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NMAM INSTITUTE OF TECHNOLOGY, NITTE

(An Autonomous Institution affiliated to VTU, Belagavi)

VIII Sem B.E. (Credit System) Mid Semester Examinations - I, February 2018

14ME8X28 – OPERATIONS MANAGEMENT AND ENTREPRENEURSHIP

Duration: 1 Hour

Max. Marks: 20

*Note: Answer any **One** full question from **each Unit.***

Unit – I

			Marks	BT*
1.		Briefly explain the classification of production system.	10	L*2
2.	a)	What are the similarities between Production Operations & Service Operations.	05	L2
	b)	Write a note on ERP.	05	L3

Unit – II

3. Write a brief note on
   i) Jurans Triology
   ii) Quality Circle — 10 L2

4. In order to estimate the process capability of a machine making resistors, resistance of 937 successive items were checked as follows

Resistance in ohms	Frequency	Resistance in ohms	Frequency
150.00 – 150.49	5	153.00 – 153.49	190
150.50 – 150.99	17	153.50 – 153.99	152
151.00 – 151.49	44	154.00 – 154.49	92
151.50 – 151.99	29	154.50 – 154.99	44
152.00 – 152.49	150	155.00 – 155.49	17
152.50 – 152.99	192	155.50 – 155.99	5

Compute the Mean, Median & Standard Deviation. 10 L2

BT* Bloom's Taxonomy, L* Level

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NMAM INSTITUTE OF TECHNOLOGY, NITTE

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VIII Sem B.E. (Credit System) Mid Semester Examinations - II, March 2018

14ME8X28 – OPERATIONS MANAGEMENT AND ENTREPRENEURSHIP

ation: 1 Hour

*Note: Answer any **One** full question from **each Unit.***

Max. Marks: 20

Unit – I

	Marks	BT*

The following table shows the averages and ranges of th spindle diameters in millimetres for 30 subgroups of 5 items each.

Xbar	R	Xbar	R	Xbar	R
45.020	0.375	45.600	0.275	45.260	0.150
44.950	0.450	45.020	0.175	45.650	0.200
45.480	0.450	45.320	0.200	45.620	0.400
45.320	0.150	45.560	0.425	45.480	0.225
45.280	0.200	45.140	0.250	45.380	0.125
45.820	0.250	45.620	0.375	45.660	0.350
45.580	0.275	45.800	0.475	45.460	0.225
45.400	0.475	45.500	0.200	45.640	0.375
45.660	0.475	45.780	0.275	45.390	0.650
45.680	0.275	45.640	0.225	45.290	0.350

For the first 20 samples set up an Xbar chart and an R chart. Plot the next 10 samples on these charts to see if the process continues "under control" both as to average and range. Also find the process capability. 10 L*2

a) Explain Type I and Type II error. 05 L2

b) What is process capability and process capability index? Explain the need of process capability index. 05 L3

Unit – II

a) Write a note on bath tub curve with suitable example. 05 L2

b) A machine has MTTF of 10,000 hrs. Find the reliability of system for operating life of

i) 100 hrs
ii) 1000hrs
iii) 10,000hrs

05 L2

NMAM INSTITUTE OF TECHNOLOGY, NITTE

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Eighth Semester B.E. (Credit System) Degree Examinations

April - May 2018

14ME8X28 – OPERATIONS MANAGEMENT AND ENTREPRENEURSHIP

Duration: 3 Hours | Max. Marks: 100

*Note: 1) Answer **Five full** questions choosing **One full** question from **each Unit.***
2) Use of SQL tables permitted.

Unit – I

		Marks	BT*
1. a)	With a neat sketch, classify production system.	10	L*2
b)	List the similarities and differences between manufacturing operations and service operations.	10	L2
2. a)	Write the scope of operations management.	10	L2
b)	Considering a manufacturing operations, write a short note on i) Customer Relationship Management (CRM) ii) Enterprise Resource Planning (ERP)	10	L4

Unit – II

3. a)	Define TQM. What are the benefits of TQM	08	L1
b)	Write a short note i) PDSA Cycle ii) Zuran's Triology iii) Quality Circles	12	L2
4. a)	What is customer perception of quality?	04	L1
b)	Explain chance and assignable cause of variation.	04	L2
c)	Find the mean, median, mode, standard deviation, variance and range for the following data.		

