Reg. No.									

Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)

VI SEMESTER B.TECH (PRINT AND MEDIA TECHNOLOGY)

MAKEUP EXAMINATIONS, JUNE - JULY 2016

SUBJECT: PROGRAM ELECTIVE -III

QUALITY MANAGEMENT FOR GRAPHIC ARTS INDUSTRY [PME 322]

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 four different types of strategies that are available in Production and marketing with neat diagram. **03**

1B. Justify the following statements of Deming's Philosophy of Quality for management in detail with suitable examples. **03**

a) Create constancy of purpose for continual improvement of product & services

b) Eliminate the use of slogans, posters and exhortations

c) Eliminate work standards and numerical quotas

1C. A company manufacturing laser diode for CTP systems, says that the diode is expected to have a life of producing **72,000** offset plates. If its life deviates from this expected number in either side, by **2,000** plates then there will be a repair cost of Rs. **5000/-** to the CTP user. If the Diode fails after output of **65,000** plates then using Taguchi's loss function, calculate the loss to the user. **04**

2A. Explain the methodology of implementing 5S system. Explain how kaizen and **5S** are related to each other? **03**

2B. Frame six answers for the following statements using Contingency method **03**

a) "How to reduce the efficiency of binding department?"

b) "How to increase the idle time in sheet fed offset machine?"

2C. In an inkjet cartridge filling station, the amount of ink being filled was under observation. The filling station supervisor has collected several filled ink cartridges and examined for the amount of ink being filled in it. The collected data forms a normal distribution with average amount of ink filled as **349.0** ml and standard deviation as **7.0** ml. The specification for the ink filling station was set at **350.0 ± 5.0** ml. By considering all these parameters and specifications find the process capability indices for ink filling station. What is the probability of cartridges not matching the specifications if any? **04**

3A. Explain the areas for training a team leader and the minimum qualifications required to become a Quality Guru / Facilitator. **03**

3B. Explain the different levels of Benchmarking using suitable examples. **03**

3C. M/s Print Pack solutions, is the leading manufacture of corrugated packages. Recently the quality control department collected a data about various quality problems and the number of packages rejected due to these reasons in a job supplied to MNC. The data is given below in the table. The Production supervisor wanted to solve these technical issues and reduce the quality rejections in the future production. Using Pareto analysis help him to prioritize these problems so that he can solve only the major problems which contribute a lot for the quality in shortest possible time. **04**

Sl. No	**Name of the problem**	**Number of packages rejected**
1	Cracking of flutes	73
2	Cross cutting	52
3	Delamination	35
4	Gelling of gum	21
5	Leaned flutes	55
6	Length variation	27
7	Loss of caliper	16
8	Score cracking	11
9	Sheet cracking	42
10	Uneven gluing	68

4A. Differentiate between Regression analysis and Histograms. **03**

4B. Explain “Quality Trilogy” and the various steps involved in it. **03**

4C. In a laboratory scale air knife coater, a study was conducted to check the effect of change in air blow rate on the coating thickness. A set of 10 sample run were conducted at different air blow rate (mm of water pressure) and corresponding thickness of coating layer deposited is measured and recorded in the table below. Using mathematical regression analysis find the correlation between air blow rate and coating layer thickness. Find the air blow rate required to deposit 4.8 micron of coating layer. **04**

Coating solution film thickness(microns)	12.0	9.2	8.7	9.1	8.7	9.0	7.4	6.5	5.7	5.8
Air blow rate (mm of water pressure)	8	10	12	14	16	18	20	22	24	26

5A. Differentiate between process Re- engineering and Kaizen. **03**

5B. What is meant by “Quality Function Deployment” and explain the different stages involved in it. **03**

5C. In mobile manufacturing unit, **15** lots of mobile cartons received from a printer, containing different number of primary mobile cartons in it. These are subjected to quality inspection before they are filled with new mobiles for sending them to the market. The quality inspector checks finished cartons before they are packed. The table below represents the number of defective cartons found in **15** different lots. Using defects per unit chart, decide whether the process of carton manufacturing is capable or not. If not revise the control limits and conclude on your findings. **04**

Lot No	1	2	3	4	5	6	7	8
No, of Mobile cartons	1200	1210	1220	1210	1225	1245	1230	1265
Defective cartons	130	132	138	126	131	129	151	155

Lot No	9	10	11	12	13	14	15
No, of Mobile cartons	1195	1250	1260	1200	1220	1215	1230
Defective cartons	155	148	168	98	185	132	133

6A. Explain Deming's PDCA Cycle with a suitable example from Printing industry. **03**

6B. Differentiate between Control Charts and Pareto Analysis with suitable examples. **03**

6C. In an automatic bottle filling station of offset fount solution, a set of data was collected for **4** different lots having **10** samples each. The target filling volume was **300** 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. **04**

Lot No / Samples	1	2	3	4	5	6	7	8	9	10
1	289	301	305	310	314	291	301	300	299	301
2	295	298	308	284	288	294	314	301	289	312
3	294	294	294	296	283	301	316	322	295	311
4	299	289	295	311	296	300	320	314	297	312