UTHM
Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
(ONLINE)
SEMESTER II
SESSION 2020/2021

COURSE NAME	:	SOFTWARE ENGINEERING
COURSE CODE	:	BEC 41803
PROGRAMME CODE	:	BEJ
EXAMINATION DATE	:	JULY 2021
DURATION	:	3 HOURS
INSTRUCTION	:	ANSWER **ALL** QUESTIONS **OPEN BOOK EXAMINATION**

THIS QUESTION PAPER CONSISTS OF **FOUR (4)** PAGES

Q1 (a) List five (5) diagram types of Unified Modelling Language.

(5 marks)

(b) **Table Q1(b)** shows the tabular description of the report weather use-case for a Weather Station System. Transform the tabular description of the report weather use-case to the sequence diagram describing data collection.

Table Q1(b)

System	Weather station
Use case	Report weather
Actors	Weather information system, Weather station
Description	The weather station sends a summary of the weather data that has been collected from the instruments in the collection period to the weather information system. The data sent are the maximum, minimum, and average ground and air temperatures; the maximum, minimum, and average air pressures; the maximum, minimum, and average wind speeds; the total rainfall; and the wind direction as sampled at five-minute intervals.
Stimulus	The weather information system establishes a satellite communication link with the weather station and requests transmission of the data.
Response	The summarized data is sent to the weather information system.
Comments	Weather stations are usually asked to report once per hour but this frequency may differ from one station to another and may be modified in the future.

(8 marks)

(c) **Figure Q1(c)** shows one of the architectural patterns in software engineering. Based on your evaluation, identify:
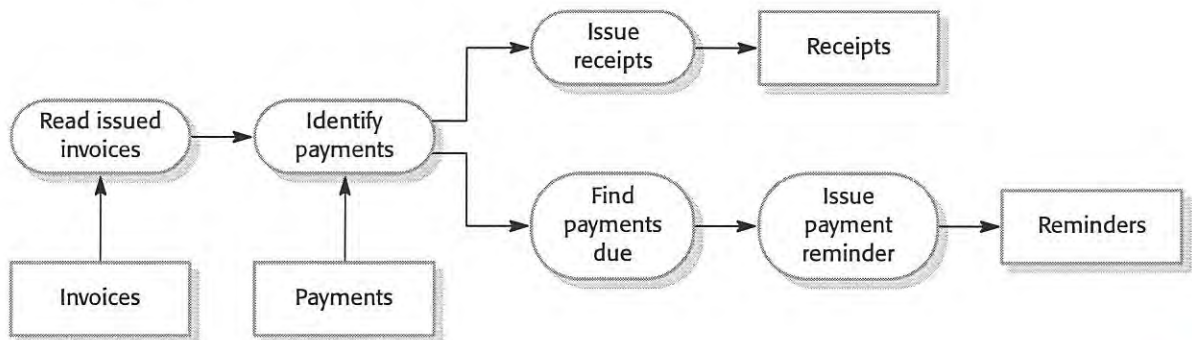

Figure Q1(c)

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     (i)   The name of this architectural pattern;

(1 mark)

     (ii)   When it can be used;

(2 marks)

     (iii)   What is the advantage and disadvantage of this architectural pattern?

(3 marks)

(d)   Describe six (6) compiler components?

(6 marks)

Q2   (a)   Explain two (2) open-source development license models.

(6 marks)

    (b)   Compare the differences between the configurable application system and application system integration. Describe it.

(4 marks)

    (c)   Discuss the supporting processes in Component-Based Software Engineering.

(6 marks)

    (d)   As a software engineer, you have been given a task to develop a distributed system based on the two-tier client server architecture, where the presentation layer is implemented on the client. Analyze this task, explain the possible architectural models and determine what is the best architectural model for this task.

(9 marks)

Q3   (a)   There are two (2) goals in software testing process. Explain it.

(5 marks)

    (b)   You are required to supervise a junior testing engineer to do an interface testing of a system. As a senior testing engineer, produce the interface testing guidelines of the system.

(5 marks)

(c) Describe three (3) types of software maintenance.

(6 marks)

(d) As a software manager, you have been given a task whether to upgrade or replace or scrap or continue maintaining a legacy system in your company. However, legacy system replacement is risky and expensive. The legacy system is older system that rely on programming language and technology that are no longer used for new system development. Evaluate this task and explain your strategy by providing the legacy system categories assessment.

(9 marks)

Q4 (a) List three (3) factors affecting software pricing.

(3 marks)

(b) Write and describe the formula to estimate software cost based on reuse model.

(10 marks)

(c) The tasks of a manager are essentially people-oriented. Poor people management is an important contributor to project failure. As a project manager, examine the crucial factors of people management. Explain it.

(6 marks)

(d) Consider a task you are not familiar with, such as designing a magnetic levitation car. Explain how would you manage to solve this problem?

(6 marks)

-END OF QUESTIONS -