



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2010/2011

INSTITUTIONAL BASED PROGRAMME (IBP) – AUGUST SESSION
EXAMINATION FOR THE DEGREE OF BACHELOR OF COMPUTER
SCIENCE

SCT 204: SYSTEMS ANALYSIS AND DESIGN

DATE: Thursday, 30th December, 2010

TIME: 2.00 p.m. – 4.00 p.m.

INSTRUCTIONS:

Answer question **ONE** and any other **TWO** questions.

Question 1

- a) Distinguish between system analysis and system design. (2 marks)
- b) Describe four system development methodologies giving the advantages and disadvantages of each. (8 marks)
- c) Describe the four elements of a data flow diagram. (4 marks)
- d) Name and explain the five stages of system testing. (5 marks)
- e) State and describe the qualities of system analyst. (6 marks)
- f) Describe the components of a use case diagram and draw a use case diagram for ATM system. (5 marks)

Question 2

Based on the following description, draw an ER diagram of a walk-in clinic information system that will keep track of patients, doctors, appointments and medications. A patient comes to the doctor by appointment. Each patient has a unique number, name, address, date of birth, date and time of appointments with doctors. A patient may receive medications, which are assigned by a doctor. Each medication is described by unique

number, name, and manufacturer name. Each doctor is characterized by employee id number, name, phone, and specialization.

- a) Indicate minimum and maximum cardinalities and degree of each relationship;
- b) Show the attributes of each data entity.
- c) If required, present a solution to avoid many-to-many relationships.

(20 marks)

Question 3

- a) Study the table below and fill in the missing values.

Year	Costs	Cumulative Costs	Benefits	Cumulative Benefits
0	125000		0	
1	3500		26000	
2	4700		34000	
3	5500		41000	
4	6300		55000	
5	7000		66000	
6	7700		75000	
7	8400		82000	

(8 marks)

- b) What do you understand by the term “payback period”. (2 marks)
- c) Calculate the payback period and explain why this could be a good or bad investment. (6 marks)
- d) Using examples, distinguish between tangible and intangible benefits as used in systems development. (4 marks)

Question 4

- a) Explain the role of the following in systems analysis and design:
System analyst, system builders, system designer and project manager. (4 marks)
- b) Describe system specification under the following sections: Design strategy, interface design, Architectural design and program design. (8 marks)

- c) Information gathering is one of the major activities in systems analysis. Explain how this is achieved. (8 marks)

Question 5

- a) Company X sells merchandise to wholesale and retail outlets. Wholesale customers receive a 2% discount on all orders. The company also encourages both wholesale and retail customers to pay cash on delivery by offering a 2% discount for this method of payment. Another 2% discount is given on orders of 50 or more units. Present this in a decision table. (10 marks)
- b) Draw a DFD for a distance education university. The enrolment process works as follows. Students send in an application form containing their personal details and their desired course. The university checks that the course is available and that the student has necessary academic qualifications. If the course is available the student is enrolled in the course and the university confirms the enrolment by sending a confirmation letter to the student. If the course is unavailable, a rejection letter is sent to the student. (Context and level 1 DFD). (10 marks)