Weight (kgs)	Frequency
3.00-3.25	6
3.25-3.50	19
3.50-3.75	35
3.75-4.00	44
4.00-4.25	47
4.25-4.50	29
4.50-4.75	15
4.75-5.00	5

12 L3

Unit – III

5. a)	What is Type-I and Type-II Error?	05	L2
b)	Explain Process Capability and Process Capability Index.	05	L2
c)	Control charts on X bar and R for samples of size n=5 are to be maintained on the tensile strength in pounds of a yarn. To start the charts, 30 samples were selected and the mean and the range of each computed. This yields $\sum X$ bar=607.8 and $\sum R$=144. i) Find the control limits for both X bar and R charts. ii) Both charts exhibit control. There is a single lower specification limit of 16lb. If strength is normally distributed, what fraction of yarn would fail to meet specifications?	10	L4

P.T.O.

6. a) A machine is producing a product to a specification of 12.58±0.05 mm. A study of 10 subgroups of size 5 each shows the following results. X double bar=12.598, R bar=0.055.If the process exhibits statistical control, determine
   i) Cp and Cpk and comment on the process.
   ii) Compute percentage nonconformity if any.
   iii) Suggest the possible ways to improve the process. 10 L3
   b) Explain MTTF and MTBF. 05 L2
   c) Ten ball point pens were tested for life. The times of these pens to run dry measured in minutes were 1740, 2000, 1421, 1857, 1246, 1683,1800,1676,1909 and 1783 respectively. Determine mean life and rate of failure. What is the reliability that a new pen of same brand will last 20hrs of writing? 05 L3

Unit – IV

7. a) What are the functions of an entrepreneur? 10 L2
   b) Write a short note on Intrapreneurs and differentiate between Entrepreneur and Intrapreneur. 10 L3

8. a) What is the role that entrepreneur plays in the economic development of an economy? 10 L3
   b) An entrepreneur has four new facility locations under consideration. The annual fixed costs and variable costs and total costs for 20,000 units are shown below.

New facility location	Fixed cost/year (Rs)	Variable cost/Unit (Rs)	Total cost (Rs) (for 20,000 units)
A	1,50,000	62	13,90,000
B	3,00,000	38	10,60,000
C	5,00,000	24	9,80,000
D	6,00,000	30	12,00,000

Use break even analysis, calculate quantities over the relevant ranges. If the expected demand is 15,000 units per, what is the best location? 10 L2

Unit – V

9. a) What is the effect of WTO/GATT on SSI? 10 L2
   b) Write a short note on objectives and scope of SSI. 10 L2

10. a) What is the impact of liberalization, Privatization and globalization on SSI? 10 L2
   b) What are the different state level institutions to support SSI and how they help an SSI? 10 L2

BT* Bloom's Taxonomy, L* Level

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NMAM INSTITUTE OF TECHNOLOGY, NITTE

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VIII Sem B.E. (ME) Mid Semester Examinations - I, January 2017

(FAST TRACK SEMESTER)

13ME8X28 – OPERATIONS MANAGEMENT & ENTREPRENEURSHIP

ation: 1 Hour | Max. Marks: 20

*Note: Answer any **One** full question from **each Unit.***

		Marks	BT*
	Unit – I		
a)	Comprehend a note on Concept of Production	5	L*2
b)	Compute a note on benefits of CRM	5	L3
a)	Define CRM & explain the purpose of CRM	5	L1
b)	Illustrate a note on ERP and ERP system	5	L4
	Unit – II		
a)	Prepare a note on the three goals of operations QDC	5	L3
b)	Compile a note on User Based view of quality management	5	L5
a)	Compose a note on quality circle & how it works	5	L5
b)	Evaluate a note on Deming's cycle	5	L6

Bloom's Taxonomy, L* Level

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NMAM INSTITUTE OF TECHNOLOGY, NITTE

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VIII Sem B.E. (Credit System) Mid Semester Examinations – I, February 2017

