



SLIATE

SRI LANKA INSTITUTE OF ADVANCED TECHNOLOGICAL EDUCATION

(Established in the Ministry of Higher Education, vide in Act No. 29 of 1995)

Higher National Diploma in Information Technology

Second Year, First Semester Examination – 2016

HNDIT2312- Principles of Software Engineering

| | | |
|--------------------------------|------------------|-----------------|
| Instructions for Candidates: | No. of questions | : 05 |
| Answer four (4) questions only | No. of pages | : 03 |
| | Time | : Two (2) hours |

1.

- i. What is meant by software engineering? [03 Marks]
- ii. Explain the difference between software engineering and system engineering [04 Marks]
- iii. Write four reasons for failure of software product. [04 Marks]
- iv. Briefly explain four (04) software process characteristics. [08 Marks]
- v. Imagine you have to develop a high risk software project. What is the process model you select, for developing the above project? [02 Marks]
- vi. What are the four (04) main task regions in spiral model? [04 Marks]

(Total 25 Marks)

2.

- i. What is the deliverable at the end of the process in requirements specification? [03 Marks]
- ii. What is requirement validation? [03 Marks]
- iii. What is requirement elicitation and analysis? [04 Marks]
- iv. Name all techniques used in the requirement validation process. [04 Marks]
- v. Different types of checks should be carried out on the requirements validation process. They must be included in the requirements document also. List all of them. [05 Marks]
- vi. The requirements document is an official statement of what the software system developers worked on. What should include in the requirements document and name any two readers for each? [06 Marks]

(Total 25 Marks)

- 3.
- i. Briefly explain the following software design principles.
 - a. Encapsulation /Information hiding [02 Marks]
 - b. Modularity [02 Marks]
 - ii. What is meant by software architectural design? [02 marks]
 - iii. Write down two (02) benefits of software reuse. [04 marks]
 - iv. Briefly explain repository model.
 - a. List two (02) advantages of repository model [02 marks]
 - b. List two (02) disadvantages of repository model [02 marks]
 - v. Compare and contrast Cohesion & Coupling in software design. [08 marks]
 - vi. List three (03) software design techniques. [03 marks]
- (Total 25 Marks)**

- 4.
- i. Briefly explain following configuration management concepts [04 Marks]
 - a. Release management
 - b. Configuration management planning
 - ii. Briefly explain Software forward-engineering and Re-engineering. [06 Marks]
 - iii. Briefly explain about project scheduling activities during the software life cycle? [05 Marks]
 - iv. Why critical path is important in software projects? [02 Marks]
 - v. The following table explains the activities, duration and dependencies

| Task | Predecessors Tasks (Dependencies) | Time (Weeks) |
|------|--------------------------------------|--------------|
| A | - | 3 |
| B | - | 5 |
| C | - | 7 |
| D | A | 8 |
| E | B | 5 |
| F | C | 5 |
| G | E | 4 |
| H | F | 5 |
| I | D | 6 |
| J | G - H | 4 |

- a. Draw the Activity on Arrow diagram? [05 Marks]
- b. Find the critical path [03 Marks]

(Total 25 Marks)

- 5.
- i. Why do we need to do software maintenance? [04 marks]
 - ii. List three types of software maintenance and briefly explain them [06 marks]
 - iii. What is the difference between Validations and Verification in software testing? [02 marks]
 - iv. Briefly explain the dynamic software testing process using a diagram. [03 marks]
 - v. List 05 types of software testing methods and briefly explain two. [06 marks]
 - vi. Briefly explain following Static verification techniques [04 marks]
 - a. Code walkthroughs
 - b. Code reviews (program inspections)

(Total 25 Marks)