UNIVERSITY OF SWAZILAND

FACULTY OF COMMERCE

DEPARMENT OF BUSINESS ADMINISTRATION

FINAL EXAMINATION PAPER: F/TIME STUDENTS

MAY 2014

TITLE OF PAPER	:	OPERATIONS MANAGEMENT 11
COURSE CODE	:	BA 439/BA507
TIME ALLOCATED :		THREE [3] HOURS
TOTAL MARKS	:	100 MARKS

INSTRUCTIONS

1. TOTAL NUMBER OF QUESTIONS IN THIS PAPER IS 4
2. THE PAPER CONSISTS OF SECTION A AND SECTION B
3. ANSWER ALL QUESTIONS IN SECTION A AND ANY TWO [2] QUESTIONS IN SECTION B.
4. THE MARKS ALLOCATED FOR A QUESTION/PART OF A QUESTION ARE INDICATED AT THE END OF EACH QUESTION/PART OF QUESTION.
5. NOTE: MAXIMUM MARKS WILL BE AWARDED FOR QUALITY, LAYOUT, ACCURACY, AND GOOD PRESENTATION OF WORK.

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

SECTION A. ANSWER ALL QUESTIONS IN THIS SECTION.

QUESTION 1

1.1. Suppose the forecast for manufactured items during the next 12 weeks (in units) is 20,15,10,10,15,20,20,25,20,15,10 and 10.These figures include the unknown customer orders for this period as well. Current stocks available to meet this demand are 20. Based on some known capacity constraints the schedule for production might be set as 14 per week. Prepare the master schedule and comment on any shortages that may be experienced by the company. **(15 marks)**

1.2. Study the following bill of material tree chart for the production of End item Q.
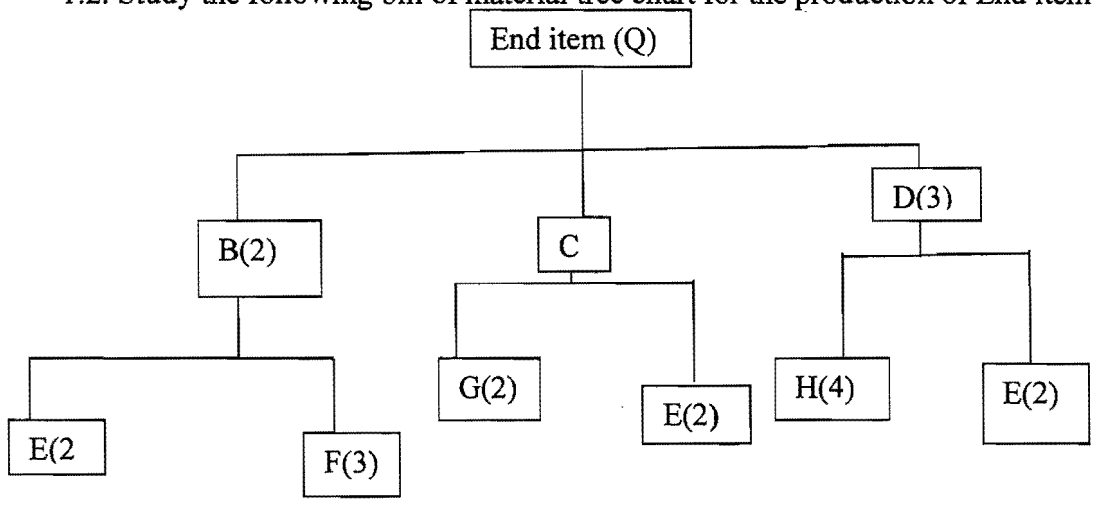
The following table lists the components needed to assemble End item (Q), lead times(LT), and quantities on hand(SH). How many additional units of each product will be required to assemble 20 units of End item(Q)?

Item	End item	B	C	D	E	F	G	H
LT	1	2	3	3	1	2	1	2
SH	0	10	10	25	12	30	5	0

(20 marks)

1.3.The Department of Education at a major Swaziland university will be scheduling faculty staff to teach courses during semester 1 of the coming academic year. Four courses need to be covered. The four courses are at Diploma, UG, MED, and Ph.D. levels. Four professors will be assigned to the courses, with each professor receiving one of the courses. Student evaluations of the professors are available from previous terms. Based on

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a rating scale of 4(excellent), 3 (good), 2 (average), 1 (fair), and 0 (poor), the average student evaluations for each professor are shown in the table below. Professor D does not have a Ph.D. and cannot be assigned to teach the Ph.D. level course. If the department head makes teaching assignments based on maximising the student evaluation ratings over all four courses, what staffing assignments should be made?

	Course			
Professor	Diploma	UG	MED	Ph.D.
A	2.8	2.2	3.3	3.0
B	3.2	3.0	3.6	3.6
C	3.3	3.2	3.5	3.5
D	3.2	2.8	2.5	-

(15 marks)

[Total 50 Marks]

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SECTION B: ANSWER ANY TWO QUESTIONS OF YOUR CHOICE FROM THIS SECTION.

QUESTION 2.

Processing times (including set up times) and due dates for five jobs waiting to be processed at a work centre are given in the following table (assume jobs arrive in the given order). Determine the sequence of jobs, the average flow time, average tardiness, and average number of jobs at the work centre, under each of the following rules; FCFS,SPT and EDD.

Job No.	Job time (days)	Due Dates
A	12	15
B	6	24
C	14	20
D	3	8
E	7	6

(Total 25 Marks)

QUESTION 3.

3.1. Mbabane municipal police handed out the following tickets on a summer weekend. You are required to make a check sheet and a Pareto diagram for the types of infractions.

Ticket Number	Infraction	Ticket Number	Infraction
1	Excessive speed	11	Expired disc
2	Expired disc	12	Parking violation
3	Improper turn	13	Improper turn
4	Excessive speed	14	Parking violation
5	Parking violation	15	Excessive speed
6	Parking violation	16	Parking violation
7	Excessive speed	17	Parking violation
8	Parking violation	18	Parking violation
9	Improper turn	19	Excessive speed
10	Parking violation	20	Parking violation

(13 marks)

[Total 25 Marks]

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3.2. The frequency of breakdown of a machine per month is shown in the table below;

Number of breakdowns	0	1	2	3
Frequency of occurrence	.20	.30	.40	.10

The cost of a breakdown is E1, 000 and the cost of preventative maintenance is E1, 250 per month. If preventative maintenance is performed, the probability of a machine breakdown is negligible. What is the number of expected breakdowns without preventative maintenance? Should the manager use preventative maintenance, or would it be cheaper to repair the machine when it breaks down?

(12 marks)

[Total 25 Marks]

QUESTION 4

4.1. A company that makes industrial pumps wants to prepare and MPS for the months of June and July. Marketing has forecasted demand for 120 pumps for June and 160 pumps for July. The estimates have been evenly distributed over 4 weeks in each month; 30 per week in June and 40 per week in July. Suppose there are currently 64 pumps in stock and that there are customer orders that have been committed (booked) and must be filled. Committed orders are as follows;

Week	1	2	3	4	5
Quantity booked	33	20	10	4	2

Prepare the company's final MPS for the two months. **(15 marks)**

4.2. What is Six sigma and what are some of its advantages **(10 marks)**.

[Total 25 Marks]

END OF QUESTION PAPER; GOOD LUCK!!!!!!!!!!!!!!