UNIVERSITI TEKNOLOGI MALAYSIA

Executive Diploma in Facility Management

2020/21

TEST 1

(25% from the overall marks)

Name of Course	**:**	**Maintenance Technology**
Code of Course	**:**	**FRSI 2043**
Date	**:**	**20th June 2021 (Sunday)**
Time	**:**	**4.00 – 5.00 pm**
Venue	**:**	**Webex**

Instruction: Answer all questions.

Question 1 (13 marks)

(a) What is 5S and the idea behind it? Cite the three (3) benefits of 5S in any organization.

(5 marks)

(b) Briefly explain the 'Red Tag' technique in 5S.

(3 marks)

(c) Based on images in Figure 1, cite the principles of 5S activities:

(a) _____

(b) _____

(c) _____

(d) _____

(e) _____

(5 marks)

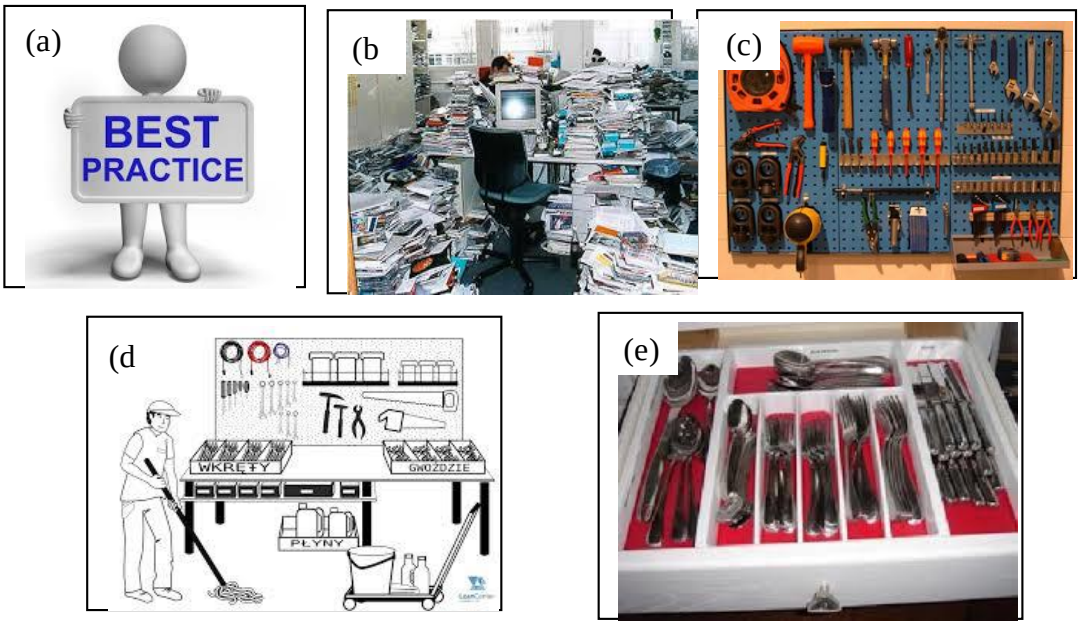

Figure 1: 5S activities

Question 2 (17 marks)

(a) What is meant by Total Productive Maintenance (TPM)?

(3 marks)

(b) Outline the two (2) direct and indirect benefits of TPM.

(4 marks)

(c) Cite all the seven (7) pillars of TPM and explain any of the 2 pillars.

(10 marks)

Question 3 (20 marks)

(a) What exactly is waste and why waste must be removed?

(3 marks)

(b) The description in Table 1 represent **7 wastes in Lean Manufacturing**. Name the type waste for each of them.

Table 1

Description	Type of Waste
Unnecessary movement of people or parts between process	
Producing more than required	
Quality errors that cause defects invariably cost you far more than you expect	
Inappropriate techniques, oversize equipment, working to tolerances that are too tight, perform processes that are not required by the customer	
People of parts are waiting for a work cycle to be completed	
Excessive travel between work stations, excessive machine movements from start point to work start point	
Every piece of product tied up in raw material, work in progress or finished goods has a cost and until it is actually sold that cost is yours	

(7 marks)

(c) Write the formula of 'Overall Equipment Effectiveness'

(2 marks)

(d) A medium size manufacturing company with a capacity of producing 2 parts/minute actually produced **900 parts** in a planned running **2 shifts of 8 hours** each. It had breaks and scheduled maintenance for **30 minutes** and also faced **50** minutes breakdowns and **1 hour 30 minutes** for changeover and adjustment. Number of rejects and re-works were **10 and 8 parts** respectively.

Calculate its Overall Equipment Effectiveness (OEE).

(8 marks)