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CICT PART II SECTION 3

SYSTEMS ANALYSIS AND DESIGN

WEDNESDAY: 22 May 2019. **Time Allowed: 3 hours.**

Answer ALL questions. Marks allocated to each question are shown at the end of the question.

QUESTION ONE

(a) In each case, state two deliverables produced in the following stages of system development life cycle:

(i) Planning (2 marks)

(ii) Analysis. (2 marks)

(b) The interview is the most common method of information gathering techniques.

Summarise four basic steps to the interview process. (4 marks)

(c) Examine four roles of a systems analyst. (4 marks)

(d) (i) Describe two main symbols used in data flow notation. (2 marks)

(ii) Summarise two guidelines used when developing data flow diagrams. (2 marks)

(iii) Suggest four steps that aid in the construction of a Level I Data Flow Diagram (DFD). (4 marks)

(Total: 20 marks)

QUESTION TWO

(a) Distinguish between the following terms as used in system analysis and design:

(i) Requirement determination and requirement structuring. (2 marks)

(ii) High level risk and medium level risk. (2 marks)

(iii) Data modelling and object modelling. (2 marks)

(b) Prototyping is based on the simple idea that people could express more easily what they like or do not like about an actual working system.

Required:

(i) Examine four guidelines required for the development of a prototype. (4 marks)

(ii) Highlight four benefits of using prototype methodology in an organisation. (4 marks)

(c) Change control is a function of a configuration management which ensures that all changes made to a software system are consistent and made as per organisational rules and regulations.

Required:

Discuss the steps undertaken in the configurational change of a product. (6 marks)

(Total: 20 marks)

QUESTION THREE

(a) Citing four reasons, justify the importance of systems theory to a system analyst. (4 marks)

(b) Describe four ways of overcoming challenges to successful system integration. (4 marks)

(c) Explain the following characteristics of an open system:

(i) Entropy. (1 mark)

(ii) Differentiation. (1 mark)

(iii) Equifinality. (1 mark)

(iv) Synergy. (1 mark)

(d) Examine four benefits associated with the use of structured systems analysis and design methodology (SSADM). (4 marks)

(e) Differentiate between the following terms:

(i) Load testing and stress testing. (2 marks)

(ii) Regression testing and integration testing. (2 marks)

(Total: 20 marks)

QUESTION FOUR

(a) Conventional system development life cycle (SDLC) has some limitations.

Assess four limitations of SDLC. (4 marks)

(b) Enumerate four benefits of using operating standards of a system. (4 marks)

(c) End users would expect thorough training as part of their acceptance of the new system. It is also in the interest of the organisation that their staff should be properly trained in its use.

Examine four benefits of employing computer aided learning in training the end-users. (4 marks)

(d) Highlight two reasons for conducting systems analysis. (4 marks)

(e) Describe four major differences between hard systems methodology and soft systems methodology. (4 marks)

(Total: 20 marks)

QUESTION FIVE

(a) Modern Builders Ltd. is a company offering house building property improvement services to the general 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.

Modern Builders Ltd. wants to computerise the management of building works. This includes processing of estimates, job scheduling and payments as described below in more details.

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 details to the outline of the proposed work. Within three days of visiting the property, the proprietor produces a fully detailed estimate and sends it to the customer. If the customer agrees to 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 one month to pay the invoice.

Required:
Construct a Level I Data Flow Diagram representing the management of building jobs in the Modern Builders Ltd. (12 marks)

(b) Assess four reasons why a systems analyst may prefer to use UML sequence diagram to model a scenario executing in a system rather than do coding. (4 marks)

(c) Explain the following characteristics of an object oriented system:

(i) Polymorphism. (1 mark)

(ii) Behaviour. (1 mark)

(iii) Class. (1 mark)

(iv) Methods. (1 mark)

(Total: 20 marks)

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