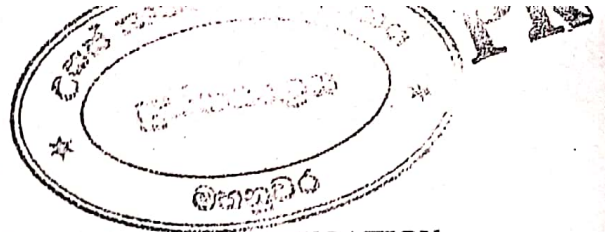




**SLIATE**

**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**

**First Year, Second Semester Examination – 2017**

**HNDIT1212 /IT2005 – System Analysis and Design**

Instructions for Candidates:

Answer any 4 questions

All Questions carry equal marks

No. of questions: 05

No. of pages : 04

Time : Two hours (02 hours)

**Question 01**

**[Total 25 Marks]**

- (i) Define the term information system. (03 Marks)
- (ii) List four resources in Computer Based Information System (CBIS). (04 Marks)
- (iii) Information System can be classified according to the management levels in an organization. Mention those classification levels with one example for each level. (06 Marks)
- (iv) Briefly explain "System analysis" and state four skills of system analysis. (06 Marks)
- (v) Legacy systems are potentially problematic. Do you agree? Justify your answer? (06 Marks)

**Question 02**

**[Total 25 Marks]**

- (i) Describe the waterfall model. (03 Marks)
- (ii) State two strengths and two weaknesses of waterfall model. (04 Marks)
- (iii) In which situation do you use Prototype software development model? And state two types of prototype models. (06 Marks)
- (iv) How does the agile model overcome the limitations of the waterfall model? (06 Marks)

- (v) Read the following scenario and select suitable software life cycle model and justify your answer. (06 Marks)

A small island nation has decided to build an air traffic control (ATC) system for its one airport. The system is specified as follows:

All aircraft landing at the airport must have a transponder that transmits aircraft type and flight data in high-density packed format to the ATC ground station. The ATC ground station can query an aircraft for specific information. When the ATC ground station receives data, it is unpacked and stored in an aircraft database. A computer graphics display is created from the stored information and displayed for an air traffic controller. The display is updated every 2 seconds. All information is analysed to determine if "dangerous situations" are present. The air traffic controller can query the database for specific information about any plane displayed on the screen.

**Question 03**

**[Total 25 Marks]**

- (i) Explain the term Requirements elicitation. (03 Marks)
- (ii) Explain the difference between functional requirements and non-functional requirements (04 Marks).
- (iii) Imagine you have to develop a child care information system. It is the caring of a child or children, usually age from three years to six years. Every single activity of a child is going to record and analyse through this system. List three functional requirements and three non-functional requirements of the above system. (06 Marks)
- (iv) What do you understand by "Feasibility study"? Why do you need to do the Economic Feasibility? (04 Marks)

- (v) KSNTG Pvt Ltd expects to undertake a project for their business. They received project (project R, project T) proposals from two different companies. Assume the following cash flows for two projects.

Year	Project R	Project T
0	Rs. -100 000	Rs.-100 000
1	Rs.50 000	Rs.10 000
2	Rs.40 000	Rs.30 000
3	Rs.30 000	Rs.40 000
4	Rs.10 000	Rs.60 000

- a. Which is the best project to accept according to payback method? Justify your answer?

(08 Marks)

#### Question 04

[Total 25 Marks]

- (i) List major component of software development and explain one of them. (05 Marks)
- (ii) Young inventors club decided to implement new web site to motivate their members. They carryout various activities that aid the members to make their dreams a reality.

Web site contains the following information:

- People who have sufficient qualifications are asked to apply by completing and submitting the application form. Member details are stored in member file.
- The Accounts department using information from the member file decides the membership fee and sends invoice to the relevant member. Membership Payments made are registered on the 'payment file'.
- Administrator can schedule activities for the members but members who have paid the fees can participate in those activities. 'Schedule file' maintains all the scheduled details.
- System maintains all the publications in 'publication file' and Members can view the publications.

- a) Draw the context diagram for the above young Inventors' system (08 Marks)
- b) Draw the level 0 Data Flow Diagram (DFD) for above system (12 Marks)



**Question 05**

**[Total 25 Marks]**

- (i) State three limitations of software testing. (03 Marks)
- (ii) What is CAST tools? Mention its two functions. (04 Marks)
- (iii) Testing is a part of broader process of system development life cycle. Describe the following terms. (06 Marks)
  - a. Black-Box Testing
  - b. White-Box Testing
  - c. Integration testing
- (iv) Briefly explain bespoke package with two advantages and two disadvantages. (06 Marks)
- (v) At the end of system implementation, file conversion can be done in different ways. Briefly explain the pilot operation method with two advantages and two disadvantages.

(06 Marks)