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UNIVERSITY OF PETROLEUM & ENERGY STUDIES
DEHRADUN
End Semester Examination – December 2017

Program/course : MBA – LSCM/Core **Semester** : III
Subject : Total Quality Management (MBCG 746) **Duration** : 3 Hrs.
No. of page/s : 3 **Max. Marks** : 100

SECTION – A

MARKS 01x20^Q = 20

Question # 01: Fill the blanks with the **most suitable** word from the **word-bank** given below.

- a. Quality solution approach to a problem is to restore the status quo and that for a chronic problem is to the status quo; the former is accomplished by a proper system of and, the latter is accomplished by taking a series of to accomplish the objective **(04/04)**
- b. To manage the sporadic and chronic quality problems leading to waste can effectively be dealt on a continuous basis by systematic Quality Planning for Quality and Quality– these three are otherwise known as or, Quality **(04/08)**
- c. The approaches and, the tools used in Total Quality Management can also be used for other parameters than waste, e.g., and, etc. **(03/11)**
- d. A proper of the process drawn at the appropriate should help to take two types of journeys viz., journey i.e. from symptoms to and, journey i.e. from cause to **(06/17)**
- e. Quality Gurus have often condensed the essence of Total Quality in a short and precise phrase. These wisdom statements are supplementary, they do not contradictory, they emphasis a particular aspect, as a result we have many profound insights into Total Quality. Some of them are – “Confirmation to Specification” it was proposed by “Predictable Degree of Uniformity” was proposed by and, “Loss to Society” proposed by **(03/20)**

Please choose the word from below

Crosby	control	change	quality improvement projects
remedy	remedial	quality control	Improvement
diagnostic	trilogy	Taguchi	cycle time
safety	Deming	cause	flow chart
Juran	level	sporadic	Productivity

SECTION – B : Answer any two (2) questions given below

MARKS 20x02^Q = 40

Question # 02:

Cost of Poor Quality study conducted at an Orthopedic Implants Company in Jaipur found that, in the previous year the internal failure costs alone is more than Rs. 11.5 crores; break up is given below. Do Pareto Analysis and identify candidate quality improvement projects **(Marks 20)**.

Cost Heads	Amount in Rs.	Cost Heads contd.	Amount in Rs.
Design Changes	333,000	Obsolete Inventory Reserves	11,552,776
Dispositions Scrap	2,473,000	Obsolete Inventory Reserves Carrying Cost	1,617,389
Downtime	212,834	Production Rework	2,470,000
Excess Inventory Reserves	36,253,810	Production Scrap	6,469,000
Excess Inventory Reserves Carrying Cost	5,075,533	QC re-inspection indirect costs	642,114
Intermediate Stock Carrying Cost	2,269,540	Safety Stock	16,213,000
Intermediate Stock Inventory	25,785,999	Safety Stock Carrying Cost	3,610,040
Investigation of Failure	445,536	Vendor Rework Charges	115,000
TOTAL			115,538,571

Question # 03:

What is Pareto Priority Index, discuss (Marks 05)? Construct a Pareto Priority Index and rank the candidate projects based on the data given in Table 02 (Marks 05). Will you propose Management to go for the top ranking project or, use some qualitative criteria to consider along with the rankings; what are those criteria, discuss (Marks 10).

Project	Savings (Rs. in '000)	Probability of Success	Cost (Rs. in '000)	Project Completion Time (in Years)
A	100	0.7	10.0	2.00
B	50	0.7	2.0	1.00
C	30	0.8	1.6	0.25
D	10	0.9	0.5	0.50
E	1.5	0.6	1.0	0.10

Question # 04:

Give simple, short, one-line definition of Quality Cost (Marks 01^M). What are the sources of Quality Cost, discuss (Marks 03^M x 3). What is your observation on the annual quality cost data given below for a tire company? Give at least five distinct observations (Marks 02^M x 5).

ANNUAL QUALITY COST : Mercury Tires Ltd., Dehradun			
<i>all figures in Rs.</i>			
Cost of Quality Failures		Cost of Appraisal	
Defective Stock	3,276	Incoming Inspection	32,655
Repairs and Rework	73,229	Process Inspection	32,582
Scarp Collection	2,288	Output Inspection	25,200
Scrap Generated	187,428	Spot Inspection	65,910
Consumer Adjustments	408,200	TOTAL	147,347
Downgrading and Seconds	22,838	Cost of Prevention	
Customer Dissatisfaction	NA	Local Plant QC Engineering Dept.	7,848
Migration of Loyal Customers	NA	Corporate QC Engineering Dept.	30,000
TOTAL	697,259	TOTAL	37,848
GRAND TOTAL			882,454

Question # 05: Based on the following information prepare a quality summary on annual basis.

The Federated Screw Company manufactures a wide variety of made-to-order screws for industrial companies. The design is usually supplied by the customers. Total manufacturing payroll is 260 people with sales of about \$28 million. Operations are relatively simple but geared to high-volume production. You have been asked to prepare a quality cost summary for the company and have made the following notes.

1. The quality control department is primarily a final inspection department (eight inspectors), which also inspects the incoming wire. Patrol inspection (One inspector) is performed in the Heading Room by checking the first and last piece of each run. The quality control department also checks and sets all gears used by that department and by production personnel. An inspector's salary is approximately \$24,000 a year.
2. Quality during manufacturing is the responsibility of the operator setup teams assigned to batteries of about four machines each. It is difficult to estimate how much of their time is spent checking setups or checking the running of the machines, so you have not tried to do this yet. Production has two sorting lots rejected by the final inspection.
3. The engineering department prepares quotations, designs tools, plans the routing of jobs, and establishes quality requirements, working from customer prints. The engineers also do trouble shooting, at a cost of about \$20,000 a year. Another \$16,000 is spent in previewing customers' prints to identify critical dimensions, trying to get such items changed by the customer, and interpreting customers' quality requirements into specifications for use by the Federated inspectors and manufacturing personnel.
4. Records of scrap, rework, and customer returns are meager, but you have been able to piece together a certain amount of information from records and estimates:
 - Scrap from final inspection rejections and customer returns amounted to 438,000 and 667,000 pieces, respectively, for the last two months.
 - Customer returns requiring rework average about 1 million pieces per month.
 - Scrap generated during production is believed to be about half of the total floor scrap (the rest is not quality related) of 30,000 kgs. per month.

Final inspection rejects an average of 400,000 reworkable pieces per month. These items can then be flat rolled or rerolled.

 - Rough cost figures have been obtained from the accountants, who say that scrap items can be figured at \$1.20 per thousand pieces. These figures are supposed to include factory overhead.