29. a.	Compare F-test, T-test and Chi-square test.	10	3	4	1,2
	(OR)				
b.	What is the use of design of experiment, list its different methods and suggest the most accurate method with an example.	10	4	4	1,2
30. a.	What is statistical process control and state the significance of C_p and C_{pk}?	10	3	5	1,2
	(OR)				
b.	What do you infer from failure mode effective analysis and explain in detail.	10	2	5	1,2

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Reg. No.														

B.Tech. DEGREE EXAMINATION, JUNE 2022

Eighth Semester

18AUE344T – CONCEPTS OF ENGINEERING DESIGN

(For the candidates admitted from the academic year 2018-2019 to 2019-2020)

Note:

(i) **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.

(ii) **Part - B** should be answered in answer booklet.

Time: 2½ Hours Max. Marks: 75

		Marks	BL	CO	PO
	PART – A (25 × 1 = 25 Marks)				
	Answer **ALL** Questions				
1.	The boldest example in use of CAD for Boeing-777 was modelled using _____during 1990-1994. (A) AutoCAD (B) Pro-e (C) Catia (D) Solid works	1	2	1	1,2
2.	Which form of design deals with improving the appeal of a product to the human senses? (A) Selection design (B) Industrial design (C) Adaptive design (D) Redesign	1	2	1	1,2
3.	In which form of benchmarking is comparison of a business process done with a similar process within other organization? (A) Internal benchmarking (B) Competitive benchmarking (C) Functional benchmarking (D) Generic benchmarking	1	3	1	1,2
4.	What is the main objective of product life cycle analysis from the producer perspective? (A) Minimize life cycle externalities (B) Maximize life cycle profit (C) Minimize life cycle costs (D) Costs Vs benefit	1	3	1	1,2
5.	The sales era is best described as, which of the following? (A) Customers are plentiful and easily pleased (B) Products are manufactured and promoted to customers (C) Customer needs and wants are considered while manufacturing (D) Products are plentiful, with fierce competition for customers	1	3	1	1,2
6.	Mathematic models provide _____ (A) Estimated results (B) Accurate results (C) Wrong results (D) Approximate results	1	2	2	1,2
7.	Scientists use mathematical models to predict the growth of world population, computer converted that data into a _____ (A) Sample (B) Model (C) Design (D) Structure	1	3	2	1,2

8. Life cycle engineering is also called _____ 1 2 2 1,2
(A) Green design (B) Expensive design
(C) Easy design (D) Futuristic design

9. Bransford and Barry stein advocated five steps for problem solving was _____ 1 2 2 1,2
(A) 5-why-analysis (B) IDEAL
(C) SECAL (D) IDEA A

10. In stiffness matrix, all the _____elements are positive. 1 2 2 1,2
(A) Linear (B) Zigzag
(C) Diagonal (D) Rectangular

11. Materials are not selected on the basis of _____ 1 2 3 1,2
(A) Performance (B) Processing
(C) Environmental profile (D) Violating regulations

12. Among the polymers listed below, which is high in cost? 1 2 3 1,2
(A) PVC (B) PET
(C) POM (D) PEEK

13. During manual assembly, avoid parts which may _____ 1 2 3 1,2
(A) Stick together (B) Sub-assemblies
(C) Not slippery (D) Standard components

14. Which of the following metal is best selection for carrying distilled water? 1 2 3 1,2
(A) Tin (B) Lead
(C) Titanium (D) Nickel

15. Which of the following is a technological property of a material? 1 3 3 1,2
(A) Castability (B) Melting point
(C) Availability (D) Stress

16. If the values taken by a random variable are negative, the negative values will have _____ 1 2 4 1,2
(A) Positive probability (B) Negative probability
(C) May have positive or negative probability (D) Insufficient data

17. In random experiment, observations of random variable are classified as _____ 1 2 4 1,2
(A) Events (B) Composition
(C) Trials (D) Functions

18. Which of the following distributions is continuous? 1 2 4 1,2
(A) Binomial distribution (B) Hyper geometric distribution
(C) F-distribution (D) Poisson distribution

19. In two-way ANOVA with m=5, n=4 then the total degrees of freedom is _____ 1 3 4 1,2
(A) 18 (B) 19
(C) 20 (D) 21

20. How many parameters are there in Weibull distributions? 1 2 4 1,2
(A) 1 (B) 2
(C) 3 (D) 4

21. How long do patents usually last for? 1 2 5 1,2
(A) 10 years (B) 20 years
(C) 30 years (D) 40 years

22. Which of the following interests is not protected by the law of tort? 1 2 5 1,2
(A) Loss of commercial profit due to competition (B) Reputation
(C) Physical safety (D) Peaceful enjoyment of one's land

23. A particular products element has been given the following Rankings for calculating RPN while preparing FMEA chart, S=10, O=2, D=2. What is the value of RPN? 1 3 5 1,2
(A) 10 (B) 20
(C) 30 (D) 40

24. What protects the intellectual property created by inventors? 1 2 5 1,2
(A) Copyright (B) Geographical indications
(C) Patents (D) Trademarks

25. Factors that affects ethical and unethical behaviour is _____ 1 2 5 1,2
(A) Ethical dilemma (B) Diversity
(C) Team work (D) Open communication

PART – B (5 × 10 = 50 Marks) Marks BL CO PO
Answer **ALL** Questions

26. a. Explain in detail about the Morris Asimow's morphology of design. 10 2 1 1,2

(OR)

b. Explain in detail about the product life cycle management with neat flow chart. 10 2 1 1,2

27. a. Explain in detail about the various steps in finite element analysis. 10 2 2 1,2

(OR)

b. Deduce a mathematical model for selecting the size of motor to drive a conveyor belt to deliver sand at a flow rate of 100 tons/hr. (Assume basic conveyor design). 10 3 2 1,2

28. a. Explain in detail about the design for manufacture and assembly. 10 2 3 1,2

(OR)

b. How will you select the material using weighted property index, explain with an example. 10 3 3 1,2