Part Ia: Structure of Papers 1 and 2 in 2022

Paper 1

Section A
Attempt 1 question
1 Foundations of Computer Science
2 Foundations of Computer Science

Section B
Attempt 1 question
3 Object-Oriented Programming
4 Object-Oriented Programming

Section C
Attempt 1 question
5 Introduction to Probability
6 Introduction to Probability

Section D
Attempt 1 question
7 Algorithms 1
8 Algorithms 1

Section E
Attempt 1 question
9 Algorithms 2
10 Algorithms 2

Paper 2

Section A
Attempt 1 question
1 Digital Electronics
2 Digital Electronics

Section B
Attempt 1 question
3 Operating Systems
4 Operating Systems

Section C
Attempt 1 question
5 Software and Security Engineering
6 Software and Security Engineering

Section D
Attempt 2 questions
7 Discrete Mathematics
8 Discrete Mathematics
9 Discrete Mathematics
10 Discrete Mathematics

Attempt five questions on each paper. For Paper 2 answer one question from each of Sections A, B and C, and two questions from Section D
Part IA: Structure of Paper 3 in 2022

Paper 3

Section A
Attempt 1 question
1 Databases
2 Databases

Section B
Attempt 1 question
3 Introduction to Graphics
4 Introduction to Graphics

Section C
Attempt 1 question
5 Interaction Design
6 Interaction Design

Section D
Attempt 2 questions
7 Machine Learning and Real-world Data
8 Machine Learning and Real-world Data
9 Machine Learning and Real-world Data

Attempt five questions on the paper, one question from each of Sections A, B and C, and two questions from Section D
### Paper 4

**Section A**
*Attempt up to 4 questions from Section A*

1. Compiler Construction
2. Compiler Construction
3. Further Java
4. Programming in C and C++
5. Programming in C and C++
6. Security
7. Security

**Section B**
*Attempt at least 1 question from Section B*

8. Semantics of Programming Languages
9. Semantics of Programming Languages

### Paper 5

1. Computer Networking
2. Computer Networking
3. Computer Networking
4. Concurrent and Distributed Systems
5. Concurrent and Distributed Systems
6. Introduction to Computer Architecture
7. Introduction to Computer Architecture
8. Introduction to Computer Architecture

### Paper 6

1. Artificial Intelligence
2. Artificial Intelligence
3. Complexity Theory
4. Complexity Theory
5. Computation Theory
6. Computation Theory
7. Data Science
8. Data Science
9. Logic and Proof
10. Logic and Proof

*Attempt five questions on paper 4 including at least one from Section B. Attempt any five questions on each of papers 5 and 6.*
Part I\textsubscript{B}, Part II (50\%): Structure of Paper 7 in 2022

Paper 7

1 Concepts in Programming Languages
2 Economics, Law and Ethics
3 Economics, Law and Ethics
4 Formal Models of Language
5 Formal Models of Language
6 Further Graphics
7 Further Graphics
8 Further HCI
9 Further HCI
10 Prolog

\textit{Attempt any five questions on the paper.}
**Part II: Structure of Papers 8 and 9 in 2022**

**Paper 8**
1. Advanced Computer Architecture
2. Bioinformatics
3. Cryptography
4. Denotational Semantics
5. E-Commerce
6. Hoare Logic and Model Checking
7. Information Theory
8. Machine Learning and Bayesian Inference
9. Optimising Compilers
10. Principles of Communications
11. Quantum Computing
12. Randomised Algorithms
13. Types

**Paper 9**
1. Advanced Computer Architecture
2. Bioinformatics
3. Business Studies
4. Cryptography
5. Denotational Semantics
6. Hoare Logic and Model Checking
7. Information Theory
8. Machine Learning and Bayesian Inference
9. Optimising Compilers
10. Principles of Communications
11. Quantum Computing
12. Randomised Algorithms
13. Types

*Attempt any five questions on each paper.*