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END SEMESTER EXAMINATIONS, NOV/DEC 2015											
SUBJE	ECT: TOTAL QUALITY MAI	NAGEMENT F	OR	GRAF	PHIC A	RTS	IND	UST	RY [	PME 4	413]

## **REVISED CREDIT SYSTEM**

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:									
*	Answer ANY FIVE FULL questions.								
*	Missing data may be suitable assumed.								

- 1A. Explain the term "Quality Trilogy", its importance to present scenario and the various 03 steps involved in it.
- **1B.** Define Quality circle and explain the significant characteristics of Quality circle. **03**
- 1C. In an automatic bottle filling station of offset plate remover solution, a set of data was 04 collected for three different lots having 10 samples each. The target filling volume was 40 ml per each bottle. Apply X bar and R chart method for the following data and determine if the process of bottle filling is in control or not. Draw the graphs and give the right conclusion for your findings.

Lot No / Samples	1	2	3	4	5	6	7	8	9	10
1	40	45	38	37	42	48	35	32	45	40
2	44	49	38	36	37	42	41	38	39	47
3	50	49	51	38	34	36	51	55	31	41

- 2A. Imagining that you are the owner of a printing house, then how would you improve 03 your production efficiency using Benchmarking process? Explain with suitable examples.
- 2B. Explain the following Deming's deadly diseases and sins with their impact on total 03 quality management.
  - a) Overemphasis on visible figures
  - b) Mobility of management (Job hopping)
  - c) Emphasis on short-term profits





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03

2C. In a digital flexographic printing press, CD stickers were being printed on self-04 adhesive label paper and converted into roll of stickers. The inspection was carried out before shipping these sticker rolls to the customer. Each roll was consisting of 500 such stickers. The table below shows the number of non-confirming stickers found in 10 rolls selected randomly from the production unit. Using defects per item chart, evaluate if the process is in control or not. If not revise the control limits and give a suitable conclusion on your findings.

Roll Number	1	2	3	4	5	6	7	8	9	10
No. of Non confirming CD stickers	34	21	8	22	37	8	27	5	38	28

- **3A.** Explain "Quality Vaccine", its components and importance in printing industry.
- 3B. Explain the minimum qualifications required to become a Quality Guru / facilitator and 03 explain the areas for training a team leader? What is the significance of such training?
- 3C. An offset blanket is expected to have a life of 2 lakh impressions. The supplier found 04 from his experience that if its life varies 10000 impressions from this target value then there will be a loss of Rs.1200 to the user. If the blanket fails and incurs a loss of Rs.800 to the user then calculate the number of impressions printed by the blanket before its failure using Taguchi's Quality Loss Function.
- 4A. Explain the six major steps in 'Process of determining measurement procedure' in 03 data collection.
- **4B.** Frame six answers for the following statements using Contingency method **03** 
  - a) "How to reduce the efficiency of four color offset machine?"
  - b) "How to increase the make ready time in Screen printing machine?"
- 4C. In a perfect book binding machine using PUR adhesives, the strength of the bind was 04 one of the quality parameter under study. The quality personnel randomly collected more than thirty sample books from this production run and measured the bind strength. The data collected fall in a normal distribution with mean book strength of 4.5 Kgf and a standard deviation of 1.25. If the customer specification for this is 4.0 ± 2 kgf, then measure the process capability indices and probability of the samples not meeting the specifications, if any.





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- 5A. Explain the meaning of Quality assurance. What are the activities involved in Product 03 Quality assurance?
- **5B.** Differentiate between Benchmarking and Kaizen process with examples.
- **5C.** M/s Best printers, a commercial printing press located in Chennai is in a process of **04** improving performance of their six color sheet fed offset machine. As a part of this the project team led by the Production executive collected last two months data regarding the delay or down time in the machine due to various reasons. The data collected is listed in the table below. Using a Pareto analysis help the Production executive to decide which problem/s to be solved first to get maximum improvements in their machine performance.

SI. No	Name of the problem	Delay in Minutes
1	Chiller roller trip	45
2	Feeder board problem	89
3	Plate charge up problem	80
4	Waiting for paper	82
5	Main motor problem	30
6	Sticky boards	17
7	Blanket packing problem	75
8	Proof approval delay	10
9	Delivery gripper problem	20
10	Anti-setoff powder spray unit repair	60
11	Job cancellation	8
12	Plate waiting	40
13	Inching problem in 3 <sup>rd</sup> Printing unit	5
14	Side lay malfunctioning	15
15	Static charge problem	25
16	Ink mixing problem	19





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- 6A. With neat diagram explain the four different types of strategies that are available in 03 Production and Marketing?
- 6B. Define 5S and explain its various steps for implementation with their importance in 03 TQM.
- 6C. A study was conducted to evaluate the effect of adhesive film thickness on the peel 04 strength of lamination on Maplitho paper. Several samples were prepared by varying adhesive film thickness and their peel strength was measured. The collected data is given below. Using mathematical regression analysis find the regression equation and the correlation coefficient between these two parameters. Calculate the adhesive film required to get a peel strength of  $4.4 \text{ kg/cm}^2$ .

Adhesive film thickness(microns)		11	15	16	17	18	19	20	21	22
		14								
Peel Seal Strength (kgf)	2.6	2.5	2.6	2.7	2.65	3.1	3.2	3.3	2.8	3.0