

M.E. Mech (P.D.D.Engg)
Master Of Engineering
Question Papers May-June 2019
Sem – I & II

ME - MECH / SEM-II CB choice based / 23/05/2019
PBD

(3 Hours)

(80 Marks)

- N.B. : (1) Answer any four questions out of the six questions.
 (2) Figures to the right indicate full marks.
 (3) Illustrate answers with neat sketches where ever required.
 (4) Answers to the questions should be grouped and written together.
 (5) Assume suitable data if required.

1. (a) What is QFD and when should it be used? Delineate the objective and methodology of QFD. 10
- (b) How can be the House Of Quality is supportive to fast food service provider? Explain with neat and clean structure of HOQ. 10
2. (a) Discuss these terms along with its significance: Severity, Occurrence, Detection and Risk Priority number (RPN). 10
- (b) Trace out the FMEA systematic process with its benefits. 10
3. (a) How the Quality Loss Function is related with Taguchi method? Illustrate with suitable example. 10
- (b) A study is designed to test whether there is a difference in mean daily calcium intake in adults with normal bone density, adults with osteopenia (a low bone density which may lead to osteoporosis) and adults with osteoporosis. Adults 60 years of age with normal bone density, osteopenia and osteoporosis are selected at random from hospital records and invited to participate in the study. Each participant's daily calcium intake is measured based on reported food intake and supplements. The data are shown below. 10

Normal Bone Density	1200	1000	980	900	750	800
Osteopenia	1000	1100	700	800	500	700
Osteoporosis	890	650	1100	900	400	350

Is there a statistically significant difference in mean calcium intake in patients with normal bone density as compared to patients with osteopenia and osteoporosis? Run the ANOVA using the five-step approach.

4. (a) The survey yielded following data for the 100 counts of dissatisfied customers and their reason for the dissatisfaction of food serving corner, by applying the Parato analysis, give your suggestion: 10

S.N.	Cause of Dissatisfaction	Count	S.N.	Cause of Dissatisfaction	Count
1	Overall taste	12	5	Promptness	5
2	Serving size	5	6	Affordability	6
3	Food presentation	25	7	Cleanliness	15
4	Quality of service	24	8	Store ambiance	8

- (b) Elucidate various frequency distribution charts with their application in industry. 10
5. (a) Calculate the Weibull Distribution whose α & β is 2 & 5 respectively, $X_1 = 1$, $X_2 = 2$. 10
- (b) Discuss various approaches to improve the design of product by reliability. 10
6. (a) Elaborate various improvement methodology of for six sigma. 10
- (b) Where Six Sigma does fits with Lean? Compare lean with six sigma. 10

(3 Hours)

[Total Marks : 80]

N.B

- 1) Answer any four questions
- 2) All questions carry equal marks.

- Q.1 a What are the types of tolerance? Explain tolerance stack. 10
- b It was decided to make engine block for automobile engines from C.I using casting process. Discuss design factors that determine the manufacturing cost of block? Which of the cost are chiefly determined by foundry and which by designer? 10
- Q.2 a Briefly explain guidelines for design for assembly. 10
- b Discuss metrics that could be used to determine the complexity of an assembly operation with an illustration various. 10
- Q.3 a Discuss the case of application of Value Engineering for cost reduction for household furniture product. 10
- b Define value analysis and explain steps involved in it. 10
- Q.4 a Explain the concept of reliability and discuss its application 10
- b Discuss the significance of bath tub curve 10
- Q.5 a Explain design for maintainability with suitable illustration. 10
- b Define MTTR. Write about analysis of downtime 10
- Q.6 a For two mutually exclusive project alternatives I and II associated costs are given. They have useful lives of 3 and 4 years respectively. If rate of return is 12 % per year, show which alternative is more desirable by using present equivalent worth method. 10

	Alternative I	Alternative II
Capital Investment	Rs.40000	Rs.55000
Annual Cash in flow	Rs.22500	Rs.25000
Useful life	3 years	4 years
Market Value at the end of useful life	0	0

- b Explain how to estimate magnitude and time of future cash outflows and cash inflows. 10

15/05/19.