13ME8X28 – OPERATIONS MANAGEMENT AND ENTREPRENEURSHIP

ation: 1 Hour | Max. Marks: 20

*Note: Answer any **One** full question from **each Unit.***

		Marks	B*T
	Unit – I		
a)	Define Operations management. Differentiate between manufacturing and service systems.	6	L*4
b)	Discuss the advantages Mass production systems.	4	L2
a)	Briefly explain how competitive advantage is achieved through Quality, Delivery and Cost.	4	L2
b)	Briefly explain the scope of Operations management.	6	L2
	Unit – II		
a)	Briefly explain the PDSA cycle.	6	L4
b)	List different costs of quality, Illustrate with graph the impact of quality improvement on each of them.	4	L4

The contained weight of certain product is labelled as 500 grams. Periodically, a sample is taken from the packaging line and the contents are weighed. After 250 samples, the data was recorded as follows.

Weight (gm)	Frequency	Weight (gm)	Frequency
505.5-506.0	1	501.5-502.0	34
505.0-505.5	2	501.0-501.5	25
504.5-505.0	7	500.5-501.0	17
504.0-504.5	12	500.0-500.5	13
503.5-504.0	25	499.5-500.5	7
503.0-503.5	29	499.0-499.5	4
502.5-503.0	41	498.5-499.0	2
502.0-502.5	30	498.0-498.5	1

Compute the average, median, mode and standard deviation of the distribution. 10 L4

* Bloom's Taxonomy, L* Level

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NMAM INSTITUTE OF TECHNOLOGY, NITTE

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VIII Sem B.E. (Credit System) Mid Semester Examinations – II, March 2017

13ME8X28 – OPERATIONS MANAGEMENT AND ENTREPRENEURSHIP

Duration: 1 Hours Max. Marks: 20

*Note: 1) Answer **Two full** questions choosing **One full** question from **each Unit.***
2) Use of SQC Tables permitted.

Unit – I

Marks BT*

1. In a capability study of a lathe used in turning a shaft to a diameter of 23.75±0.1 mm a spindle of 6 consecutive pieces was taken each day for 8 days. The diameters of these shafts are as given below.

Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8
23.77	23.8	23.77	23.79	23.75	23.78	23.76	23.76
23.80	23.78	23.78	23.76	23.78	23.76	23.78	23.79
23.78	23.77	23.77	23.79	23.78	23.73	23.75	23.77
23.73	23.77	23.77	23.74	23.77	23.76	23.76	23.72
23.76	23.8	23.8	23.82	23.76	23.74	23.81	23.78
23.75	23.77	23.74	23.76	23.79	23.78	23.8	23.78

Construct $\bar{X}$ and R chart and determine the process capability of the machine. Evaluate if the specification requirements can be met by the lathe. 10 L*4

2. a) Explain the phenomenon of 'bath tub curve'. 5 L2
   b) Briefly explain Type I and Type II errors. 5 L2

Unit – II

3. a) There are two sets of brakes in a bicycle, one for the front wheel and one for the rear. It may be assumed that one brake system is sufficient for safe operation. Each brake set consists of a hand- operated lever, a cable, and 2 brake shoes. One brake Shoe is enough for stopping the bicycle. The MTBFs of various components are

Brake levers :500 hours.
Brake cables :100 hours.
Brake shoes : 25 hours.

Calculate the reliability of the system for a 2 hour down – hill run. 6 L4

   b) Ten ball point pens were tested for life. The times of these pens to run dry measured in minutes were, 1740, 2000, 1421, 1857, 1246, 1683, 1890, 1676, 1909 and 1783 respectively. Determine mean life and rate of failure. What is the reliability that a new pen of same brand will last 20 hours of writing. 4 L4

4. Three locations A, C and J have the following cost structure:

Location	Fixed cost/ year ($/ year)	Variable cost/ unit ($/ unit)
A	110000	2
C	80000	4
J	75000	5

   i. Determine is the most economical location for a volume of 10,000units per year.
   ii. Evaluate the volumes at which each of the location are preferred.
   iii. What is the annual break-even quantity for the location A if the selling price of the product is $ 14/ unit? 10 L4

BT* Bloom's Taxonomy, L* Level

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Eighth Semester B.E. (Credit System) Degree Examinations

April - May 2017

13ME8X28 – OPERATIONS MANAGEMENT AND ENTREPRENEURSHIP

Duration: 3 Hours

Max. Marks: 100

*Note: 1) Answer **Five full** questions choosing **One full** question from **each Unit.***
2) Use of SQC tables is permitted.

