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Reg. No. :

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**Question Paper Code:U9206**

B.E./B.Tech. DEGREE EXAMINATION, APRIL 2024

Professional Elective

Mechanical Engineering

**21MEV206 - NEW PRODUCT DEVELOPMENT**

(Regulations 2021)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The first step in process of developing new-product must be CO1-U  
(a) idea generation (b) idea screening  
(c) concept progress and testing (d) business analysis
2. Finding new ways to create more satisfying products for customers is called CO1- U  
(a) customer centered product development  
(b) team based product development  
(c) systematic product development  
(d) concentration based development
3. Heat transfer problem depends on CO1- U  
(a) Thermal conductivity (b) heat coefficient  
(c) ambient temperature (d) All the above
4. The washer for the mechanical joint is an example of which of the following CO1- U  
process.  
(a) Progressive forming (b) Piercing  
(c) Punching (d) Blanking
5. Which of the following chucks in the lathe machine is known as Universal CO1- U  
Chuck  
(a) Magnetic chuck (b) Three jaws chuck  
(c) Clamping Plate (d) Four jaws chuck

6. What precise movement does CMM have? CO1- U
- (a) Precise progress in x coordinate  
 (b) Precise progress in x and y coordinates  
 (c) Precise progress in y and z coordinates  
 (d) Precise progress in x, y and z coordinates
7. The commonly used frequency range for ultrasonic testing is CO1- U
- (a) 5Hz-10Hz (b) 10Hz-20Hz  
 (c) 20kHz-10MHz (d) 50MHz -100MHz
8. Marketers have traditionally classified products on the basis of CO1- U
- (a) Durability, tangibility, and use. (b) affordability, tangibility, and use  
 (c) availability, tangibility, and use (d) aesthetics, tangibility, and use
9. The importance of standard operating procedures is CO1- U
- (a) To ensure consistent execution of key processes.  
 (b) Processes can only be improved if they are written down.  
 (c) The Department Labour requires that all key processes be written down.  
 (d) None of these
10. Which 3D printing method is most suitable for creating highly detailed objects with smooth surfaces? CO1- U
- (a) Fused deposition modeling (FDM) (b) Stereo lithography (SLA)  
 (c) Selective laser sintering (SLS) (d) Digital light processing (DLP)

PART – B (5 x 2= 10Marks)

11. Differentiate between customer requirement and customer-specific requirements. CO1-U
12. Briefly explain the welding process.. CO1 -U
13. How do you ensure that the right tools are available for production at all times? CO1 -U
14. List the 6 common risks in New Product Development. CO1 -U
15. Infer about shop floor planning and control. CO1 -U

PART – C (5 x 16= 80Marks)

16. (a) Outline about an Engineering Bill of Materials (EBOM) CO1 - U (16)
- Or
- (b) Illustrate the QFD and their application in industries. CO1 - U (16)
17. (a) Analyze the point at which a component, asset, or material fails by using destructive testing method. CO1 - U (16)
- Or
- (b) Prioritize failure modes based on severity, frequency, and how easily you can detect the failure modes. CO1 - U (16)
18. (a) Identify the Process of Request For Quotation (RFQ) CAD/CAM systems and optimizing production workflows. CO3 -App (16)
- Or
- (b) Apply drafting and design that are used in product development. CO4 -App (16)
19. (a) Organize Market Research for a New Product Development. CO4 - App (16)
- Or
- (b) Identify the Lessons Learned through Product Development From Customers CO4 U (16)
20. (a) Choose a rapidly evolving technology that is having a major impact on product development, to accelerate the physical prototypes quickly and easily. CO5 - App (16)
- Or
- (b) Reduce lead time for new product development through standardization. CO5- App (16)

