



UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (*EXTERNAL*)

*Academic Year 2007/2008 – 2<sup>nd</sup> Year Examination – Semester 3*

***IT3203 Software Engineering***  
***PART 1 - Multiple Choice Question Paper***

**15<sup>th</sup> March, 2008**  
**(ONE HOUR)**

**Important Instructions:**

- The duration of the paper is **1 (one) hour**.
- The medium of instruction and questions is English.
- The paper has **25** questions and **6** pages.
- All questions are of the MCQ (Multiple Choice Questions) type.
- All questions should be answered.
- Each question will have 5 (five) choices with **one or more** correct answers.
- All questions will carry equal marks.
- There will be a penalty for incorrect responses to discourage guessing.
- The mark given for a question will vary from 0 to +1 (All the correct choices are marked & no incorrect choices are marked).
- Answers should be marked on the special answer sheet provided.
- Note that questions appear on both sides of the paper.  
If a page is not printed, please inform the supervisor immediately.
- Mark the correct choices on the question paper first and then transfer them to the given answer sheet which will be machine marked. **Please completely read and follow the instructions given on the other side of the answer sheet before you shade your correct choices.**

- 1) Which of the following were the reasons for a crisis in the software industry?
- (a) Software maintenance is given little consideration by companies developing software.
  - (b) Experienced developers left software companies.
  - (c) A change to a piece of code may implicitly affect the functions of the rest of the code.
  - (d) less market demand for software
  - (e) Modifications to software can be done easily.
- 2) What type of software could be a control system of a nuclear power plant?
- (a) Business software                      (b) Real time software                      (c) Safety critical software
  - (d) Scientific software                      (e) Embedded software
- 3) Which of the following is a/are project management activity/activities?
- (a) cost estimation
  - (b) quality assurance
  - (c) risk management
  - (d) team management
  - (e) tender evaluation
- 4) Identify the sentences which describe software correctly.
- (a) Software will not deteriorate over time.
  - (b) Software takes more time to be tested than hardware.
  - (c) Managing software projects is easier than managing hardware projects.
  - (d) Software is made up of programs and data.
  - (e) Increased use of software will not introduce any defects.
- 5) Which of the following are agile software development methods?
- (a) formal software development
  - (b) adaptive software development
  - (c) SCRUM
  - (d) extreme programming
  - (e) waterfall model
- 6) Which of the following is a / are feature(s) of agile methods?
- (a) very high user interaction
  - (b) use of simple methods is encouraged
  - (c) use of a sequential set of activities
  - (d) adding new requirements is not allowed
  - (e) use of small and highly motivated software teams
- 7) Which of the following is a/are non-functional requirement(s) of a website which sells songs?
- (a) A catalogue of the stock needs to be available for the users to choose from.
  - (b) Customer information should be retained to allow future transactions easier.
  - (c) Users should be able to choose from a set of different languages for the interface.
  - (d) Time taken to download songs in the catalogue should not irritate users.
  - (e) Security of the transactions should be maintained to a high level.

8) Consider the following software projects.

- (i) Automation of an existing record keeping system for a small library
- (ii) Development of a new computer game
- (iii) Development of a computer aided life-support system for a hospital
- (iv) Development of a web page for a small CD shop

For what project(s) would the waterfall model be suitable for?

- (a) (i) only.
- (b) (ii) and (iv) only.
- (c) (i) and (iv) only.
- (d) (ii), (iii) and (iv) only.
- (e) (iii) and (iv) only.

9) Which of the following is/are correct with respect to formal systems development?

- (a) It is widely used for software development.
- (b) It is a process model which is ideal for projects with unclear requirements.
- (c) It is based on the transformation of a mathematical specification to an executable program.
- (d) It most suits the development of safety critical systems.
- (e) The extreme programming methodology is based on formal systems development.

10) Which of the following is an/are advantage(s) of prototyping over the waterfall model?

- (a) A working version of the system is available for customer comments from the beginning.
- (b) Prototyping always results in a better engineered software product.
- (c) Team management is always easier with prototyping
- (d) Prototyping is suitable for almost any software development task.
- (e) Prototyping can be applied when the requirements are vague and ambiguous.

11) What is/are the most crucial non-functional requirement(s) of a system to control radiation dosages that are emitted as treatment for cancer?

- |               |              |                 |
|---------------|--------------|-----------------|
| (a) Security  | (b) Safety   | (c) Reliability |
| (d) Usability | (e) Accuracy |                 |

12) Which of the following sets of maintenance categories represent a decreasing ordering with respect to time spent?

- (a) Corrective Maintenance, Perfective Maintenance, Adaptive Maintenance
- (b) Perfective Maintenance, Adaptive Maintenance, Corrective Maintenance
- (c) Adaptive Maintenance, Perfective Maintenance, Corrective Maintenance
- (d) Adaptive Maintenance, Corrective Maintenance, Perfective Maintenance
- (e) Corrective Maintenance, Adaptive Maintenance, Perfective Maintenance

13) Which of the following are items which may be included in a configuration database?

- (a) specifications, design, program code, user manuals
- (b) version information, specifications, design, marketing information
- (c) test data, version information, company policy, user manuals
- (d) version information, user manuals, marketing information, design
- (e) program code, user manuals, version information, company policy

14) Select the correct statement(s) from among the following.