Unit – I

			Marks	BT*
1.	a)	Discuss system's view of operations management with a neat block diagram.	10	L*2
	b)	Describe the classification of production system.	10	L4
2.	a)	List and discuss objectives of operations management.	10	L2
	b)	Distinguish between a product and service.	10	L4

Unit – II

3.	a)	List and describe different dimensions of quality.	12	L2
	b)	Explain the concept of quality circle.	8	L2
4.	a)	Explain briefly seven QC tools.	12	L2
	b)	In a normal distribution, 31% of items are under 45Ω and 8% of items are over 64Ω. Find mean and standard deviation of the distribution.	8	L4

Unit – III

5.	a)	What is a control chart? Discuss its importance in production.	8	L2
	b)	The following table gives reading of 25 samples of pin diameter in mm.		

Sample number	Measurement of pin diameter (mm)				
	1	2	3	4	5
1	5.99	5.98	6.01	5.97	6.00
2	6.01	6.00	5.97	5.99	6.00
3	6.00	5.99	6.00	5.99	5.98
4	5.98	5.99	6.00	5.99	6.01
5	6.02	6.01	6.01	6.00	5.99
6	6.00	6.01	6.02	6.01	6.03
7	6.01	6.00	6.04	6.02	6.02
8	5.99	5.99	6.00	5.97	6.01
9	6.02	6.01	6.01	6.00	6.02
10	6.01	6.02	6.00	5.98	5.99
11	5.99	5.98	5.99	6.02	5.99
12	5.99	6.01	6.00	6.02	6.03
13	5.97	6.02	5.98	6.00	5.99
14	5.98	6.00	6.01	5.99	6.02
15	6.01	6.03	6.00	6.02	6.01
16	6.00	6.02	6.02	6.01	6.04
17	5.98	6.00	6.01	5.99	6.01
18	6.00	6.01	6.00	6.00	6.02
19	6.02	6.01	5.99	6.01	6.02
20	6.01	6.04	6.00	6.01	5.99
21	6.00	6.01	6.03	6.04	6.01
22	6.02	5.99	6.02	6.01	6.02
23	6.01	6.03	6.02	6.04	6.03
24	6.01	6.03	6.02	6.04	6.01
25	6.04	6.01	6.03	5.99	6.02

Plot $\bar{x}$ and R chart for the above table of values and calculate control limits. 12 L4

P.T.O.

a) Write short notes on process capability indices. 8 L2

b) Following chart gives number of defects in a compressor. Plot relevant chart and calculate control limits.

Compressor No.	No. of defects
101	2
102	5
103	7
104	3
105	5
106	1
107	4
108	6
109	3
110	2
111	4
112	4
113	3
114	7
115	12
116	2
117	3
118	1
119	4
120	2

12 L4

Unit – IV

7. a) Who is an entrepreneur? What is the role of an entrepreneur in the economic development? Give an example. 10 L2

b) How entrepreneurs are classified? Discuss. 10 L2

8. a) What are the barriers for entrepreneurship? Discuss. 10 L2

b) Location A results in fixed cost of Rs. 300,000/-, variable cost of Rs. 63/unit and revenues of Rs. 68/unit. Location B results in fixed cost of Rs. 800,000/-, variable cost of Rs. 32/unit and revenues of Rs. 68/unit. If sales volume is estimated to be 25000 units/year which location is attractive? 10 L4

Unit – V

9. a) Discuss characteristics of SSI. 10 L2

b) Discuss the impact of Liberalisation, Privatisation and Globalisation (LPG) on SSI. 10 L2

10. Write short notes on
i) National Small Industries Corporation (NSIC)
ii) Small Industries Service Institutes (SISI)
iii) District Industry Center (DIC)
iv) Karnataka State Finance Corporation (KSFC) 5 x 4 L1

BT* Bloom's Taxonomy, L* Level

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NMAM INSTITUTE OF TECHNOLOGY, NITTE

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Eighth Semester B.E. (Credit System) Degree Examinations

