



UNIVERSITY  
OF  
JOHANNESBURG

**FACULTY OF ENGINEERING AND THE BUILT ENVIRONMENT**

**DEPARTMENT** : **QUALITY AND OPERATIONS MANAGEMENT**  
**MODULE** : **OPERATIONS MANAGEMENT 2**  
**CODE** : **BPJ 22B2**  
**DATE** : **1 DECEMBER 2014**  
**DURATION** : **3 HOURS**  
**TIME** : **(SESSION 2) 11:30 - 14:30**  
**TOTAL MARKS** : **100**

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**EXAMINER** : **MS K MUSHAVHANAMADI**  
**INTERNAL MODERATOR:** **MS E NWOBODO-ANYADIEGWU**  
**NUMBER OF PAGES** : **3 PAGES**

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**INSTRUCTIONS TO CANDIDATES:**

- Answer ALL questions.
- This is a closed book assessment.
- Leave margins and spaces between the questions.
- Show all your calculations.
- Unless otherwise indicated, express your answers correctly to two (2) decimal places.
- Where appropriate, indicate the units of your answer. (e.g. Hour, R )
- Write neatly and legibly
- NOTE: Marks will be awarded for theoretical knowledge, application of the theory and use of relevant examples.
- The general University of Johannesburg policies, procedures and rules pertaining to written assessments apply to this examination.

**SECTION A: CAPACITY PLANNING**

**17 MARKS**

1) A fleet repair facility has the capacity to repair 800 trucks per month. However, due to scheduled maintenance of their equipment, management feels that they can repair no more than 600 trucks per month. Last month, two of the employees were absent several days each, and only 400 trucks were repaired. What are the utilization and efficiency of the repair shop? (10)

2) Distinguish between utilization and efficiency. (7)

**SECTION B: SCHEDULING**

**63 MARKS**

1. James Gross chairman of the college of Oshkosh's business department needs to assign professors to courses next semester. As a criterion for judging who should teach each course, Professor Gross reviews past two years' teaching evaluations (which were filled out by students). Since each of the four professors taught each of the four courses at one time or another during the 2-year period, Gross is able to record a course rating for each instructor. These ratings are shown in the following table:

- 1.1 Find the assignment of professors to course to maximize the overall teaching rating. (23)  
 1.2 Assign the professors to the course with the exception that Professor Fisher cannot teach statistics. (2)

Professors	Statistics	Management	Finance	Economics
Fisher	90	65	95	40
Golhar	70	60	80	75
Hug	85	40	80	60
Rustagi	55	80	65	55

## Operations Management II (BPJ22B2)

2. The following set of seven jobs is to be processed through two work centers at George Heinrich's printing company. The sequencing is first printing, then binding. Processing time at each of the work centers is shown in the following table:

JOB	Printing (Hours)	Binding (Hours)
T	15	3
U	7	9
V	4	10
W	7	6
X	10	9
Y	4	5
Z	7	8

- 2.1 What is the optimal sequence for these jobs to be scheduled? (3)  
2.2 Chart these jobs through two work centers (20)  
2.3 What is the total length of time of this optimal solution? (2)  
2.4 What is the idle time in the binding shop, given the optimal solution? (5)
3. List and define the most popular priority rules for dispatching jobs. (8)

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### SECTION C: MRP AND ERP

20 MARKS

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1. What information is necessary for an operations manager to make effective use of a dependent inventory demand model? (10)
2. Explain the difference between a gross requirements plan and a net requirements plan. (10)