



**UNIVERSITY OF COLOMBO, SRI LANKA**

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

**DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (EXTERNAL)**

*Academic Year 2011/2012 – 2nd Year Examination – Semester 3*

***IT3204: Software Engineering I***

***PART I – Multiple Choice Question Paper***

**25<sup>th</sup> February 2012**

**(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 (*All the incorrect choices are marked & no correct choices are marked*) 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.

Consider the following description about software called HOROSCOPE and answer the questions 1 to 6 which follow.

*'HOROSCOPE is software which enables someone to enter a birth and birth time and view a description of his/her future. HOROSCOPE requires a user date of register with the system by entering personal data and a payment by credit card. HOROSCOPE is available as an online tool and accessible in different languages.'*

- 1) Which of the following category pair(s) best describe HOROSCOPE?

- |  |
|--|
| (a) generic software and web-based software<br>(b) customized software and business software<br>(c) business software and system software<br>(d) application software and generic software<br>(e) real time software and system software |
|--|

- 2) Which of the following are the 2 most important qualities that HOROSCOPE must possess from among the following?

- |  |                                       |
|--|---------------------------------------|
| (a) portability<br>(c) security<br>(e) maintainability | (b) usability<br>(d) interoperability |
|--|---------------------------------------|

- 3) Which of the following process model(s) is/are suitable for the development of a system such as HOROSCOPE?

- |  |   |
|--|---|
| (a) traditional waterfall model<br>(c) spiral model<br>(e) agile development | (b) evolutionary prototyping<br>(d) formal system development model |
|--|---|

- 4) Which of the following is/are (a) functional requirement(s) of HOROSCOPE?

- |   |   |
|---|---|
| (a) The system must allow a user to register with the system.<br>(c) The system must ensure the security of the transactions.<br>(e) The system must ensure confidentiality of personal data. | (b) The system must use the hardware resources in an optimal way.<br>(d) The user must be prompted to enter his/her date of birth and time of birth to display a description of his/her future. |
|---|---|

- 5) Which architectural model(s) best suit(s) the design of a system such as HOROSCOPE?

- |   |   |
|---|---|
| (a) repository model<br>(c) client-server model<br>(e) formal systems development model | (b) waterfall model<br>(d) spiral model |
|---|---|

- 6) Select the most likely language which must have been used for the development of HOROSCOPE from among the following?

- |                                    |                     |
|------------------------------------|---------------------|
| (a) Fortran<br>(c) C++<br>(e) Java | (b) Pascal<br>(d) C |
|------------------------------------|---------------------|

- 7) Which of the following is/are (a) disadvantage(s) of throw-away prototyping when compared with evolutionary prototyping?
- |  |   |   |
|--|---|---|
| (a) The resultant software can contain casual features of the prototype. | (b) The initial effort for prototyping is wasted to a certain extent.       | (c) The customer can see a working version only at the end. |
| (d) The model cannot incorporate customer feedback.                      | (e) There is no provision for a contract to be signed with client at start. |   |
- 8) Which of the following is/are (an) agile software development technique(s)?
- |                                     |   |           |
|-------------------------------------|---|-----------|
| (a) extreme programming             | (b) rational unified process            | (c) scrum |
| (d) clean room software engineering | (e) computer aided software engineering |           |
- 9) Which of the following is/are (a) correct statement(s) regarding CASE tools?
- |   |
|---|
| (a) A software tool to draw class diagrams can be considered an upper CASE tool.          |
| (b) CASE tools can be used to automate almost every aspect of software engineering.       |
| (c) An automatic test case generator can be considered a lower CASE tool.                 |
| (d) CASE tools can improve productivity of a software engineering company.                |
| (e) CASE tools can reduce the workload significantly when re-engineering legacy software. |
- 10) Which of the following diagrams can be used to depict a functional view of a business during the requirements analysis stage?
- |                        |                       |                      |
|------------------------|-----------------------|----------------------|
| (a) data flow diagrams | (b) use case diagrams | (c) structure charts |
| (d) sequence diagrams  | (e) class diagrams    |                      |
- 11) Which of the following is/are the most suitable requirement gathering technique(s) to capture volatile requirements?
- |                   |                 |                   |
|-------------------|-----------------|-------------------|
| (a) questionnaire | (b) observation | (c) introspection |
| (d) interview     | (e) prototyping |                   |
- 12) Suppose you are working as a software engineer in a software engineering team and your project manager wants the design to be discussed in different levels of detail. Which design principle(s) will directly facilitate your project managers need from among the following?
- |                         |                        |           |
|-------------------------|------------------------|-----------|
| (a) abstraction         | (b) modularity         | (c) reuse |
| (d) stepwise refinement | (e) information hiding |           |

- 13) A computer-user interface is considered vital in rendering system functionality to the user in an effective way. Which of the following can be considered usability guidelines to follow during the process of user interface development for a computer game?

