The Open University of Sri Lanka
Faculty of Engineering Technology
Department of Electrical and Computer Engineering

051

Study Programmes	: Bachelor of Software Engineering Honours
Name of the Examination	: Final Examination
Course Code and Title	: **EEX5362-Performance Modelling**
Academic Year	: 2022-23
Date	: 14th February 2024
Time	: 1330-1630 hrs
Duration	: **3 Hours**

General Instructions

1. Read all instructions carefully before answering the questions.
2. This question paper consists of **five (5) questions** in **three (3)** pages.
3. Answer all questions, each question will carry equal marks (20 marks each).
5. Answers for each question should commence from a new page.
6. This is a Closed Book Test **(CBT).**
7. Answers should be in clear handwriting.
8. Do not use a Red colour pen.
9. Use of Scientific Calculators is allowed.

Q1

(a) Name 2 Performance Testing types & provide a brief description of them. (6 marks)

(b) Explain the difference between Correlation & Parameterization. (2 marks)

(c) Name 3 Performance Testing tools. (3 marks)

(d) Name 3 advantages of using JMeter as a Performance Testing tool. (3 marks)

(e) Describe why we need to do performance test Monitoring. (3 marks)

(f) Name 3 items that needs to highlight in a Performance Test Result report. (3 marks)

Q2

(a) Explain the functionality of the below fields in Tread Group component in JMeter. (4 marks)

Number of Threads	Ramp up time
Loop count	Duration

(b) What is the usage of Http(s) Test Script Recorder in JMeter. (2 Marks)

(c) Describe the steps of using the Http(s) Test Script Recorder in JMeter. (5 Marks)

(d) Explain the purpose of running the Types of Performance Tests Listed below.

- Spike Test (Rendezvous point)
- Stress Test
- Soak Test (Endurance Test) (6 marks)

(e) Describe the usage of HTTP Request Sampler and name 2 fields contained in HTTP Request Sampler. (3 Marks)

Q3

(a) Explain the functionality of the below 2 Logical Controllers. (4 marks)

- Transaction Controller
- If Controller

(b) Name 2 Listeners and describe their functionality. (6 marks)

(c) Explain the functionality of the below 2 timers. (4 marks)

- Constant timer
- Synchronizing Timer

(d) Name 2 Assertions and briefly describe each. (2 marks)

(e) Explain the functionality of the below 2 Configuration Controllers

- CSV Data Set Config
- HTTP Authorization Manager (4 marks)

Q4.

(a) Consider the below information collected on several Test Scenarios

Scenario 1

- Duration of a single run – 2 minutes
- Required Throughput – 450

Scenario 2

- Duration of a single run – 4 minutes
- Required Throughput – 500

Scenario 3

- Duration of a single run – 7 minutes
- Required Throughput – 150

Scenario 4

- Duration of a single run – 3 minutes & 15 seconds
- Required Throughput – 1000

Based on the above Test scenarios fill out the below table.

Test Scenario	**Duration for a single run**	**How many test runs can be executed in an hour (single user)**	**Required Throughput**	**Number of users required for the test**	**User count**
Scenario 1					
Scenario 2					
Scenario 3					
Scenario 4					

(20 marks)

Q5

(a) Describe the significance of the service discipline in queuing theory. (2 marks)

(b) How does the choice of service discipline affect queueing system performance? (2 marks)

(c) Describe two types of queuing networks with an example for each type. (4 marks)

(d) Tasty bakers is a well-known bakery for the quality and the tase of the food. It claims that on average, they receive 15 customers per hour during their peak hours. Assume the arrival of customers per hour follows a Poisson distribution to answer the following questions.

(i) Calculate the probability of the bakery receiving exactly 20 customers in a given hour during their peak hours. (4 marks)

(ii) Calculate the probability that the bakery receives fewer than 10 customers in the next 30 minutes during their peak hours? (4 marks)

(iii) If the bakery operates for 8 hours during its peak times, what is the probability of receiving a total of 120 customers or more in a day? (4 marks)

END OF THE PAPER