

2013 (A)

PRINCIPLES OF PROGRAMMING
LANGUAGE

Time : 3 hours

Full Marks : 70

Instructions :

- (i) The marks are indicated in the right-hand margin.
- (ii) There are **TEN** questions in this paper.
- (iii) Attempt any **FIVE** questions.

1. What is programming language? Discuss abstractions in it with suitable example. 14
2. Discuss programming language design principles. 14
3. (a) Discuss lexical structure of programming languages. 7
(b) Write and explain various stages in translation. 7
4. (a) Explain context-free grammar and BNFs. 7
(b) Discuss inheritance and polymorphism with example. 7

5. Write short notes on : 5+5+4=14
 - (a) Data hiding and encapsulation
 - (b) Program verification
 - (c) Virtual architecture

6. (a) Discuss type checking and type equivalence with example. 7
(b) Explain explicit polymorphism with example. Does the occur check problem occur in C++? Explain. 7

7. Discuss the following with examples :

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5+5+4=14

- (a) Implicit and explicit sequence control
 - (b) Static and dynamic scope
 - (c) Stack-based runtime environment
8. (a) Explain static and heap storage management. 7
(b) Discuss programmer and system controlled storage. 7
 9. (a) What is exception handling? Discuss exception handler in Java and ML. 10
(b) Differentiate between statement level parallelism and procedure level parallelism. 4

10. Explain the following with examples :

- (a) Semaphores 5+4+5=14
- (b) Threads
- (c) Client-server Computing

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