BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF SCIENCE AND ENGINEERING

COMPUTER SCIENCE DEPARTMENT

BSc HONORS DEGREE IN COMPUTER SCIENCE

SYSTEMS ANALYSIS AND DESIGN -CSH202 / CS115

2 ½ HOURS

OCT 2024

**INSTRUCTION TO CANDIDATES**

This paper carries **five (5)** questions. Answer **ALL.**

Marks are indicated in brackets at the end of each question. Total marks are **100**.

**Question 1**

(a) Explain the various stages of the System Development Life Cycle (SLDC). **[16]**

(b) Distinguish the following

(i) White box testing and black box testing. **[4]**

(ii) Functional and non-functional requirement. **[4]**

**Question 2**

(a) Discuss the view that Agile methods are far more able to deliver high customer and worker satisfaction than their traditional counterparts. **[12]**

(b) What does a program documentation entails. **[4]**

**Question 3**

(a) How can the Graphical User Interface be designed to help ensure data validity on data capturing? **[12]**

(b) Describe the following in the context of systems Analysis and Design.

(i) Prototyping as an approach for software development. **[4]**

(ii) Distinguish parallel conversion from modular conversion. **[5]**

**Question 4**

(a) Describe any **five (5)** elements of Elements of Object-Oriented System. **[10]**

(b) Write short notes on

(i) Encapsulation. **[4]**

(ii) Encryption. **[3]**

(iii) Modularisation. **[3]**

**Question 5**

**Case Study for Question 1**

ABC Computer Repairs

ABC is a computer repair company operating out of a small workshop. The owner, Behold is the only person working in the company but he hopes to expand and employ more engineers in the near future. At present Behold holds much of the information about repair jobs in a filing cabinet but this is rather disorganised and he realises that a computer system would be a better method especially as any new members of staff would also need access to this information. When a customer brings in a faulty computer Behold logs the fault and the customer's details giving him/her an estimated date for the repair to be completed. Every day he checks the list of repairs and selects the jobs to be done that day. If he finds he doesn't have the required parts in stock for a repair he places a purchase order with his supplier and reschedules the job to a later date. When a repair is complete and the customer comes to collect the computer, Behold gives him/her an invoice and the customer pays immediately. Once a week Behold checks his stock of parts, and orders any that are getting low from his supplier.

(a) List the processes and the external entities that you would include on a LOGICAL top-level data flow diagram (DFD) of the ABC Company. (You do not need to draw the DFD). **[8]**

(b) Produce a Use Case diagram for the ABC system. (Hint - correct <<include>> or <extend>> relationships will attract additional marks). **[12]**

********END OF PAPER********