



MACHAKOS UNIVERSITY

University Examinations for 2019/2020 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

FIRST YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (COMPUTER SCIENCE)

SCO 101: SYSTEM ANALYSIS AND DESIGN

DATE:10/12/2020

TIME: 8:30 – 10:30 AM

INSTRUCTIONS

Answer question ONE and any other TWO questions.

QUESTION ONE (30 MARKS)

- a) Discuss the following phases of feasibility and outline the deliverable of each phase.
 - i. Technical feasibility (2 marks)
 - ii. Economic feasibility (2 marks)
 - iii. Operational feasibility (2 marks)
- b) Systems analysis can be defined as the detailed investigation and analysis of the requirements of a system to fulfill a given business problem. List FIVE fact finding methods used and describe a situation in which the technique is most appropriate. (5 marks)
- c) Describe any THREE types of information systems. (6 marks)
- d) Your organization needs to hire an assistant system analyst to work with you in a software project. Management has requested you to draw up the job description for this assistant. Write a short job description of what the assistant will be required to do as a Systems Analyst. (5 marks)
- e) Differentiate between logical and physical model (2 marks)
- f) Explain the term Data Flow Diagrams? Why are they deemed so important during systems development? (2 marks)
- g) What do the acronyms DFD and ERD stand for? (2 marks)
- h) Explain the strategies followed for change-over of the system. (4 marks)

QUESTION TWO (20 MARKS)

- a) Briefly describe five categories of people involved in system analysis and design work (10 marks)
- b) A small company makes and sells machine tools. The production and Accounting system have been computerized for some time and systems analyst is putting together a proposal to computerize the firms order entry system. The system has been described in narrative form as follows: “The order entry process currently begins with when the sales department, which prepares a quotation using the price, files and returns the quotation to the sales department. A record of the quoted price is held in the quotation file. The quotation is sent to the customer.
A successful quotation results in the customer sending an order to the department where the order is matched with the quotation. The order is then given a number and entered onto the order file. The order department uses the details in the order file to create an acknowledgement which is sent to the customer and to compile a works order which is sent to the production department.

REQUIRED:

- i. Explain the term Data Flow Diagrams? Why are they deemed so important during systems development? (2 marks)
- ii. Produce a Data Flow Diagram for the current order entry. (8 marks)

QUESTION THREE (20 MARKS)

- a) New systems developed in-house frequently require a complex suite of programs. During the development of the system, testing will take place at different levels and at different times. Discuss four different types of testing that could take place. (8 marks)
- b) ‘SkoolTech’ is a system development company approved to develop and implement IT for schools. They have recently been approached by St Henry’s Primary school to develop an on-line payment system enabling parents to make payments to the school directly. St Henry’s Primary school is a large school with about 830 pupils across 7 school years
(Reception class and Years 1 -6).
The school handles and manages two different kinds of payments:
- Regular term time payments (i.e. dinner money, milk, after school clubs, swimming and music lessons).
 - One off payments (i.e. school trips, school uniform).

The school office is manned by 3 secretaries' (Hazel, Bill and Jane) but handling and managing all the individual payments through the school reception is putting a strain on the school office. There is a trip coming up next term for both Year 4 & 5 at the same time which means payments from approximately 240 parents will need to be taken over a two week period. Hazel and Bill are well versed in computers and have spreadsheets already in place coupled with a well understood process to manage the payments manually. Jane is happy to follow the process and use the spreadsheets but is not as comfortable with new IT. The school is hoping that an on-line payment system will significantly relieve the burden on the school office.

The school also has a very active and well represented 'parents forum'. Where online payments have been a topic of discussion for some time and is much sought after by the parents, many of whom work full time. Due to this it is important that any new payment system also meets the parent's requirements.

You work for SkoolTech and are the System Analyst/designer for this project

You will be working in a small team with a Project Manager, a Developer and a Tester. Ted is the Project Manager who has a lot of experience of managing projects although much of this has been a traditional project management approach following a Waterfall development lifecycle. Arran is the youngest and least experienced member of the team and although he only has 2 years working experience he is well versed in Java and web based applications so he will fill the Developer role. Arran has also done some Agile training and has worked on one agile project. Pam is the Tester but she has had over 10 years working in various system development roles, including developer, systems analyst, tester and some project management. She is used to working iteratively and is well versed in the Rational Unified Process. She has had little exposure, however, to agile development and is not comfortable with new approaches such as SCRUM which appear to jump straight into coding before the requirements have been defined.

Which System Development Lifecycle would you suggest to be the most appropriate to use for developing the school on-line payment system? Please give reasons, relating to the scenario where possible, that describe why this approach is more appropriate than another. (12 marks)

QUESTION FOUR (20 MARKS)

- a) A system is said to comprise of input, output, processes, boundary and environment. Explain these terms with reference to a business system. (10 marks)
- b) Systems development life cycle is one of the methodologies of systems development. Explain briefly what it involves and its deliverables at the various stages. (10 marks)

QUESTION FIVE (20 MARKS)

- a) Apart from the waterfall model, name FOUR other system development methodologies. (4 marks)
- b) State THREE strengths of the waterfall system development methodology. (6 marks)
- c) Mention TWO reasons that may make an organization abandon an information systems project. (2 marks)
- d) Explain four main organization levels and mention the types of Information Systems used at each level. (8 marks)