

**AMIETE – CS/IT (Current & New Scheme)**

Time: 3 Hours

**JUNE 2017**

Max. Marks: 100

*PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.*

**NOTE: There are 9 Questions in all.**

- Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.
- The answer sheet for the Q.1 will be collected by the invigilator after 45 Minutes of the commencement of the examination.
- Out of the remaining EIGHT Questions, answer any FIVE Questions. Each question carries 16 marks.
- Any required data not explicitly given, may be suitably assumed and stated.

**Q.1 Choose the correct or the best alternative in the following: (2×10)**

- a. Evolutionary software process models
- (A) Are iterative in nature
  - (B) Can easily accommodate product requirement changes
  - (C) Do not generally produce throwaway systems
  - (D) All of these
- b. The prototyping model of software development is
- (A) A reasonable approach when requirements are well defined.
  - (B) A useful approach when a customer cannot define requirements clearly.
  - (C) The best approach to use for projects with large development teams.
  - (D) A risky model that rarely produces a meaningful product.
- c. The data flow diagram
- (A) depicts relationships between data objects
  - (B) depicts functions that transform the data flow
  - (C) indicates how data are transformed by the system
  - (D) both (B) & (C)
- d. Which of the following items does not appear on a CRC card?
- (A) class collaborators
  - (B) class name
  - (C) class reliability
  - (D) class responsibilities
- e. Cohesion is a qualitative indication of the degree to which a module
- (A) can be written more compactly.
  - (B) focuses on just one thing.
  - (C) is able to complete its function in a timely manner.
  - (D) is connected to other modules and the outside world.

- f. The cyclomatic complexity metric provides the designer with information regarding the number of
- (A) cycles in the program
  - (B) errors in the program
  - (C) independent logic paths in the program
  - (D) statements in the program
- g. Which of the following are objectives for formal technical reviews?
- (A) allow senior staff members to correct errors
  - (B) assess programmer productivity
  - (C) determining who introduced an error into a program
  - (D) uncover errors in software work products
- h. What does SOAP stand for?
- (A) SIM Object Access Protocol
  - (B) Simple Object Access Protocol
  - (C) Search Object Access Protocol
  - (D) Standard Object Access Protocol
- i. A \_\_\_\_\_ is developed using historical cost information that relates some software metric to the project cost.
- (A) Algorithmic cost modelling
  - (B) Expert judgement
  - (C) Estimation by analogy
  - (D) Parkinson's Law
- j. Which method recommends that very frequent system builds should be carried out with automated testing to discover software problems?
- (A) Agile method
  - (B) Parallel compilation method
  - (C) Large systems method
  - (D) All of these

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**Answer any FIVE Questions out of EIGHT Questions.**

**Each question carries 16 marks.**

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- Q.2** a. Explain Computer Aided Software Engineering and various activities that can be automated using CASE. **(6)**
- b. Explain the spiral model of software process in detail. **(10)**
- Q.3** a. Discuss the difference between the following:
- (i) Functional & non functional requirements
  - (ii) User & system requirements **(5)**
- b. Discuss three principal stages of requirement change management process. **(6)**
- c. Explain the weakness of structured methods. **(5)**

**Code: AC63/AT63/AC114/AT114      Subject: SOFTWARE ENGINEERING**

- Q.4** a. Explain, how the principles underlying agile methods lead to the accelerated development and deployment of software? **(8)**
- b. You have been given the task of ‘selling’ formal specification techniques to a software development organization. Outline, how you would go about explaining the advantages of formal specifications to sceptical, practising software engineers? **(8)**
- Q.5** a. Explain control styles of architectural design. **(5)**
- b. Explain various advantages of using a distributed approach to systems development. **(6)**
- c. What is the fundamental difference between a fat-client and a thin-client approach to client–server systems architectures? **(5)**
- Q.6** a. Explain the difference between an object and an object class. **(4)**
- b. Identify six possible risks that can arise when systems are constructed using COTS. What steps can a company take to reduce these risks? **(6)**
- c. Explain the problems associated with Component base software engineering development. **(6)**
- Q.7** a. Suggest situations where it is unwise or impossible to provide a consistent user interface. **(6)**
- b. What do you mean by Fault tolerant system? Explain different aspects of fault tolerance. Discuss approaches of software fault tolerance system architecture. **(10)**
- Q.8** a. What is regression testing? Explain how the use of automated tests and a testing framework such as JUnit simplifies regression testing. **(5)**
- b. Explain various stages involved in automatic static analysis. **(6)**
- c. Explain various cost estimation techniques. **(5)**
- Q.9** a. Describe several static product metrics used for quality assessment. **(8)**
- b. Explain CMMI assessment of an organisation on a six-point scale for level of maturity in process. **(8)**