

# WOMEN'S UNIVERSITY IN AFRICA



*Addressing gender disparity and fostering equity in University Education*

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**FACULTY OF MANAGEMENT AND ENTREPRENEURIAL SCIENCES**

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**BSc HONOURS DEGREE IN INFORMATION SYSTEMS**

**MAIN PAPER**

**IS113: SYSTEMS ANALYSIS AND DESIGN**

**INTAKE 27: FIRST YEAR FIRST SEMESTER**

**TIME: 3 HOURS**

**INSTRUCTIONS TO CANDIDATES**

Answer any **four** questions.

### **Question 1**

BCS Builders is a company offering house building and property improvement services to the public. The proprietor of the company employs a number of skilled workers such as bricklayers, carpenters and plumbers. The proprietor manages the building projects himself, and may occasionally help with the construction work. BCS Builders wants to computerise the management of building work. This includes processing of estimates, job scheduling, and payments as described below in more detail.

When a customer contacts the company to ask for an estimate, the proprietor makes a note of the customer's contact details and an outline of the proposed work. He agrees a date with the customer to view the property in order to give an estimate of the cost for the work. When visiting the property on the agreed date the proprietor adds more detail to the outline of the proposed work. Within 3 days of visiting the property the proprietor produces a fully detailed estimate and sends it to the customer. If the customer agrees the estimate, the proprietor schedules a date to start the job (this is based on the size of the job and other jobs that have already been scheduled).

A few days before the agreed start date of a job, the proprietor contacts the customer to confirm the start date, and then orders the required building materials from suppliers to be delivered on the date the job starts. At the end/completion of the job the proprietor calculates the actual cost of the job to produce an invoice which is sent to the customer. The customer has 30 days to pay the invoice.

- a) Produce a top level data flow diagram representing the management of building jobs in the BCS Builders company (described in the case study). [20]
- b) Briefly describe the symbols in a Data Flow Diagrams [5]

### **Question 2**

- a) Explain the difference between a waterfall and an iterative/increment System Development Life Cycle. Illustrate your answer with diagrams. [12]
- b) When is it appropriate to use a waterfall approach and when should it not be used? [5]
- c) Explain the purpose of the following categories of feasibility tests giving the criteria used to determine their feasibility:
  - i. Operational feasibility;

- ii. Technical feasibility;
- iii. Schedule feasibility; and
- iv. Economic feasibility. [8]

### Question 3

- a) Explain five required characteristics for the following to be successful:
  - i. JAD workshop;
  - ii. Observations;
  - iii. Interviews;
  - iv. Focus groups; and
  - v. Questionnaires. [13]
- b) Describe the role and responsibilities of the following:
  - i. Business analysts,
  - ii. Stakeholders. [12]

### Question 4

A local hospital consists of many wards, each of which is assigned many patients.

Each patient is assigned to one doctor, who has overall responsibility for the patient in his/her care. Other doctors are assigned on an advisory basis. Each patient is prescribed drugs by the doctor responsible for that patient. Each nurse is assigned to a ward and nurses all patients in the ward, though he/she is given special responsibility for some patients. Each patient is assigned one nurse in this position of responsibility.

One of the doctors is attached to each ward as an overall medical advisor.

- a) Draw an entity relationship diagram representing these relationships. [12]
- b) The SDLC consist of the conceptual, logical and physical design of the system. Briefly explain at what point is the entity relationship is created. [5]
- c) Discuss the advantages and disadvantages of requirements gathering. [8]

### **Question 5**

- a) Differentiate the following:
- i. Technical feasibility and Operational feasibility of a project; and [3]
  - ii. User documentation and System documentation. [3]
- b) Explain on the given three primary ways to approach the creation of a new system and which one you think is the best choice, justify your answer:
- i. Develop a custom application in-house;
  - ii. Buy a packaged system and (possibly) customize it; and
  - iii. Rely on an external vendor, developer, or service provider to build or provide the system. [9]
- c) Briefly describe what is involved in the incremental development approach stating its merits and demerits. [10]

### **Question 6**

- a) Systems analysts use a variety of techniques to search for requirements. Identify four (4) of these techniques and explain any strengths and weaknesses they may have. [15]
- b) Explain the purpose of a Requirements Definition and when in the system development life cycle it should be produced. [10]

**END**