



# United International University (UIU)

Term Final Examination

## IPE 401: Industrial Management

Spring Trimester: 2021

Total time: 1:30 hours

Date: 12/06/2021

Total marks: 40

Section: A/B/C

There are 6 questions. You must answer question 1,2,3&4 and any one of 5 & 6

- 1 Solve by using Simplex method, [14] [CO4]  
Maximize,  $Z = 5m + 7n$   
subject to  
 $m \leq 16$   
 $2m + 3n \leq 19$   
 $m + n \leq 8$   
and  $m, n \geq 0$   
(Show Rough)
- 2 Show the differences between Traditional goal post view of quality loss and [5] [CO3]  
Taguchi quality loss function with necessary sketches and Explanation.
- 3 “AMW” is a famous luxury vehicle and motorcycle company. They are trying to [5] [CO3]  
establish Lean manufacturing system. They wanted to establish JIT System in their  
factories. They have a very stable production process and the workers are very  
expert at dealing with breakdowns and expert at assembling parts. Even though  
they have this things after 2 years of trying they are nowhere near establishing JIT.  
Determine the steps that can help them establish JIT in the given situation and  
determine the Type of inventory control system used for JIT with explanation.
- 4 Between  $6\sigma$  and  $8\sigma$  which reduce variability more and which costs more? Explain [5] [CO3]  
with necessary sketches.
- 5 Sequence the following jobs using Critical ratio method and determine average [11] [CO2]  
completion time, Utilization, average number of jobs in the system and average  
job lateness. Is it possible to apply Johnson's rule here? (Explain)
- | Job | Processing time | Due date |
|-----|-----------------|----------|
| E   | 68              | 99       |
| A   | 31              | 114      |
| C   | 99              | 193      |
| F   | 112             | 168      |
| B   | 119             | 199      |
| D   | 77              | 217      |
- 6 A Subassembly of a computer system consists of M, N and P Components. [11] [CO2]  
Because of low reliability of component P and M, they are replicated. The system  
Contains 6 of P and 4 of M component. Reliabilities per 739 hours of  $M=0.89$ ,  
 $N=0.96$ ,  $P=0.73$ . Find the MTBF of the system and failure rate of the system (Per  
200 hour)

<b>CO1</b>	Apply Engineering economics and simple mathematics for Solving project selection problems for choosing the best possible project
<b>CO2</b>	Analyze various industrial problems by using operation management, technique, operation research technique and solve it.
<b>CO3</b>	Understand the importance of quality control, and various industrial engineering techniques to improve the process in any engineering sector and how this affect the organization and customers
<b>CO4</b>	Analyze the optimization problems and solve it by using graphical method or simplex method

**“Any examinee found adopting unfair means will be expelled from the trimester / program as per UIU disciplinary rules”**