



THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

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MAIN EXAMINATION

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MAY – AUGUST 2021

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DEPARTMENT OF COMPUTER AND INFORMATION SCIENCE

REGULAR PROGRAMME

DIT 013: SYSTEM ANALYSIS AND DESIGN

Date: AUGUST 2021

Duration: 2 Hours

INSTRUCTIONS: 1. SECTION A [Answer 1- Compulsory]

2. SECTION B [Answer 2 Questions]

QUESTION ONE

Consider for example the discount policy of a cloth manufacturer for his customers. According to the policy the cloth manufacturer give discount to his customers based on the type of customer and size of their order. For the individual, only if the order size is 12 or more, the manufacturer gives a discount of 30% and for less than 12 cloth there is no discount. Whereas in case of shopkeeper or retailers, the discount policy is different. If the order is less than 12 then there is 15% discount. For 13 to 48 cloth order, the discount is 30%, for 49 to 84 cloth 40% and for more than 85 cloth the discount is 50%.

- Create the decision policy for discount percentage that can be put in the form of a decision tree. **[5 Marks]**
- Explain why it's easy to verify logic and problems that involve a few complex decisions **[2 Marks]**
- Outline **THREE** limitations associated with form of a decision tree. **[3 Marks]**

- d) Explain the purpose of a Requirements Definition and when in the system development life cycle it should be produced. **[5 Marks]**
- e) It is important that software systems work with clean, valid data. Describe how can the User Interface be designed to help ensure that data entered by the user is valid. **[5 Marks]**
- f) Explain the purpose of a Requirements Definition and when in the system development life cycle it should be produced. **[5 Marks]**
- g) It is important that software systems work with clean, valid data. Describe how can the User Interface be designed to help ensure that data entered by the user is valid. **[5 Marks]**

QUESTION TWO

- a) Using suitable data flow diagram, generate a university management system using a second level DFD that would detail the files to which the data is applied in the system and from which data is obtained to each individual process. **[7 Marks]**
- b) List **TWO** tangible benefits and two operational costs for a system. How would you determine the values that should be assigned to each item? **[4 Marks]**
- c) An insurance company uses the following rule to determine the eligibility of a driver for insurance. The driver will be insured if. The driver lives in the city with population less than 5000 and he is married man. The driver lives in the city with population less than 5000 and he is married and age is over 30 years old. The driver lives in the city with population is 5000 or more and it is married female. The driver is male over 30. The driver is married and under 30.
- i) Generate a decision table that shows conditions and actions from above **[6 Marks]**
- ii) Identify **THREE** limitations associated with form of decision table **[3 Marks]**

QUESTION THREE

- h) Compare and contrast batch processing and online processing. Describe one application that would use batch processing and one that would use online processing **[5 Marks]**
- i) Suppose that you are the analyst charged with developing a new system to help senior managers make better strategic decisions. What requirements gathering techniques will you use? Describe in detail how you would apply the techniques. **[5 Marks]**
- j) Two common techniques for gathering requirements are interviews and workshops. Choose ONE of these techniques and describe how an analyst would prepare for it and carry it out. Explain the kind of system and why it is. **[4 Marks]**
- k) For the technique you have chosen in part (a) discuss its advantages and disadvantages for requirements gathering. **[6 Marks]**

QUESTION FOUR

A major public university graduates approximately 10,000 students per year, and its development office has decided to build a Web-based system that solicits and tracks donations from the university's large alumni body. Ultimately, the development officers hope to use the information in the system to better understand the alumni giving patterns so that they can improve giving rates.

- i. What kind of system is this? **[2 Marks]**
- ii. Does it have characteristics of more than one? **[3 Marks]**
- iii. What different kinds of data will this system use? **[2 Marks]**
- iv. On the basis of your answers, what kind of data storage format(s) do you recommend for this system? **[3 Marks]**
- b) The following are four phases in the Systems Development Life Cycle (SDLC). For each phase identify TWO deliverables, briefly describe each of these deliverables and identify the techniques used to produce it.
- i. Requirements identification **[5 marks]**
- ii. Analysis **[5 marks]**

QUESTION FIVE

- a) Compare and contrast batch processing and online processing. Describe one application that would use batch processing and one that would use online processing **[5 Marks]**
- b) Suppose that you are the analyst charged with developing a new system to help senior managers make better strategic decisions. What requirements gathering techniques will you use? Describe in detail how you would apply the techniques. **[5 Marks]**
- c) There are many characteristics/attributes of a good software design. One of them is usability. Explain the meaning of usability and give **FIVE** examples of poor software system usability. **[5 Marks]**
- d) Suppose that you are the analyst charged with developing a new system to help senior managers make better strategic decisions. What requirements gathering techniques will you use? Describe in detail how you would apply the techniques. **[5 Marks]**