

## Higher National Diploma in Information Technology

Second Year, First Semester Examination – 2016

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

(Total 25 Mark

2.

- i. What is the deliverable at the end of the process in requirements specification? [03 Ma
- ii. What is requirement validation? [03 Ma
- iii. What is requirement elicitation and analysis? [04 Ma
- iv. Name all techniques used in the requirement validation process. [04 Ma
- 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 M
- 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 two readers for each? [06 M

(Total 25 M

- 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)