- (a) Allow different user levels so that users can migrate from basic level to advance as they become familiar with the software.
- (b) Text has to be used predominantly to provide help for new users of the game.
- (c) Use consistent colors and sound on the interface.
- (d) Different languages have to be used on the same interface for users from different countries to use the game.
- (e) Utilize different channels of interaction such as sight and sound together when interacting with the user.

- 14) Consider the following applications.

- i. software utility on a vehicle dash board
- ii. computer program for visually impaired

Which technology pair(s) best suit(s) the development of interfaces of the above applications respectively?

- (a) command-line and GUI
- (b) touch screen and voice recognition
- (c) voice recognition and mouse
- (d) direct manipulation and brail keyboard
- (e) keyboard and voice recognition

- 15) Suppose you have been hired to work as a programmer for a software project. If a question was asked at the interview regarding proper programming practice, which of the following should have been included in your answer?

- (a) The program must include comments describing pre and post conditions.
- (b) Line spacing should be avoided as much as possible.
- (c) Every program statement must be aligned with each other on the left.
- (d) The program must contain meaningful variable names.
- (e) The program must tally with the design.

- 16) Which of the following testing technique(s) involve(s) an audience exterior to the software development company?

- (a) integration testing
- (b) beta testing
- (c) white box testing
- (d) unit testing
- (e) acceptance testing

- 17) Which of the following level(s) is/are present in the capability maturity model?

- (a) defined
- (b) intermediate
- (c) recursive
- (d) managed
- (e) optimized

18) Which of the following is/are (a) key challenge(s) of software engineering?

- |                                       |  |                       |
|---------------------------------------|--|-----------------------|
| (a) coping with legacy systems        | (b) coping with increasing failure rate    | (c) employee folklore |
| (d) coping with application diversity | (e) timely completion of software projects |                       |

19) Consider the following faulty code fragment of a compiled program.

```
if a then
{
  while b
  {
    repeat c
    until d
  }
  e
}
```

If you were asked to test this code to locate faults using a program tracing tool, which of the following testing technique(s) can be used?

- |                       |                   |                         |
|-----------------------|-------------------|-------------------------|
| (a) black box testing | (b) alpha testing | (c) static verification |
| (d) white box testing | (e) path testing  |                         |

20) Certain recurring design elements called design patterns can be used when designing software. Which of the following is/are (an) advantage(s) of using design patterns.

- |  |                              |                           |
|--|------------------------------|---------------------------|
| (a) improved design quality              | (b) reduced testing effort   | (c) improved productivity |
| (d) improved maintainability of software | (e) increased staff turnover |                           |

21) Identify the system(s) which agile methods are not suitable for its/their development.

- |                       |                             |                          |
|-----------------------|-----------------------------|--------------------------|
| (a) computer game     | (b) aircraft control system | (c) stock control system |
| (d) e-commerce system | (e) life support system     |                          |

22) Suppose a legal issue has been raised to ban marketing of software you developed as a software engineer. Identify at which phase(s) of the software lifecycle, the problem could have been avoided beforehand.

- |                       |                 |             |
|-----------------------|-----------------|-------------|
| (a) design            | (b) maintenance | (c) testing |
| (d) feasibility study | (e) coding      |             |

23) Which of the following statement(s) is/are valid with regards to software maintenance?

- |   |
|---|
| (a) Software maintenance absorbs most of the life cycle costs.<br>(b) A software product can be maintained over and over again without degrading its quality.<br>(c) Regression testing must be performed after each change to the software in order to ensure that the change has not compromised quality.<br>(d) The failure rate of software increases as more and more maintenance is done.<br>(e) A modular design makes it difficult to debug faults. |
|---|

24) Which of the following activity/activities is/are part of maintenance?

- |                        |                         |                     |
|------------------------|-------------------------|---------------------|
| (a) fault repair       | (b) re-engineering      | (c) version control |
| (d) regression testing | (e) adding new features |                     |

25) Which of the following aspect(s) need(s) to be considered when managing a software project?

- |                              |  |
|------------------------------|--|
| (a) project planning         | (b) human resource utilization         |
| (c) language choice          | (d) choosing the correct process model |
| (e) estimating project costs |  |

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