# BINDURA UNIVERSITY OF SCIENCE EDUCATION

## FACULTY OF SCIENCE EDUCATION

## DEPARTMENT OF EDUCATIONAL TECHNOLOGY

## BACHELOR OF SCIENCE EDUCATION IN COMPUTER SCIENCE

**CS216/ EDT216: SOFTWARE ENGINEERING**

**TIME: 3 HOURS**

AUG 2021

**INSTRUCTIONS**

Answer **ALL the questions.** Each question carries **20** marks.

The question paper has **5** questions

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**Question 1**

i. Describe the **any four** of attributes of a good software **[10]**

*ii.*. Explain **all** the following types of software systems **[10]**

*a. Data-processing systems*
*b. Real-time systems*
*c. Decision support systems*
*d. Knowledge-based systems*

**Question2**

**i.** Many project failures during 'Software crisis' in 1960s and 1970s resulted from the inability to scale the techniques employed when developing small software systems to handle larger, more complex systems. State any our problems that were a consequence of the failures **[8]**

ii. Describe **two** of the main features of the prototyping life cycle model? **[4]**

iii. What are the points of the *Agile Manifesto*? **[8]**

**Question 3**

**i.** Briefly outline **any three properties** of a model. **[6]**
ii. State any 4 criteria that is used in selection of a development methodology **[8]**

**iii.** To reduce costs and the environmental impact of commuting, your company decides to close a number of offices and to provide support for staff to work from home. However, the senior management who introduce the policy are unaware

that software is developed using agile methods, which rely on close team working and pair programming. Discuss any three difficulties that this new policy might cause and how you might get around these problems. **[6]**

**Question 4**

i. Differentiate white and black box testing **[8]**

ii. Explain any four of the functional requirements **[12]**

**Question 5**

A retail business wishes to automate some of its sales procedures. The retailer buys items in bulk from various manufacturers and re-sells them to the public at a profit. Preliminary interviews reveal that there are number of staff roles in the Sales department. A salesperson can place orders on behalf of customers and check the status of these orders. A technical salesperson has the same duties, but additionally is able to provide customers with detailed technical advice (which we would not expect an ordinary salesperson to be able to do). A sales supervisor is a salesperson, with the additional responsibility of creating new customer accounts and checking their credit-worthiness. A dispatcher is responsible for collecting the goods ordered from the warehouse and packing them for dispatch to the customer. To assist in this operation, the computer system should be able to produce a list of unpacked orders as well as delete the orders from the list that the dispatcher has packed. All staff are able to find general details of the products stocked, including stock levels and locations in the warehouse. A re-ordering clerk is responsible for finding out which products are out of stock in the warehouse, and placing orders for these products from the manufacturers. If these products are required to satisfy an outstanding order, they are considered to be "priority" products, and are ordered first. The system should be able to advise the re-order clerk of which products are "priority" products. A stock clerk is responsible for placing items that arrive from manufacturers in their correct places in the warehouse. To do this the clerk needs to be able to find the correct warehouse location for each product from the computer system. Currently, the same person in the business plays the roles of stock clerks and re-order clerk.

i. Draw the associated use case diagram **[11]**

ii. Give brief specifications of **any three** use cases involved **[9]**

**END OF EXAMINATION**