Register Number:……..

KUMARAGURU
college of technology
character is life

B.E DEGREE EXAMINATIONS: MAY 2017

(Regulation 2014)

Sixth Semester

MECHANICAL ENGINEERING

U14GST006: Product Design and Development

COURSE OUTCOMES

CO1: Understand the process to plan and develop products

CO2: Understand the process of collecting information and developing product specifications

CO3: Understand the concept generation, selection and testing processes

CO4: Understand the concepts of product architecture, industrial design and design for manufacture

CO5: Understand the basics of prototyping, economic analysis and project planning and execution process

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Match list I (Authors) with list II (Their concept for entrepreneurs) and select the correct answer using the codes given below. CO3 [K_1]

List I	List II
A. Capital structure	1. Mortgage loans
B. External source	2. LIC
C. Internal source	3. Debt equity ratio
D. Debenture holder	4. Creditor

	A	B	C	D
a)	2	3	4	1
b)	3	2	4	1
c)	3	1	2	4
d)	2	1	3	4

2. Consider the following terms related to creation of a successful new product. CO1 [K_1]

1. Customers
2. Competitors
3. Markets
4. superior value

Which one of the following is the correct sequence of the above in the descending order of maximum velocity?

a) 1 – 2 – 3 - 4 b) 1 – 2 – 4 - 3

c) 4 – 3 -2 -1 d) 4 – 2 – 1 - 3

3. Consider the following statements. CO5 [K_2]

1. Internal growth strategy means enterprises grow by not joining hands with others.
2. Growth of a firm by expansion is rapid.
3. Joint venture is a form of expternal growth strategy.
4. Diversification do not involve business reorganization.

Which of these statements are correct?

a) 2,4 b) 3,4

c) 1,3 d) 2,3

4. An IPR in context with government policies for industries means _____ CO4 [K_2]

a) Intellectual property right b) Industry Process Resolutions

c) Internal planning Resolutions d) Industrial Policy Resolutions

5. Assertion (A): Small scale industries have been given much importance in India. CO4 [K_2]

Reason (R) : Small scale industries do not offer much employment.

a) Both A and R are Individually true and R is the correct explanation of A b) Both A and R are Individually true but R is not the correct explanation of A

c) A is true but R is false d) A is false but R is true

6. Why is good product and service design important? CO1 [K_1]

1.Products are the last thing a customer sees of a company

2.Operations managers' pay is determined by the quality of product design

3. The visual appeal of a product is the most important factor in selling it.

4. Products and services are usually the first thing customers see of a company, so they should have an impact.

a) 1 and 2 only b) 3 only

c) 4 only d) 2 only

7. Consider the following stages in growth of an enterprise and arrange them in a sequence. CO5 [K_2]

1. Start-up stage
2. Maturity stage.
3. Decline stage.
4. Growth stage.

The correct sequence is

a) 4-3-2-1 b) 1-4-2-3

c) 2-4-3-2 d) 1-2-4-3

8. New-product development starts with _____ CO2 [K_1]

a) Idea screening b) Idea generation

c) Concept development and testing d) Marketing strategy development

9. Assertion (A): Under internal sources of financing funds are raised within enterprise. CO3 [K_2]

Reason (R) : Internal sources are ideally owner's capital including deposits etc.

a) Both A and R are Individually true and R is the correct explanation of A b) Both A and R are Individually true but R is not the correct explanation of A

c) A is true but R is false d) A is false but R is true

10. Which method is used for establishing engineering specifications? CO2 [K_1]

a) Kano diagram b) Pugh method

c) Brainstorming d) Value analysis

PART B (10 x 2 = 20 Marks)

(Answer not more than 40 words)

11. Compare product design and product development. CO1 [K_2]
12. List out the challenges involved in Product Development. CO1 [K_2]
13. List out different type of customer needs. CO2 [K_2]
14. What are the steps involved in establishing target specifications? CO2 [K_2]
15. How concept testing differs from concept selection process? CO3 [K_2]
16. State the advantages of concept selection. CO3 [K_2]
17. Define product architecture. CO4 [K_2]
18. List out the various secondary systems used in product architecture. CO4 [K_2]
19. What are the main elements involved in determining a manufacturing cost of a product? CO5 [K_2]
20. List out the various costs involved in the product design and manufacturing. CO5 [K_2]

Answer any FIVE Questions:-

PART C (5 x 14 = 70 Marks)

(Answer not more than 300 words)

Q.No. 21 is Compulsory

21.	Explain in detail about six phases of generic product development process and their functions with a neat sketch.	CO1	[K_2]
22.	Discuss about various methods of gathering customer needs. How Affinity diagram useful in grouping of customer needs? Discuss briefly.	CO2	[K_2]
23.	Explain about different intuitive methods of concept generation process with a neat sketch.	CO3	[K_2]
24.	What are the steps involved in concept selection process? Explain in detail.	CO3	[K_2]
25.	Briefly discuss about the steps involved in industrial design process. What are the steps involved in Design for Manufacturing process? Discuss briefly with a neat sketch.	CO4	[K_2]
26.	Explain about different types of prototype with an example. Also discuss the various uses of it.	CO5	[K_2]
27.	Discuss briefly about three types of task and their dependencies with an example.	CO5	[K_2]

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