M.E. (MECH) Sem II Choice Base
PDD

(3 Hours)

(Total Marks : 80)

- N.B. : (1) Answer **any four** questions out of the **six** questions.
 (2) **Figures** to the **right** indicate **full marks**.
 (3) Illustrate answers with **neat sketches** where ever **required**.
 (4) Answers to the questions should be **grouped** and **written together**.
 (5) Assume suitable **data** if **required**.

1. (a) An ergonomist is invited to be a human factors consultant in a team tasked with a design of an information system for an organization. What should be the ergonomist's FIRST priority in this capacity as the team sets to work? 10
 (b) What do you understand by biomechanics of work? 10
2. (a) Design a chair for a hearing impaired person by the implementation of human factors vision, vestibule and tactile senses. 10
 (b) Explain the reasons and concept for using the human factors you have utilized in the design of chair for hearing impaired person 10
3. (a) Design a digital dial for a watch for under graduate students. 10
 (b) Explain the design concepts you have used for design of dial. 10
4. (a) As a product design and development consultant you give online services for selecting the optimum parameters for an operation. Develop a website for the same. 10
 (b) For the website developed in first part of question incorporate the help you are giving for the services online to the customers and receiving the payment also for the same. 10
5. (a) Design a banner for college annual function depicting the events for a day. 10
 (b) Justify the selection and use of Gestald Laws you have used for designing of banner. 10
6. (a) Design a support system to reduce the Musculo- skeleton stresses for a technician working in standing position on the shop floor in an assembly line. 10
 (b) Describe the joint being used by technician working in standing position on the shop floor in assembly line 10

17/5/2019

ME / mech / PDD / Sem-II / choice based /

(3 Hours)

[Total Marks: 80]

- N.B: (1) Attempt any Four Questions.
(2) Figures to the right indicate full marks.
(3) Assume any suitable data if necessary and justify the same.

- Q1 A) Explain in detail Exploratory Research, Descriptive Research, and Experimental Research? 10
B) Describe in detail designing & planning transportation network in Supply Chain Network? 10
- Q2 A) Explain the Marketing concept and its evolution and brief Marketing mix? 10
B) Explain the Concept of Brand and Significance of Branding for Consumers and for Firms 10
- Q3 A) Explain Secondary Data Sources for Marketing Research in India. 10
B) Explain in detail the macro and micro components and their Impact on marketing decisions? 10
- Q4 A) Explain in detail Consumer Decision making Process? 10
B) Explain the Sources of Brand Equity- Brand Awareness and Brand Image? 10
- Q5 A) Explain the Marketing Research Process? 10
B) Explain Cost based, Price based and Customer based brand equity? 10
- Q6 A) Write short notes on **any four** of following: - 20
(a) Marketing Research Designs
(b) Market segmentation and positioning
(c) Strategic marketing planning
(d) New product pricing and building
(e) Supply Chain network

21/05/2019

ME (Med)/sem-II/ choice Based/PDD

(Three Hours)

Total Marks: 80

Instructions:

- Attempt any four questions out of six questions
- Assume suitable data wherever necessary
- Figures to the right indicate full marks.

Q.1 Answer any Four.

20

- a. Role of SPSS in data analysis
- b. Foot notes and Bibliography
- c. Importance of t-tests
- d. Descriptive statistics
- e. Testing of hypothesis
- f. Non-parametric tests

Q.2 a. What is the research methodology? Explain the steps in scientific research process. Briefly explain about literature review. 10

b. State the sources of research problem. How a problem is identified? Enumerate the criteria for the selection of a problem. 10

Q.3 a. Explain the concept of attitude scale. Explain the Likert's scale to measure data attitude. 10

b. Explain Quantitative vs. Qualitative type of research. Explain Post Facto research and Motivation in research. 10

Q.4 a. Explain critically interpretation and Organization of the data. 10

b. Hypothesis is a statement which involves a relationship of variable. Enumerate the types of variables included in stating a hypothesis. 10

Q.5 a. What are the characteristics of research? What are the factors affecting research design? 10

b. "A systematic bias results from errors in the sampling procedures". What do you mean by such a systematic bias? Describe the important causes responsible for such a bias. 10

Q.6 a. What are the differences between observation and interviewing as methods of data collection? Explain with two specific examples of situations where either observation or interviewing would be more appropriate. 10

b. You have been asked to research setting up of a roadside hotel. Design a questionnaire to find out the prospects of proceeding with the venture. 10