- (a) CASE tools can be applied to automate the whole software development process.
- (b) CASE tools can be integrated with one another.
- (c) A configuration database can be considered as a CASE tool.
- (d) Maintenance costs can be reduced by using CASE tools.
- (e) Upper CASE tools refer to those which support early process activities such as requirement analysis and design.

15) Which of the following must be considered when choosing a programming language for a project?

- (a) the data types supported
- (b) match with the design
- (c) interoperability with other software
- (d) knowledge about the language
- (e) efficiency of code

16) What would be the most suitable architecture to develop a commercial web page to do business transactions over the internet?

- (a) Client server model
- (b) Spiral model
- (c) Island model
- (d) RAD model
- (e) Repository model

17) The Capability Maturity Model (CMM) is a

- (a) process standard.
- (b) product standard.
- (c) documentation standard.
- (d) ISO standard.
- (e) standard that comprises of 5 levels.

18) The items in column X have to be matched with the descriptions in column Y.

	Column X		Column Y
1	Pascal	A	Scientific computing
2	Lisp	B	Back-end programming
3	C	C	Knowledge based expert systems
4	SQL	D	Web programming
5	Java script	E	Functional programming
6	PROLOG	F	System programming
7	MATLAB	G	Structured programming

Which of the following is a/are proper match(es)?

- (a) 1 & A 2 & E 3 & G 4 & C 5 & F 6 & D 7 & B
- (b) 1 & C 2 & C 3 & B 4 & A 5 & F 6 & D 7 & C
- (c) 1 & G 2 & E 3 & A 4 & F 5 & B 6 & C 7 & D
- (d) 1 & G 2 & E 3 & F 4 & B 5 & D 6 & C 7 & A
- (e) 1 & B 2 & C 3 & F 4 & A 5 & G 6 & D 7 & E

- 19) The items in column A have to be matched with the descriptions in column B.

	Column A		Column B
1	Unit testing	A	The final system is tested with a user group within the software company
2	Regression testing	B	The product is released to a much wider audience outside the company for feedback
3	Alpha testing	C	Tests the system after changes are being made during maintenance
4	Beta testing	D	Individual modules are tested

Which of the following match(es) is/are appropriate?

- |                                   |                                   |
|-----------------------------------|-----------------------------------|
| (a) 1 & C   2 & D   3 & A   4 & B | (b) 1 & B   2 & D   3 & C   4 & A |
| (c) 1 & D   2 & C   3 & A   4 & B | (d) 1 & C   2 & D   3 & B   4 & A |
| (e) 1 & B   2 & D   3 & B   4 & A |                                   |

- 20) Which of the following is a/correct statement(s)?

- |  |
|--|
| (a) Software verification tries to answer the question “Are we building the product right?”.   |
| (b) Software validation tries to answer the question “Are we building the product right?”.     |
| (c) Automatic code analysis can be used as a technique of verification.                        |
| (d) Inspections are not a good way to check non-functional requirements of a software product. |
| (e) Beta testing is a verification technique.  |

- 21) Which of the following is/are tool(s) generally used during the design phase of software?

- |                                |                         |
|--------------------------------|-------------------------|
| (a) Module dependency diagrams | (b) Pseudo code         |
| (c) Gant charts                | (d) Control flow graphs |
| (e) Activity networks          |                         |

- 22) Which of the following sentences are true with regard to user interface design?

- |  |
|--|
| (a) GUI interfaces are good for all tasks which a user needs to perform at an interface.   |
| (b) The higher the response time of an interface the better.                               |
| (c) Recall is a faster cognitive skill than recognition.                                   |
| (d) Command-line interfaces are faster for some tasks which the user needs to perform.     |
| (e) Learnability of an interface is a crucial characteristic for the novice user category. |

- 23) Following are some statements about software design?

- |   |
|---|
| (a) Pseudocode is a notation that can be used in procedural design.                           |
| (b) Common coupling occurs when some global data repository is shared by two or more modules. |
| (c) Polymorphism is a design principle that helps the code to be flexible and reused.         |
| (d) Software reuse injects more reliability to code.  |
| (e) Stepwise refinement refers to increasing the level of detail of the design.               |

- 24) Which of the following application(s) best suit client-server architecture?

- |   |                      |                   |
|---|----------------------|-------------------|
| (a) Embedded software in a mobile phone | (b) A Java applet    | (c) A web browser |
| (d) An e-mail program                   | (e) A word processor |                   |

25) Consider the following five code fragments.

(1)	(2)	(3)
<pre>class File { void OpenFile () { ... } void SearchIndex () { ... } void CloseFile () {...} }</pre>	<pre>class AreaFun { double CircleArea() { ... } double RectangleArea() { ... } double TriangleArea() { ... } }</pre>	<pre>class MyClass { void OpenFile () { ... } void SearchIndex () { ... } void InitPrinter () { ... } void Print index { ... } }</pre>
(4)	(5)	
<pre>class POST { void CheckPower () { ... } void InitializeDisc () { ... } void LoadBootstrap () { ... } }</pre>	<pre>Class MakeSoup { void BoilWater () { ... } Void AddIngredients () {...} void MixIngredients () { ... } void ServeSoup () { ... } }</pre>	

Which of the above code fragment(s) show(s) the weakest level of cohesion?

- (a) (1) and (2) only.
- (b) (1), (3) and (4) only.
- (c) (1) only.
- (d) (3) only.
- (e) (3), (4) and (5) only.

\*\*\*\*\*