SLIATE

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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 – 2017

HNDIT2312- Principles of Software Engineering

Instructions for Candidates:
Answer only four (04) Questions

No. of questions: 05
No. of pages : 04
Time : 02 hours

1.

i. What is "**Software Engineering**"? (04 Marks)

ii. Give three reasons why software need to be maintained. (03 Marks)

iii. "Software engineering is different compared to other engineering disciplines." Do you agree with this statement? Explain your view. (Hint: use at least three reasons) (07 Marks)

iv. There are two classifications for software quality attributes as Bohem's Classification and McCall's Classification. Name two attributes of each classification and give an example for each attribute. (08 Marks)

v. Match the most suitable expecting **goal** with following **software system**? (03 Marks)

Software System	Goal
a) Banking system	P). Responsive
b) Telephone switching system	Q). Secure
c) Interactive game	R). Reliable

(Total 25 Marks)

2.

i. The spiral model is divided into four main task regions. Name three of them. (03 Marks)

ii. List down three principles of agile methods. (03 marks)

iii. Your development team has received three projects given as follows. Which project can use waterfall model? (03 Marks)

a) Aircraft system
b) Word processing package
c) Bridge designing system

iv. Evolutionary prototyping and waterfall model are two software process models. For "**safety-critical projects**" which model is more suitable? Justify your answer. (04 Marks)

v. Briefly explain the differences and similarities between evolutionary prototyping and incremental approaches in systems development. (06 Marks)

vi. Discuss the characteristics of software development projects which prototyping would be suitable. (06 Marks)

(Total 25 Marks)

3.

i. Name four process in Requirements Engineering. (04 Marks)

ii. Briefly explain two types of Requirements. (04 Marks)

iii. Briefly explain two requirements validation techniques. (06 marks)

iv. Following steps explain the "**customer is paying by cash**" scenario in Point-of –Sale system.

- Cashier enters the customer paid amount to system through keyboard.
- System presents the balance due and release the cash drawer.
- Cashier deposits the cash paid by customer and returns balance in cash to customer.
- System records the cash payment.

Complete the following part of form which used in form based approach in requirements specification for the above scenario? (05 Marks)

Function: ……(a)……..
Description: In the POS (Point-Of-Sale), after buy things customer need to pay the money (amount) tendered
Inputs:…… ……..(b)…….……....
Source: ……(c)…..……..…….
Outputs: …… (d)……..……

v. Imagine you have to develop an **on-line Patient Health Record Management System**. That system will be used to maintain information about patients and receiving treatments for their health problems. List down three functional requirements for the above system.

(06 Marks)

(Total 25 Marks)

4.

i. Name four Software Design activities. (04 marks)

ii. Briefly explain the following Design Principles (08 Marks)

a) Abstraction

b) Encapsulation

c) Loose coupling

d) Module Cohesion

iii. Briefly explain the difference between followings: (08 Marks)

a) **Adaptive Maintenance** and **Perfective Maintenance**

b) **Software Re-engineering** and **Reverse engineering**

iv. "Software Designing is an important process in system Development Life Cycle". Do you agree with this statement? Briefly explain by giving two reasons. (05 Marks)

(Total 25 Marks)

5.

i. Testing procedures should be established at the start of any software project. All testing carried out should be based on a test plan. Name three factors which should be included in the **test plan**. (03 Marks)

ii. Write the **author** and a **technique** which is used for following test phases. (03 Marks)

a) Unit Test

b) Integration Test

c) System Test

iii. Name three activities in Software Project Management. (03 Marks)

iv. Name milestones of following processes (03 Marks)

a). Feasibility study

b). Prototype development

c). Requirement specification

v. List down three basic techniques for Component (Version) identification? (03 Marks)

vi. Briefly explain drawbacks in manual version control. (03 marks)

vii. Draw the Activity on node, network diagram and find the critical path for following data. (07 Marks)

Tasks	Predecessors Task (Dependencies)	Time/Duration (Weeks)
A	-	5
B	A	3
C	A	4
D	B, C	2
E	D	3

(Total 25 Marks)