

**UNIVERSITY OF ESWATINI**  
**FACULTY OF COMMERCE**  
**DEPARTMENT OF BUSINESS ADMINISTRATION**  
**MAIN EXAMINATION**  
**MAY 2019**

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TITLE OF THE PAPER : OPERATIONS MANAGEMENT 11

DEGREE : BACHELOR OF COMMERCE

COURSE : BUS 432, BA 439 AND BA 505 (IDE)

TIME ALLOWED : THREE (3 HOURS)

Instructions:

1. THIS PAPER CONSISTS OF SECTION A AND SECTION B)
2. SECTION A IS CASE STUDY AND IT IS COMPULSORY QUESTION
3. ANSWER ANY TWO QUESTIONS FROM SECTION B

Note: You are reminded that in assessing your work, account will be given of accuracy of language and the general quality of expression, together with layout and presentation of your final answer.

THIS PAPER MUST NOT BE OPENED UNTIL THE INVIGILATOR HAS GRANTED THE PERMISSION

## SECTION A – COMPULSORY

### Question 1.

Coca Cola is the international company and they have opened its strategic Business Unit (SBU) in the Kingdom of Eswatini. Eswatini is, by-and-large, a safe country in which to travel. It does not have South Africa's alarming crime rate, and tourists are seldom targeted. Equally, it does not have South Africa's history of racial tension, which means that visitors are unlikely to encounter any antagonism on that basis. Indeed, hospitality is a cornerstone of Swazi culture and the average visitor's experience is overwhelmingly a friendly and relaxed one. The most serious hazards for the independent traveller are on the roads.

Some South African crime does sometimes creep over the border. This includes occasional 'car-jacking' – the hijacking of drivers, often at gunpoint, for the theft of their car. Armed robberies of wealthier urban residences are not uncommon, and inevitably street crime such as pick-pocketing occurs in busy parts of town. Manzini has a worse reputation in this respect than Mbabane.

In general, the basic guidelines for safe travel are the same in Swaziland as anywhere else. Be alert, avoid obviously compromising situations, and don't play the tourist too conspicuously. It's common sense, really. The UK Foreign Office, which areas on the side of caution, offers the following specific advice:- Avoid travelling into or out of Swaziland by road after dark, as carjacking has occurred on major routes from South Africa and Mozambique. Avoid walking in downtown Mbabane and Manzini after dark. Keep valuables in a safe place and avoid carrying large amounts of money or wearing conspicuous jewellery. Drivers who break down or need to change a tyre should be wary of anyone who offers help. Do not stop to assist apparently distressed motorists, as this is a technique sometimes used by hijackers. Instead, report the incident to the police. Always park in well-lit areas of town. Keep car doors locked and valuables such as mobile phones, cameras and handbags out of sight. Be wary of picnicking in remote areas unless in a large group.

The Foreign Office also advises against giving strangers a ride. Offering a lift, however, is part of life in rural Swaziland and can be an interesting opportunity to meet local people. Common sense and experience will enable you to judge when it is safe to do so: a single driver picking up a group of young men after dark on the edge of town is asking for trouble; a car full of tourists picking up an elderly woman with a heavy load in a rural area is a nice gesture. If in any doubt, of course, don't do it.

International terrorism has not yet reared its ugly head in Swaziland. Recent years have seen an increasing number of political demonstrations. You are best advised to avoid these, especially if the police regard them as unauthorised and so decide to disperse them forcefully.

### Required

- a. Identify and explain five benefits and five disadvantages of Coca Cola global location. **30 marks**
- b. Identify and discuss four deterrents of quality which a product or service satisfies and six responsibilities of quality. **20 marks**

**Total Marks (50)**

**SECTION: ANSWER ANY TWO QUESTIONS IN THIS SECTION.**

**Question 2**

*P-chart* and *c-chart*. Using the appropriate control chart, determine two-sigma control limits for each case :

- An inspector found the average of 3.9 scratches in the exterior paint of each of the automobiles being prepared for shipment to dealers. **8 marks**
- Before shipping lawn mowers to dealers, an inspector attempts to start each mower and notes any that do not start on the first try. The lot size is 100 mowers, and an average of 4 did not start (4 percent). **7 marks**
- Process capability. Determine which of these three processes are capable (**10 marks**):

Process	Mean	Standard Deviation	Lower Spec	Upper Spec
1	7.5	.10	7.0	8.0
2	4.6	.12	4.3	4.9
3	6.0	.14	5.5	6.7

**Total 25 marks**

**Question 3**

Checkout time at supermarket is monitored using the mean and range chart. Six samples of N=20 observations have been obtained and the sample means and ranges computed:

Sample	Mean	Range
1.	3.06	0.42
2.	3.15	0.50
3.	3.11	0.41
4.	3.13	0.46
5.	3.06	0.46
6.	3.09	0.45

**Required**

- Calculate the average mean and range for the supermarket **5 marks**.
- Using the factors in Table below, determine upper and lower limits for mean and range charts **10 marks**.
- Discuss six steps for effective control process. **10 marks**

Sample Size (n)	Factors for A-Chart		Factors for R-Chart	
	A2	D3	D4	
2	1.88	0.00	3.27	
3	1.02	0.00	2.57	
4	0.73	0.00	2.28	
5	0.58	0.00	2.11	
6	0.48	0.00	2.00	
7	0.42	0.08	1.92	
8	0.37	0.14	1.86	
9	0.34	0.18	1.82	
10	0.31	0.22	1.78	
11	0.29	0.26	1.74	
12	0.27	0.28	1.72	
13	0.25	0.31	1.69	
14	0.24	0.33	1.67	
15	0.22	0.35	1.65	

Total: 25 marks

**Question 4**

d. Manager is attempting to put together an aggregate plan for the coming nine months. She has a forecast of expected demand for the planning horizon. The plan must deal with highly seasonal demand is relatively high in periods 3 and 4 and again in period 8, as can be seen from the following forecasts:

Period	1	2	3	4	5	6	7	8	9	Total
Forecast	190	230	260	280	210	170	160	260	180	1,940

The department now has 20 full-time employees, each of whom can produce 10 units per period output per period at a cost of E56 per unit period, and backlog cost is E10 per unit per period. The manager is considering a plan that would involve hiring two people to start working period 1, one on a temporary basis who would work only through period 5. This would cost E500 in addition to unit production costs.

- What is the rationale for this plan? **5 marks**
- Determine the total cost of the plan, including production, inventory and back-order costs. **10 marks**

- c. Prepare a schedule from the following situation. The forecast for each period is 70 units. The starting inventory zero. The MPS rule is to schedule production if the projected inventory on hand is negative. The production lot size is 100 units. The following table shows committed orders.(10 Marks)

Period	Customer orders
1	80
2	50
3	30
4	10

**Total 25 marks**