UPES
UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2021

Course: Lean Supply Chain Management **Semester: III**
Program: MBA LSCM **Duration: 3 hours**
Course Code: **LSCM 8012P** **Max. Marks: 100**
Instructions: As per sections

SECTION A (20 Marks)
(Type the answers in test box)

S. No.	**Attempt all questions in this section**	**Marks**	**CO**
	Explain the following and fill in the blank		
Q 1	Heijunka	2	CO 1
Q 2	Jidoka	2	CO 1
Q 3	SMED	2	CO 1
Q 4	Little's law	2	CO 1
Q 5	OEE	2	CO 1
Q 6	In order to implement lean system in any organization what are the two basic changes needed to bring…….. & ……	2	CO 1
Q 7	If takt time is 34.3 sec. & OEE is 88% what would be the cycle time? ……	2	CO 1
Q 8	The flow concept has……..&……...	2	CO 1
Q 9	Which of the following is not one of the 5s? (a) Synchronize (b) sustain (c) shine (d) standardize	2	CO 1
Q 10	What is the other name of VSM……...	2	CO 1

SECTION B (20 Marks)

	Attempt all questions	**Marks**	**CO**
Q 1	Calculate the takt time when a plant runs for two ten hour shifts & each shift include a 30 minute lunch two ten minutes break. The normal work schedule if 5 days per week & have nine holidays in a year. The customer has a contractual agreement to purchase 500,000 units per year.	5	CO 2
Q 2	Compare lean principles with TPS principles?	5	CO 2
Q 3	What do you understand by 5s & how it can be used in a warehouse?	5	CO 1
Q 4	Compare lean enterprise vs traditional mass production?	5	CO 2

SECTION-C(30 Marks)

	Attempt all questions in this section	**Marks**	**CO**
Q 1	Calculate the OEE for 31st March 2021, where a plant runs for two shift of 12 hours each everyday & each shift has a break of 1 hour & 30 min. each for lunch & dinner & tea break. The scheduled preventive maintenance is 30 min. each day. The unscheduled downtime was 1 hour on 31st March 2021. The design cycle time is 30 seconds per piece & the total production was 2050 pieces with 50 rejected pieces on	10	CO 3

	that particular day. Also predict the type of losses using OEE?		
Q 2	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 & 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.	10	CO 3
Q 3	Describe Lean supply chain management & also what are the recommendations for implementation of lean supply chain? **OR** With reference to the article "World class manufacturing", discuss the WCM model & what are the process which integrates wcm with business planning?	10	CO 2
	SECTION-D(30 Marks)		
	Read the case and attempt both questions	**Marks**	**CO**
	St James's Hospital, affectionately known as 'Jimmy's', is Europe's largest teaching hospital. It employs around 4500 people to support the 90 000 in-patient treatments per year and over 450 000 total admissions. Under increasing pressure to reduce costs, to contain inventory and to improve service, the Supplies Department has recently undertaken a major analysis of its activities, helped by the consultancy division of Lucas Industries, the UK-based manufacturing company. The initial review highlighted that Jimmy's had approximately 1500 suppliers of 15 000 different products at a total cost of £15 million. Traditionally, the Supplies Department ordered what the doctors asked for, with many cases of similar items supplied by six or more firms. Under a cross-functional task force, comprising both medical and supply staff, a major programme of supplier and product rationalization was undertaken, which also revealed many sources of waste. For example, the team found that wards used as many as 20 different types of gloves, some of which were expensive surgeons' gloves costing around £1 per pair, yet in almost all cases these could be replaced by fewer and cheaper (20 pence) alternatives. Similarly, anaesthetic items which were previously bought from six suppliers, were single-sourced. The savings in purchasing costs, inventory costs and general administration were enormous in themselves, but the higher-order volumes also helped the hospital negotiate for lower prices. Suppliers are also much more willing to deliver frequently in smaller quantities when they know that they are the sole supplier. Peter Beeston, the Supplies Manager, said: 'We've been driven by suppliers for years ... they would insist that we could only purchase in thousands, that we would have to wait weeks, or that they would only deliver on Wednesdays! Now, our selected suppliers know that if they perform well, we will assure them of a long-term commitment. I prefer to buy 80 per cent of our requirements from 20 or 30 suppliers, whereas previously, it involved over a hundred.' The streamlining of the admissions process also proved fertile ground for		

	improvement along JIT principles. For example, in the Urology Department, one-third of patients for non-urgent surgery found their appointments were being cancelled. One reason for this was that in the time between the consultant saying that an operation was required and the patient arriving at the operating theatre, there were 59 changes in responsibility for the process. The hospital reorganized the process to form a 'cell' of four people who were given complete responsibility for admissions to Urology. The cell was located next to the ward and made responsible for all record keeping, planning all operations, ensuring that beds were available as needed, and telling the patient when to arrive. As a result, the 59 handovers are now down to 13 and the process is faster, cheaper and more reliable. Jimmy's also introduced a simple kanban system for some of its local inventory. In Ward 9's storeroom, for example, there are just two boxes of 10 mm syringes on the shelf. When the first is empty, the other is moved forward and the Ward Sister then orders another. The next stage will be to simplify the reordering: empty boxes will be posted outside the store, where codes will be periodically read by the Supplies Department, using a mobile data recorder. The hospital's management is convinced of the benefits of their changes. 'Value for money, not cost cutting, is what this is all about. We are standardizing on buying quality products and now also have more influence on the buying decision ... from being previously functionally oriented with a number of buyers, we now concentrate on materials management for complete product ranges. The project has been an unmitigated success and although we are only just starting to see the benefits, I would expect savings in cost and in excess inventory to spiral! The report on Sterile Wound Care Packs shows the potential that our team has identified. The 'old' pack consisted of four pairs of plastic forceps, cotton wool balls and a plastic pot, which were used with or without additional gloves. This pack cost approximately 60 pence excluding the gloves. The "new" pack consists of a plastic pot, swabs, etc., and one pair of latex gloves only. This pack costs approximately 33 pence including gloves. Total target saving is approximately £20 000.'		
Q1	List the elements in St James's new approach which could be seen as deriving from JIT principles of manufacturing.	**15**	CO 2
Q 2	What further ideas from JIT manufacturing do you think could be applied in a hospital setting such as St James's?	**15**	CO 3