Make up / Supplementary Examinations - July 2017

13ME8X28 – OPERATIONS MANAGEMENT AND ENTREPRENEURSHIP

Duration: 3 Hours | Max. Marks: 100

Note: *1) Answer **Five full** questions choosing **One full** question from **each Unit***
*2) Use of **SQC Tables** permitted.*

			Marks	BT*
		Unit – I		
1.	a)	Explain the concept of production system.	2	L*2
	b)	Classify different production/operation management system and bring out the difference between intermittent and continuous production system.	10	L3
	c)	What is ERP? Write about the salient features of ERP and CRM.	8	L2
2.	a)	Bring out the differences and similarities between production and service system.	10	L3
	b)	Briefly write about the objectives and scope of operations management.	10	L2
		Unit – II		
3.	a)	Define the term "Quality". Explain the key dimensions of quality.	10	L2
	b)	What is PDSA and explain various stages of PDSA cycle.	6	L3
	c)	Write a brief note on quality circles.	4	L2
4.	a)	List and explain 7 quality control tools.	7	L2
	b)	What is Kaizen? How it is different from western philosophy of Improvement through innovation.	5	L3
	c)	Differentiate between chance and assignable causes of variation with suitable example.	4	L2
	d)	What are the differences between "Control limits "and "Tolerance limits"?	4	L3
		Unit – III		
5.	a)	Write a note on Type-I and Type-II errors.	4	L3
	b)	What is six sigma and what is its significance? Briefly write about six sigma methodology.	6	L3
	c)	The following are the mean lengths and ranges of a finished product from 10 samples each of size 5. The specification limits for lengths are 200±5 cm. Construct X bar and R chart and examine whether the process is under control or not and state your recommendations.		

Sample number	1	2	3	4	5	6	7	8	9	10
Mean X bar	201	198	202	200	203	204	199	196	199	201
Ranges	5	0	7	3	4	7	2	8	5	6

[For n=5, A_2=0.577, D_3=0, D_4=2.115] — 10 L4

6.	a)	What do you mean by process capability and briefly write about C_P and C_{PK}.	5	L2
	b)	A control limit for effects per unit "U" uses probability limits corresponding to probabilities of 0.975 and 0.025. The central line on the control chart is at U=2.00.The limits vary with the values of n. Determine the correct position of these upper and lower limits when n=15 (Note: Use SQC tables, Corresponding to P_a =0.975, σ =+1.96 and P_a =0.025, σ = -1.96)	5	L4

P.T.O.

c) A sample of 100 tubes are drawn randomly from the outputs of a process that produces several thousand units daily. Sample items are inspected for quality and defective tubes are rejected. The results of 15 samples are shown below. On the basis of information given below, prepare control chart for fraction of defectives. What conclusion do you draw from the control charts?

Sample No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Number of defectives	8	10	13	9	8	10	14	6	10	13	18	15	14	14	9

10 L4

Unit – IV

7. a) Briefly write about "concept of entrepreneurship" and different functions of entrepreneur. 10 L2
   b) Distinguish between Entrepreneur and Manager. 5 L2
   c) Discuss various factors to be considered for selection of business site. 5 L3

8. a) Briefly explain the Market feasibility and technical feasibility studies for project appraisal. 10 L3
   b) An entrepreneur has four new facility locations under consideration. The annual fixed costs and variable costs and total costs for 20,000 units are shown below.

New facility location	Fixed cost/year (Rs)	Variable cost /unit (Rs)	Total cost (Rs) (for 20,000 units)
A	1,50,000	62	13,90,000
B	3,00,000	38	10,60,000
C	5,00,000	24	9,80,000
D	6,00,000	30	12,00,000

Use break even analysis, calculate quantities over the relevant ranges. If the expected demand is 15,000 units per year, what is the best location? 10 L4

Unit – V

9. a) Define Ancillary and Tiny Industries. 4 L2
   b) What are the advantages with Small Scale Industries (SSIs)? 6 L3
   c) Discuss various challenges and opportunities associated with liberalization and globalisation on SSIs. 10 L3

10. a) Categorise various supporting agencies of government (central and state) for SSI and write briefly about any two agencies selecting one from each. 10 L3
    b) Write short notes on any two of the following
    (i) TECKSOK (ii) KIADB (iii) DICs 10 L3

BT* Bloom's Taxonomy, L* Level

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