(d) What is a system?

(e) What do you understand by the principle of Span of Control?

(f) List any three advantages of Line Organization.

(g) What physiological needs are as described by Maslow‟s Hierarchy of Needs?

(h) Write any three sources of conflict.

(i) What can be understood by „1, 1‟ in explaining Managerial Grid Theory?

(j) What do you understand by Corporate Social Responsibility?

Group B (2x10=20)
Answer any two questions, but question no 4 is compulsory.

2. Explain the contribution of Administrative Management Theory.

3. Explain the types of planning in detail.

4. Read the case given below carefully and answer the question:

Ms. Chemjong is a general manager of Nepal Net P. Ltd. There are 65 employees working under her. It is a software development company and about 80% employees are programmers and software engineers, and 20% are administrative and support staffs. She is very strict with her administrative and support staffs. She wants all of them to be in their office at specified time and be in the office during the office hour. 1CSc. 205-2066 IOST, TU **Downloaded from: http://www.bsccsit.com**

On the other hand, with programmers and software engineers Ms. Chemjong is very liberal and friendly. There is no fixed work hour for them and she says that at “the specified time I need output. The rest of the thing related to work is to be decided by you”.

Questions: Defining leadership explain with the help of the situation in the case what type of leadership you find on Ms. Chemjong?

Group C (6x5=30)

Attempt any six questions:

5. What type of skills required for a manager?

6. Discuss interval environment of management.

7. What do you understand by human resource management? Briefly describe.

8. What is contingency approach in management?

9. What is decision making? Explain briefly.

10. Describe briefly the concept of TQM.

11. What do you understand by the term conflict?

12. Briefly describe the barriers to effective communication.

1CSc. 204-2068□□IOST, TU **Downloaded from: http://www.bsccsit.com**

Tribhuvan University
Institute of Science and Technology
2068
□□
Bachelor Level/ Second Year/ Third Semester/Science Full Marks: 60
Computer Science and Information Technology (CSc 204) Pass Marks: 24
(Numerical Method) Time: 3 Hours
Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.
Attempt all questions:

1. Define the types of errors in numerical calculations. Derive the formula for secant method and illustrate the method by figure. **(4+4)**

2. Define the linear least squares approximations. Give the data set (x_i, y_i) as (20.5, 765), (32.7, 826), (51.0, 873), (73.2, 942), (95.7, 1032) find the linear least square to fit given data.

(2+6)

3. Evaluate ∫ using trapezoidal rule with n = 10. Also evaluate the same integral using Grossion 3 point formula and compare the result. **(4+4)**

4. Solve the following system of linear equations using Gauss-elimination method (use partial pivoting if necessary);

(8)
OR
What do you mean by eigen-value eigen-vector problems? Find the largest eigen value correct to two significant digits and corresponding eigen vectors of the following matrix using power method. [ ]
(2+6)

5. Write an algorithm and program to solve system of linear equations using Gauss-Jordan method.
(4+8)

1CSc. 204-2068□□IOST, TU **Downloaded from: http://www.bsccsit.com**

6. Apply Runge Kutta method of second order and fourth order to find an approximate value of y when x = 0.2 given that

( )
(8)
7. How can you solve Laplace's equation? Explain. The steady-state two dimensional heat flow in a metal plate is defined by

A steel plate of size 30 x 30cm is given. Two adjacent sides are placed at 100ºC and other side at held at 0ºC. Find the temperature at interior points, assuming the grid size of 10 x 10cm.
(3+5) 1CSc. 204-2067□□IOST, TU **Downloaded from: http://www.bsccsit.com**

Tribhuvan University
Institute of Science and Technology
2067

Bachelor Level/ Second Year/ Third Semester/Science Full Marks: 60
Computer Science and Information Technology (CSc 204) Pass Marks: 24
(Numerical Method) Time: 3 Hours
Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.
Attempt all questions:

8. Discuss methods of Half Interval and Newton's for solving the nonlinear equation f(x) = 0. Illustrate the methods by figures and compare them stating their advantages and disadvantages. **(8)**

9. Derive the equation for Lagrange's interpolating polynomial and find the value of f(x) at x = 1 for the following: **(4+4)**

X	-1	-2	2	4
F(x)	-1	-9	11	69

1CSc. 202-2068□□IOST, TU **Downloaded from: http://www.bsccsit.com**

Tribhuvan University
Institute of Science and Technology
2068
□□
Bachelor Level/ Second Year/ Third Semester/Science Full Marks: 60
Computer Science and Information Technology (CSc 202) Pass Marks: 24
(Object Oriented Programming) Time: 3 Hours
Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.

