UNIVERSITY OF RUHUNA
BACHELOR OF COMPUTER SCIENCE (GENERAL) DEGREE
LEVEL I (SEMESTER I) EXAMINATIONS
JULY 2016

Subject: Computer Science

Course unit: CSC1142 (Systems Analysis and Design)   Duration: 2 Hours

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Answer All questions.

1.

a. Which of the following statements is false regarding the systems analysis and design process?
    i.   it is an organizational improvement process
    ii. It is a process in which information systems are developed.
    iii. It only concerns information systems development.
    iv. There are different system analysis and design processes.

(05 marks)

b.
    i.   What is a system?
    ii. List the components you can identify in a business when a business is viewed as a work system. Briefly explain how the components you written are interrelated.
    iii. Describe the business case of *buying internet connection* using the components you listed in b (ii) above.

(50 marks)

c. Briefly describe how systems analysis and design methods provide systematic ways of handling the complexity in Information Systems development.

(15 marks)

d.
    i.   Who is a system stakeholder?
    ii. List five types of system stakeholders.
    iii. Group the stakeholders you written in d.(ii) into technical and non-technical categories

(15 Marks)

e. Briefly explain the role of a systems analyst in the systems analysis and design process.

(15 Marks)

2.

a. Relate the different phases of the Software Development Life Cycle in *SDLC Phase* column with activities in the *Activity* column in the table given below.

SDLC phase	Activity
A. Planning B. Analysis C. Design D. Implementation	i. In-depth undertanding of problems ii. Identify business strategies and goals iii. Explore technical solution to the problems iv. Identify project development team v. Install and test new system vi. Detailed study of how the current system works vii. System documentation viii. Perform fact finding ix. Do feasibility studies x. Prepare project schedule and budget

(20 Marks)

b. What is strategic planning? Briefly explain why strategic planning is important in Information Systems development context.

(10 Marks)

c. Write three potential benefits of project management.

(15 marks)

d. Consider the following description regarding a workshop on staff training.

First, send an e-mail message to all department heads announcing the training workshop (1 day). After sending the e-mail, develop the training materials (4 days) and reserve the training facility planned to use (11 days). When the training materials are completed, print them (3 days) and develop PowerPoint presentation (4 days). When the PowerPoint presentation is ready, conduct a practice training session with the instructors who are assigned to assist the workshop (1 day). When the practice session is over, the printing of handout material done, and the training facility is reserved, you conduct the user training sessions (3 days).

i. Using the table structure given below, list all tasks, showing their durations and their predecessor tasks (if any) in the staff training workshop scenario described above.

Task Id	Task description	Duration (days)	Predecessor tasks (task Id)
1.			
2.			
....			

ii. Draw PERT diagram based on the above data
iii. Calculate most likely duration of each path (in days) and determine the critical path.

(55 Marks)

3.

    a.

        i. What does a process model shows?

        ii. What does the primary difference between UML Activity diagram and Data Flow Diagram?

(20 Marks)

    b. Consider the following description regarding booking a vehicle at the university.

When a staff member wants transport facilities to travel for official events, he/she has to submit a vehicle booking request to the head of the department where he/she works. When the head of the department approves the request, the request details are updated and it is then sent to the dean of the faculty for his approval. The request approved by the dean of the faculty is sent to the general administration branch after updating it with the approval information.

When the application is received by the general administration branch, a clerk first checks the university vehicle file for the availability of a university vehicle for the requested date. If a vehicle is available it will be booked for the dates requested by the staff member and both the booking file and the university vehicle file will be updated with the booking details. If a university vehicle is not available an outside vehicle will be hired and the vehicle booking information will be updated in the booking file. A list of outside vehicles, that can be hired, is maintained by the administration branch of the university for this purpose.

(80 Marks)

        i. Considering the works of department, faculty and general administration branch as the scope of the system under investigation, draw context diagram (level 0 DFD) for the above scenario.

        ii. Expand the context diagram you developed in (i) above and develop the top level data flow diagram (level 1 DFD) for the current system of the scenario above.

4.

    a. State three key problems that a project could face due to incorrect identification of requirements.

(15 Marks)

    b. Define "Requirements Management".

(05 Marks)

c. Consider the following dialogue between a clerk (CLK) at the Course Unit Office at the faculty and a head of a department (HOD), recorded by a systems analyst.

CLK:	Sir, I need your help to set excuses for attendance based on a request of a student approved by the Dean / Science.
HoD:	No problem. What is the student registration number?
CLK:	SC/2009/2453.
HoD:	OK. According to our records, his name is Tharanga Ramanayake and he follows PS VI combination in BSc. Degree program
CLK:	Yes, the information is correct. Could you please excuse him from the courses conducted during the dates 2009-05-17 to 19 and 2009-06-21?
HoD:	OK. I see that we have conducted COM 2123 and COM2133 courses on the above dates. I will excuse him for the courses conducted during the dates you mentioned
CLK:	Thank you Sir.

Identify three functional requirements based on the facts given in the above dialogue.

(45 marks)

d. Consider the following requirements for improving the management information system at the faculty of science, written by a trainee developer.

- *The system shall not allow student to submit a medical certificate two weeks after the date for which the medical certificate is submitted.*
- *The system shall not allow student to register for more than six (06) FSC credits in total.*
- *The clerk sometimes enters student registration number, which the system will use to find a student, also the system allows replacing it with student last name, degree program and year of study, so the clerk does not need to know student registration number, and it will still be understood by the system.*

The developer is not certain whether the requirements are correctly formulated. For each of the requirement you believe not correctly written, explain reason(s) and formulate the incorrect requirement(s) in correct way.

(35 marks)

******End******