

UNIVERSITY OF RUHUNA
BACHELOR OF COMPUTER SCIENCE (GENERAL) DEGREE
LEVEL I (SEMESTER I) EXAMINATIONS
~~August~~ JULY 2017

Subject: Computer Science

Course unit: CSC1142 (Systems Analysis and Design)

Duration: 2 Hours

Answer All questions.

1.

- a. List two reasons for doing Systems Analysis and Design in the process of Information Systems Development.

(10 Marks)

- b. "Systems analyst should be able to bridge the knowledge gap between two stakeholder groups representing system owners & users, on one hand and system designers & developers on the other hand"

- i. Name two categories represented by different types of stakeholders mentioned above?
- ii. Briefly explain what it is meant by "knowledge gap" in the above statement.
- iii. Briefly explain how systems analyst bridge the "knowledge gap" you explained above in (ii).

(40 Marks)

- c. Silver Line Cabs is a car renting Company that has begun operating its branches island wide recently. In order to allow customers to obtain vehicle information and submit their booking requests online, the company is planning to develop an Information System. Further, the management expects to obtain information necessary to make important business decisions from the planned Information System.

The management has decided to hire a systems analyst for this purpose. The company has received several applications from people having experience in businesses other than the vehicle renting business. The management has selected a systems analyst with a strong background in systems development projects in manufacturing area.

- i. Write three business drivers that may have influenced their decision to use an Information System to support daily operations.
- ii. What is the role the hired systems analyst will play in the company?
- iii. List an advantage and a disadvantage of their selection of the systems analyst.

(50 Marks)

2.

- a. State whether each of the following statements is true or false.
- i. Software development life cycle (SDLC) is an ordered set of activities that are always performed in sequence.
 - ii. Waterfall and agile models are examples of SDLC models.
 - iii. Fact finding techniques are used to collect facts in the planning phase of SDLC.
 - iv. Evaluation of the business case and determining the project feasibility is done in the Analysis phase of SDLC.
 - v. Conceptual solution for the problems is proposed in the design phase.
 - vi. Issues such as the proposed system's sufficiency for the future needs and room for its expansion is addressed under the operational feasibility.
 - vii. In software development projects, Total Cost of Ownership (TCO) only include the cost associated with, software development, and purchase of any new Hardware/Software/technology to support the development.
 - viii. Economic feasibility checks whether the investment of the software development project supports achieving the company's business goals.
 - ix. Strategic plan of a company describes how the company plans to do their business in the future.
 - x. Systems analysis and design can concern only about identifying problems and possible improvements.

(20 Marks)

- b. What is SWOT analysis? Why SWOT analysis is important in Organizational modeling context.

(15 Marks)

- c. List three problems that can occur when there is no proper planning during a systems development project.

(15 Marks)

- d. Consider the following description regarding a software development project.

First, identify user needs by interviewing users (04 days). At the same time use prototype designs to get the user feedback (07 days). After the interview are conducted, create DFDs based on the elicited requirements (07 days). Then the decision tree design is done (10 days) and at the same time the data dictionaries are developed (08 days). After completing both the prototype designs which are used to get user feedback, and the data dictionary designs, the database design is done (04 days). When both the decision tree design and the database design are done, do the project documentation (10 days).

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

Task id	Task description	Duration (days)	Predecessor tasks (task id)
A			
B			
....			

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

(50 Marks)

3.

- a. Model the following scenario using an E-R diagram by clearly showing the cardinalities.

A student can register for maximum six (06) FSC course units and a FSC course unit can accommodate maximum of forty (40) students.

(20 marks)

- b. Consider the following description regarding a leave application process.

When an academic staff member wants to travel abroad for post graduate studies or to attend a conference, he/she has to apply for study leave or conference leave through the head of the department and the dean of the faculty, where he/she works, to the Vice Chancellor.

When the head of the department receives a leave request he approves the request by signing the relevant sections of the application forms, and the request is forwarded to the dean of the faculty for his approval. The request approved by the dean of the faculty is sent to the Vice Chancellor for his approval. Once he approves the request, it is forwarded to the University Study Leave Committee.

The University Study Leave Committee obtains the staff member's previous study leave records by checking his personal file. Then they analyze such information against the details of the study leave request. When the University Study leave committee approves the request, a letter with the study leave approval details, is issued to the staff member and the staff member's personal file is updated with a copy of the letter.

- i. Taking the works of department, faculty, VC and the study leave committee 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 a (i) above and develop the top level data flow diagram (level 1 DFD) for the current system of the scenario above.

(80 Marks)

4.

- a. Considering the fact finding techniques you learnt, outline a good fact finding strategy.

(20 marks)

- b. Consider the following questions prepared by a newly recruited systems analyst for an interview session.

- P. Is it sufficient to have a 100 ms response time?
- Q. Do you just print reports and send them to your manager or do you also email and fax them along with the printed copy?
- R. Do you think more than 5000 customers order the products online per month?

- i. To which type the above questions belong to?
- ii. Do you think that the above interview questions are properly formulated? Explain your answer. Rewrite questions that you found not properly formulated (if any) in acceptable format without changing the question type.

(30 Marks)

- c. Consider the following dialogue between the Director (PED) at the Physical Education Unit and the president of the Student Union (SUP), regarding the booking of the university playground for the faculty event.

Identify four (04) functional requirements based on the facts given in the dialogue below.

SUP:	Sir, I need your help to check the availability of the playground for a student event approved by the Dean / Science.
PED:	No problem. What is the event?
SUP:	Faculty Day.
PED:	On which date have you planned to hold the event?
SUP:	We plan to hold the event on a Friday and the suggested date is 2017-10-12
PED:	OK. According to our records, this day is already booked for a Yoga event from 8.00 am to 12.00 noon by the Yoga Society. Let me check for free Fridays in October. OK, we have free Fridays on 2017-10-19 and 2017-10-26.
SUP:	Sir, can you make a temporary booking for 2017-10-19?
PED:	OK. Can I have your registration number and event details to register a temporary booking?
SUP:	My registration number is SC/2015/8453. The event is the Faculty day and we need the playground from 8.00 am to 5.00 pm.
PED:	OK. I made a temporary booking based on the above details. You must get back to me with DVCs approval within a month for me confirm the booking. Otherwise the temporary booking will be expired after a month.
SUP:	Thank you Sir. We will contact you with the DVC's approval within a month.
PED:	Thank you.

(40 Marks)

d. Consider the following requirement written by a student for improving management information system at the faculty of science.

- *On the "Course Registration Page" the BCS student can only view the course units of BCS Degree Program.*

Is the above requirement correctly formulated? If not explain reason(s) and write it in a correct way.

(10 Marks)
