B3.3-R4: SOFTWARE ENGINEERING & CASE TOOLS

NOTE:

1. **Answer question 1 and any FOUR from questions 2 to 7.**
2. **Parts of the same question should be answered together and in the same sequence.**

Time: 3 Hours **Total Marks: 100**

1.

a) List out characteristics of software and justify why software doesn't wear out.

b) What are the five generic process framework activities? Explain in brief.

c) What is the difference between debugging and testing? What are the steps involved in debugging?

d) How modularity affects software cost? Explain with diagram.

e) What is data design? List down the phases of design process.

f) What is the difference between a revision and a version?

g) Discuss the need of Software Agents.

(7x4)

2.

a) Suggest the most appropriate software process model that might be used for developing the following systems:

i) A system to control anti-lock braking in a car.

ii) A university accounting system that replaces an existing system.

b) Explain V-Model for software development with the help of a diagram.

c) Which layer holds the technology layers together and enables timely development of software? Explain the layer.

(8+6+4)

3.

a) Explain different types of COCOMO model.

b) What are the steps involved in cleanroom software development? List the characteristics of cleanroom process.

c) What is CMMI? Mention its levels.

(8+6+4)

4.

a) Explain the term Reusability.

b) What is requirement elicitation and analysis? Explain its steps.

c) Write short notes on functional and non-functional requirements.

(2+10+6)

5.

a) How are Status Monitoring and Audits performed in Configuration Management?

b) We are after a system that controls a recycling machine for returnable bottles and cans. The machine will allow a customer to return bottles or cans on the same occasion. When the customer returns an item, the system will check what type has been returned. The system will register how many items each customer returns and, when the customer asks for a receipt, the system will print out

i) What he deposited,

ii) the value of the returned items, and

iii) the total return sum that will be paid to the customer. The system is also to be used by an operator. The operator wants to know how many items of each type have been returned during the day. At the end of the day, the operator asks for a printout of the total number of items that have been deposited in the machine on that particular day. The operator should also be able to change information in the system, such as the deposit values of the items. If something is missing, for example if a can gets stuck or if the receipt rolls is finished, the operator will be called by a special alarm signal. Identify the principal viewpoints which might be taken into account in the specification of this system and show their relationships using a viewpoint hierarchy diagram.

c) How does testing strategies in object oriented software differ from testing strategies in conventional software? Explain.

(5+8+5)

6.

a) What is effective modular design? Explain the design concept involved in effective modular Design.

b) List all golden rules for interface design. Explain each rule in detail.

(9+9)

7.

a) What is software configuration management? How do you manage software configuration?

b) Draw control flow diagram for photocopier.

c) What are the benefits and challenges of I-CASE?

(8+6+4)