Name:	
Enrolment No:	**UPES**

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
Online End Semester Examination, December 2020

Course   : Lean Manufacturing   Semester: III
Programme : MBA (OPM)   Time: 03 hrs.
Course Code: LSCM 8018   Max. Marks: 100

Instructions: 1. All questions are compulsory
                2. This question paper has three sections

SECTION A (30 Marks)
1. Each Question will carry 5 Marks
2. Attempt all questions in this section

S. No.		Marks	CO
Q 1	If takt time is 34.3 sec. & OEE is 88% what would be the cycle time? ……………	5	CO 1
Q 2	Name the waste reduced using the strategy "Establish Pull Demand System"…	5	CO 1
Q 3	What is the other name of OTS…………………………………………………….	5	CO 1
Q 4	Time study is also known as…………………………………………………….	5	CO 1
Q 5	Which of the following is not one of the 5s? (a) Synchronize (b) sustain (c) shine (d) standardize	5	CO 1
Q 6	Total productive maintenance (TPM) seeks to do all of the following except ____. (a)Maximize equipment effectiveness (b)Create worker ownership (c)Foster continuous improvement efforts (d)Enable multiple products in small batches to be run on the same equipment	5	CO 2

SECTION B (50 Marks)
1. There are five questions in this section each question is of 10 marks
2. Attempt all questions in this section

Q 7	Calculate the OEE for 31st December 2020, where a plant runs for two shift of 12 hours each everyday & each shift has a break of 1 hour each for lunch & dinner & tea break. The scheduled preventive maintenance is 1.5 hours each day. The unscheduled downtime was 1.5 hours on 31st December 2020. The design cycle time is 30 seconds per piece & the total production was 2020 pieces with 50 rejected pieces on that particular day. Also predict the type of losses using OEE?	**10**	**CO2**
Q 8	A projector manufacturing company exports projector, calculate the cycle, buffer & safety stock for the company when their daily shipment is 1400 units per day, assume takt time as 1 minute. The time the Kanban cards are in planning is 24 hours, and the delivery time(due to material handler's frequency) is 3 hours. In any typical queue they have 14 hours of demand in front of the order. Assuming safety factor as 0.03, also the average production is 1400 units for a month & standard deviation is 59.0 &	**10**	**CO2**

	average demand for a month is 1400 units & standard deviation for demand is 208.0. For a 99% on time delivery the acceptable value for one sided test(Z score= 2.33). Also calculate the number of kanban required when the kanban container size is 50 units.		
Q 9	Discuss the various diagnostics tools used for Lean strategy implementation?	**10**	**CO2**
Q 10	Discuss & compare lean principles with TPS principles?	**10**	**CO2**
Q 11	Define (a) little's law (b) model mix leveling?	**10**	**CO3**
SECTION-C (20 marks) **1. In this section there are two questions attempt any question** **2. Each question carries equal weightage**			
Q 12	The article **"Lean service machine"** explains the various stages of redesigning of cell's work flow? Explain each? **OR** The article **"Read a Plant Fast"** discuss about how to analyze the leanness of a plant? Explain the method of its analysis	**20**	**CO 3**