



UNIVERSITY  
OF  
JOHANNESBURG

**PROGRAM** : BACHELOR OF TECHNOLOGY  
ENGINEERING : INDUSTRIAL

**SUBJECT** : LOGISTICS ENGINEERING IV

**CODE** : ILE411

**DATE** : SUMMER SSA EXAMINATION 2017  
10 JANUARY 2017

**DURATION** : (SESSION 3) 15:00 - 18:00

**WEIGHT** : 40 : 60

**TOTAL MARKS** : 100

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**ASSESSOR** : MR B MOGOTSI

**MODERATOR** : DR R MALADZHI

**NUMBER OF PAGES** : 3 PAGES

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**INSTRUCTIONS** :

- ANSWER ALL QUESTIONS.
  - A STUDENT IS EXPECTED TO MAKE REASONABLE ASSUMPTIONS FOR DATA NOT SUPPLIED.
  - NUMBER YOUR QUESTIONS CLEARLY AND UNDERLINE THE FINAL ANSWER.
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2/...

### **QUESTION 1**

During the preliminary system design stage in the system lifecycle, subsystems that perform the desired system functions are designed and specified in compliance with the system specification. Interfaces between subsystems are defined, as well as overall test and evaluation requirements. Discuss 10 steps of preliminary system design process. (10)

**[10]**

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### **QUESTION 2**

Explain the following terms:

- 2.1. Configuration Management (CM). (3)
- 2.2. Total Quality Management (TQM). (3)
- 2.3. System Engineering. (3)
- 2.4. Logistics engineering (6)

**[15]**

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### **QUESTION 3**

Blanchard recommends that every stage of the system evaluation during the life cycle need to be tested and evaluated. Name and discuss 5 Stages of System Testing & Evaluation in the system life cycle. (15)

**[15]**

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### **QUESTION 4**

- 4.1. What is Performance Base Logistics (PBL) (5)
- 4.2. Give 5 examples of Performance Base Logistics (5)

**[10]**

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### **QUESTION 5**

As an Engineer your superior want you to train new employees on how you design the logistics System Life Cycle/System design and development from start to finish. (20)

**[20]**

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### QUESTION 6

Maintainability design involves those actions that deal with the ease, accuracy and economy in the performance maintenance task. Because of its objectives, maintainability is seen as the largest contributor in the design relative to addressing logistics support. Name and discuss 5 of the 6 factors that influence design for maintainability. (10)

[10]

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### QUESTION 7

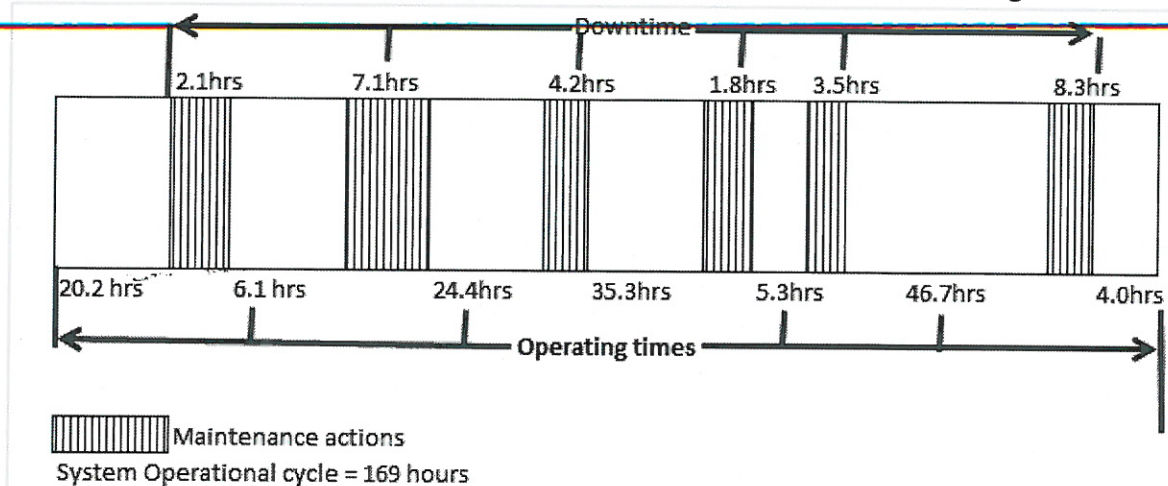
The purpose of the design review is to formally and logically cover the proposed design from the total system standpoint in the most effective and economical manner through a combined integrated review effort. Discuss the 5 other purposes that the design review serve. (10)

[10]

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### QUESTION 8

The conveyor belt that transport coal from quarry to loading zone has being under an investigation for frequent stoppages over a period of time. From the below diagram



NB. Show all calculations.

- 8.1. Calculate the corrective maintenance frequency per hour (3)
- 8.2. Calculate the system mean life/mean time between failures (3)
- 8.3. Calculate the Inherent Availability ( $A_i$ ), the probability that a system, when used under stated condition in an ideal support environment (readily available tool, spare, maintenance personnel etc) will operate satisfactory at any point in time as required. (4)

[10]

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TOTAL = 100