



National Officers Academy
Mock Exams CSS-2022
April 2022(Final Mock)
COMPUTER SCIENCE, PAPER-I

TIME ALLOWED: THREE HOURS	PART-I (MCQS)	MAXIMUM MARKS = 20
PART-I(MCQS): MAXIMUM 30 MINUTES	PART-II	MAXIMUM MARKS = 80

NOTE:

- Part-II** is to be attempted on the separate **Answer Book**.
- Attempt **ONLY FOUR** questions from **PART-II**, by selecting **TWO** questions from **EACH SECTION**. **ALL** questions carry **EQUAL** marks.
- All the parts (if any) of each Question must be attempted at one place instead of at different places.
- Write Q. No. in the Answer Book in accordance with Q. No. in the Q. Paper.
- No Page/Space be left blank between the answers. All the blank pages of Answer Book must be crossed.

SUBJECTIVE PART — PART-II
SECTION-A

Question 2

- List and explain 5 types of storage devices. (10)
- What is a computer virus? Give three examples of computer viruses. (6)
- What are the ethical challenges that a software engineer might face while engineering a product for a bank? (4)

Question 3

- Write a program in C/C++ that calculates the standard deviation of the given dataset: 10, 12, 44, 30, and 24. (8)
- Write a C++ program that takes input two numbers and implements the NAND gate. Why is a NAND gate a vital concept in digital logic design? (8)
- What is the difference between a compiler and an interpreter? (4)

Question 4

- Procedural programming was a key concept in early computer science, why did it evolve into OOP over time? (10)
- What is exception handling? Explain. (4)
- Define a function named monthly-profit which will calculate the monthly profit on the given investment amount. Function will take two float arguments, percent profit rate and investment amount and return the monthly profit (float). Write function prototype, function definition and a main program to demonstrate the functionality. Sample execution of the program is given below. User can enter any values therefore write generalized function (user variables, not given values).

Enter percent profit rate: 8

Enter investment amount: 50000

Monthly profit: 4000

Press Any Key to Continue.... (6)

Question 5

- (a) What is the difference between big O, big omega and big theta? Explain in terms of algorithm analysis and how we can judge an algorithm based on measuring these three quantities. (10)
- (b) Explain the usefulness of hash tables? (5)
- (c) What is a genetic algorithm? (5)

Section B

Question 6

- (a) What is the difference between overloading and overriding? (6)
- (b) What is recursion? How is it different from iterative algorithms? (8)
- (c) What data structure would you use for searching from a list of numbers? Explain with reasoning. (6)

Question 7

- (a) Write similarities and differences of CFG and regular expression. (6)
- (b) What are the different phases of compilers? (6)
- (c) What is the difference between a top-down and bottom-up parser? (8)

Question 8

- (a) Explain the difference between iterative and incremental development in software engineering. (8)
- (b) Why have most software development companies shifted to agile methodology. (6)
- (c) Why is waterfall process model being phased out? (6)

Best of Luck for CSS-2022