Section A

Attempt any two questions: (2x10=20)

1. What are the main features of the Object-Oriented Programming? Explain with suitable practical examples.

2. Explain the role of constructo and destructor in Object-Oriented Programming. Discuss user defined parameterized constructor with suitable example.

3. Define a **Shape** class (with necessary constructors and member functions) in Object-Oriented Programming (abstract necessary attributes and their types). (Write a complete code in C++ programming language)

- Derive **Triangle and Rectangle** classes from Shape class adding necessary attributes.
- Use these classes in a main function and display the area of triangle and rectangle.

Section B

Attempt any eight questions: (8x5 = 40)

4. Why dynamic object is needed? Explain with suitable example.

5. What is function overloading? Explain with suitable example.

6. Write a C++ program containing a possible exception. Use a try block to throw it and a catch block to handle it properly.

7. Differentiate between base class and derived class with suitable examples.

8. Differntiate between private, public and protected variable with suitable example.

9. Differentiate container class from inheritance. Explain with suitable example.

10. Explain the role of polymorphism in Object Oriented Programming.

11. Explain about “this” pointer with suitable example.

12. Write a program to find the square root of given integer using inline function.

13. Write a program to convert inch into centimeter.

1CSc. 202-2067□□IOST, TU **Downloaded from: http://www.bsccsit.com**

Tribhuvan University
Institute of Science and Technology
2067
□□
Bachelor Level/ Second Year/ Third Semester/Science Full Marks: 60
Computer Science and Information Technology (CSc 202) Pass Marks: 24
(Object Oriented Programming Language) Time: 3 Hours
Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.

Section A

Attempt any two questions: (2x10=20)

1. Discuss the feature of the Object-Oriented Programming. Differentiate between Object Oriented Programming and Procedural Oriented Programming.

2. What is constructor? Explain their types? Discuss user defined parameterized constructor with suitable example.

3. Define a **clock** class (with necessary constructors and member functions) in Object Oriented Programming (abstract necessary attributes and their types). (Write a complete code in C++ programming language).
 Derive a **wall_clock** class from **clock** class adding necessary attributes.
 Create two objects of **wall_clock** class with all initial state to 0 or NULL.

Section B

Attempt any eight questions: (8x5 = 40)

4. How can you classify objects? Why dynamic objects are needed?

5. What is operator overloading? Explain their types with suitable examples.

6. Why type conversion is necessary in OOP? Explain with example, the type conversion routine.

7. What is Inheritance? Explain their types with their suitable examples.

8. What is friend function? Why it is used in OOP? Explain with an example.

9. What is container class? Differentiate container class from inheritance.

10. Explain the role of virtual function in Object Oriented Programming.

11. Explain about “this” pointer with suitable example.

12. Write a program to find the square of given integer using inline function.

13. Write a program to convert feet into meter.

 Downloaded from: http://www.bsccsit.com

Tribhuvan University
Institute of Science and Technology
2066
□□
Bachelor Level/ Second Year/ Third Semester/Science Full Marks: 60
Computer Science and Information Technology (CSc 202) Pass Marks: 24
(Object Oriented Programming Language) Time: 3 Hours
Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.

Section A

Attempt any two questions: (2x10=20)

1. Explain in detail the following principles of Object-Oriented Programming.
i) Data encapsulation and data hiding.
ii) Inheritance and polymorphism.
iii) Abstraction

2. Why constructor and destructor are required on Object Oriented Programming? Explain with suitable example.

3. Define a **student** class (with necessary constructors and member functions) in Object Oriented Programming (abstract necessary attributes and their types). (Write a complete code in C++ programming language).
 Derive a **computer Science and Mathematics** class from **student** class adding necessary attributes (at least three subjects).
 Use these classes in a main function and display the average marks of computer science and mathematics students.

Section B

Attempt any eight questions: (8x5 = 40)

4. What is type casting? Explain with suitable example.

5. Write a program to compute subtraction of two complex numbers using operator overloading.

6. Why exception handling is required? Explain with suitable example.

7. Differentiate between super class and sub class with suitable examples.

8. Write a program in C++ to count a number of words in a line of text.

9. Differentiate between function overriding and function overloading. Explain with suitable example.

10. Explain the role of polymorphism in Object Oriented Programming.

11. Explain the different type of class access specifiers.

12. Write a program to find the cube of given integer using inline function.

13. Write a program to convert centigrade into Fahrenheit temperature.