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EMoS 6308: System Development Methodology TEST

Instructions

Answer three questions (question four is mandatory)

Time allocated is 1 hour

QUESTION ONE

[10+15 Marks]

- * a) Apart from the challenges of heterogeneity, business and social change, and trust and security, identify other problems and challenges that software engineering is likely to face in the 21st century
- b) To help counter terrorism, many countries are planning or have developed computer systems that track large numbers of their citizens and their actions. Clearly this has privacy implications. Discuss the ethics of working on the development of this type of system.

QUESTION TWO

[5+20 Marks]

- ✓ a) What are the advantages of providing static and dynamic views of the software process as in the Rational Unified Process?
- b) Suggest the most appropriate generic software process model that might be used as a basis for managing the development of the following systems: (Giving reasons for your answer based on the type of system being developed)
 - i. A system to control anti-lock braking in a car
 - ii. A virtual reality system to support software maintenance
 - iii. A university accounting system that replaces an existing system
 - iv. An interactive travel planning system that helps users plan journeys with the lowest environmental impact

② **QUESTION THREE**

[5+5+15 Marks]

- a) Explain why the rapid delivery and deployment of new systems is often more important to businesses than the detailed functionality of these systems. When would you recommend against the use of an agile method for developing a software system?
- b) Explain why test-first development helps the programmer to develop a better understanding of the system requirements. What are the potential difficulties with test-first development?
- c) 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 the difficulties that this new policy might cause and how you might get around these problems.

④ **QUESTION FOUR**

[20+20+10 Marks]

- ✓ a) Based on your experience with a bank ATM, draw an activity diagram that models the data processing involved when a customer withdraws cash from the machine.
- b) Draw a sequence diagram for the bank ATM system in (a).
- c) Explain why you might want to develop both activity and sequence diagrams when modeling the behavior of a system.