# Part Ia: Structure of Papers 1 and 2 in 2017

## Paper 1

<table>
<thead>
<tr>
<th>Section A</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Attempt 1 question</strong></td>
</tr>
<tr>
<td>1. Foundations of Computer Science</td>
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<tr>
<td>2. Foundations of Computer Science</td>
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<table>
<thead>
<tr>
<th>Section B</th>
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<tbody>
<tr>
<td><strong>Attempt 1 question</strong></td>
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<tr>
<td>3. Object-Oriented Programming</td>
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<td>4. Object-Oriented Programming</td>
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<thead>
<tr>
<th>Section C</th>
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<tbody>
<tr>
<td><strong>Attempt 1 question</strong></td>
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<tr>
<td>5. Numerical Methods</td>
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<td>6. Numerical Methods</td>
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<thead>
<tr>
<th>Section D</th>
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<tbody>
<tr>
<td><strong>Attempt 2 questions</strong></td>
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<tr>
<td>7. Algorithms</td>
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<tr>
<td>8. Algorithms</td>
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<tr>
<td>9. Algorithms</td>
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<tr>
<td>10. Algorithms</td>
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*Attempt five questions on each paper.*

## Paper 2

<table>
<thead>
<tr>
<th>Section A</th>
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<tbody>
<tr>
<td><strong>Attempt 1 question</strong></td>
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<tr>
<td>1. Digital Electronics</td>
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<td>2. Digital Electronics</td>
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<tr>
<th>Section B</th>
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<tbody>
<tr>
<td><strong>Attempt 1 question</strong></td>
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<tr>
<td>3. Operating Systems</td>
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<thead>
<tr>
<th>Section C</th>
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<tbody>
<tr>
<td><strong>Attempt 1 question</strong></td>
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<tr>
<td>5. Software Engineering and Security</td>
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<tr>
<td>6. Software Engineering and Security</td>
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<table>
<thead>
<tr>
<th>Section D</th>
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</thead>
<tbody>
<tr>
<td><strong>Attempt 2 questions</strong></td>
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<tr>
<td>7. Discrete Mathematics</td>
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<td>8. Discrete Mathematics</td>
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<tr>
<td>9. Discrete Mathematics</td>
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<tr>
<td>10. Discrete Mathematics</td>
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</tbody>
</table>
Part Ia (75%): Structure of Paper 3 in 2017

Section A
Attempt 1 question
1. Databases
2. Databases

Section B
Attempt 1 question
3. Graphics
4. 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.
Part Ib: Structure of Papers 3 to 6 in 2017

Paper 3
1. Programming in C and C++
2. Programming in C and C++
3. Compiler Construction
4. Compiler Construction
5. Concepts in Programming Languages
6. Further Java
7. Prolog
8. Software Engineering

Paper 4
1. Artificial Intelligence
2. Artificial Intelligence
3. Computer Graphics and Image Processing
5. Databases
6. Databases
7. Economics, Law and Ethics
8. Security I
9. Security I

Paper 5
1. Computer Design
2. Computer Design
3. Computer Design
4. Computer Networking
5. Computer Networking
6. Computer Networking
7. Concurrent and Distributed Systems
8. Concurrent and Distributed Systems
9. Concurrent and Distributed Systems

Paper 6
1. Complexity Theory
2. Complexity Theory
3. Computation Theory
4. Computation Theory
5. Logic and Proof
6. Logic and Proof
7. Mathematical Methods for Computer Science
8. Mathematical Methods for Computer Science
9. Semantics of Programming Languages
10. Semantics of Programming Languages

Attempt any five questions on each paper.
### Paper 7
1. Advanced Algorithms
2. Advanced Graphics
3. Machine Learning and Bayesian Inference
4. Bioinformatics
5. Business Studies
6. Comparative Architectures
7. Denotational Semantics
8. Hoare Logic and Model Checking
9. Human–Computer Interaction
10. Information Theory
11. Natural Language Processing
12. Optimising Compilers
13. Principles of Communications
14. Security II

### Paper 8
1. Advanced Graphics
2. Machine Learning and Bayesian Inference
3. Comparative Architectures
4. Computer Systems Modelling
5. Computer Vision
6. Digital Signal Processing
7. E-Commerce
8. Information Retrieval
9. Principles of Communications
10. Quantum Computing
11. Security II
12. System-on-Chip Design
13. Topical Issues
14. Topics in Concurrency
15. Types

### Paper 9
1. Advanced Algorithms
2. Bioinformatics
3. Computer Systems Modelling
4. Computer Vision
5. Denotational Semantics
6. Digital Signal Processing
7. Information Theory
8. Mobile and Sensor Systems
9. Natural Language Processing
10. Optimising Compilers
11. Principles of Communications
12. System-on-Chip Design
13. Hoare Logic and Model Checking
14. Topical Issues
15. Topics in Concurrency
16. Types

*Attempt any five questions on each paper.*