Ques 1. Case study.

You have been asked to develop a banking system for A & B Banking (A&B). Conveniently A&B has already purchased the hardware and the networking portion of the system. They need you to write the software to automate savings and checking account transactions as well as the ATM services that they wish to offer to their customers.

A&B has one type of savings account and two types of checking accounts. The savings account bears interest based on the prevailing rates compounded monthly. Transactions carried out against the savings account are free as long as they are carried out at a branch and not at an ATM. Two checking account options exist. The Rich Club Account (RCA) bears interest at 1 percent less than the savings account, checks are free, and no monthly fee is applied as long as the total balance of all accounts is at least $200,000.00. The other checking account, the Poor Slob Club (PSC), has no minimum balance. PSC accounts are charged a monthly fee of $200.00, and each check costs the customer $10.00.

ATM should allow the following:

- Customers can withdraw cash from either their checking or savings accounts. The customer profile determines which checking account is relevant for any given customer.
- Customers can inquire about the balance of any accounts that they hold with A&B.
- Customers will be charged a $50.00 fee for all transactions after the third free transaction.
- Customers may also deposit money into either checking or savings accounts.
• Customers need receipts of all their ATM transactions including any service charges where ever applicable.
• Customers can initiate transactions from ATM machines owned by other banks at an additional cost of $100.00.
• Customers with accounts at other banks can use A&B ATMs at a cost of $100.00 per transaction.

A&B is a member of the global Electronic Funds Transfer system and needs the account number, password, and transaction information to facilitate transactions belonging to other banks.

a. Draw use case diagrams for the given case study. Describe the use case “Withdraw cash” in detail.

b. Draw Class diagrams for the above case study. What different perspectives do Class diagrams and Sequence diagrams model in a system? Are they both important in designing a system? Explain using the above case study.

c. Suggest and describe a software process model that could be used for the case study. Give reasons for your choice.

Ques 2.

a. User and System Requirements can easily be represented in Natural Language. Discuss this claim.

b. Discuss the three different strategies for changing software systems.

c. Answer one of the following questions.

   i) What is Outsourcing? What factors should be taken into consideration if organizations have to make a decision whether to outsource or not?

   ii) Discuss Open Source systems. How are they different from free software?

   iii) What is reusability? Discuss its advantages and disadvantages.

Ques 3.

a. Describe the stages in software development which can benefit from prototyping. Compare and contrast Exploratory and Throw-away prototyping.

b. Answer one of the following questions.

   Why is software testing important and what does it aim to achieve? Discuss two testing methods.

   Or

   Discuss the relevance of Configuration Management or Formal Specifications in software engineering.
Ques 4.

a. Draw an Activity Network for the tasks given in the table below.
Each milestone should have both the earliest completion date (at the top) and the latest
completion date (at the bottom).
Use January 1st 2003 as the start date. January has 31 days and February has 28 days.

- Can T5 and T6 be delayed? If yes, then by how many days and if no, then why not?

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<thead>
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<th>TASKS</th>
<th>Duration (days)</th>
<th>Dependencies</th>
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<td>-</td>
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<tr>
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<tr>
<td>T9</td>
<td>5</td>
<td>T7</td>
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</table>

[10 marks]

b. Answer one of the following questions.

Is Software Engineering a viable industry in Jamaica?

Or

Define one of the following technologies and discuss its impact on software engineering
industry?

- Software development for Web or
- E-Commerce

[5 marks]

END OF QUESTION PAPER