KUMARAGURU
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Register Number:……..

M.TECH DEGREE EXAMINATIONS: NOV/DEC 2023

(Regulation 2018)

Third Semester

APPAREL TECHNOLOGY

P18ATE1005: Sports and Medical Apparels

COURSE OUTCOMES

CO1: Gain knowledge on requirements of sports apparels

CO2: Acquire knowledge on sports apparels and cross functional assemblies

CO3: Describe the biomaterials of metals, ceramics, polymers, natural biomaterials, and specialty fibers.

CO4: Define and classify the different types of healthcare and hygiene products, infection control and barrier materials and nonwoven products.

CO5: Identify and construct the different types of bandaging materials and pressure garment with suitable construction techniques.

CO6: Recognize the suitability, specifications of medical textile products and garments for wounds and selection factors for different implantable products for various end uses and intelligent textiles. Identify the suitable materials for developing implantable products.

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

Answer all the Questions: -

PART A (10 x 1 = 10 Marks)

1. Which type of design focuses on pushing boundaries and exploring new ideas? CO1 [K_2]

   a) Aesthetic b) Functional

   c) Exploratory d) Incremental

2. Which smart material changes color in response to external stimuli such as temperature or light? CO2 [K_2]

   a) Auxetic Materials b) Chromic Materials

   c) Conductive Fibers d) Stomatex

3. What is the primary purpose of test methods for sport clothing? CO2 [K_3]

   i Enhancing fashion trends.

   ii. Evaluating performance and quality.

   iii. Reducing production costs

   iv Promoting environmental sustainability.

a) i & ii only
b) ii & iii only
c) i only
d) ii only

4. Matching type item with multiple choice code CO4 [K_3]

List I Apparels/ products	List II- TYPE OF CLOTHING
A. Medical scrubs	i. Therapeutic clothing
B. EKG Vests	ii. Surgical clothing
C. Surgeon's gowns	iii. Intelligent functional clothing
D. Pressure garments	iv. Healthcare/hygiene clothing

	A	B	C	D
a)	ii	iii	iv	i
b)	ii	iv	i	ii
c)	iii	i	iv	ii
d)	iii	iv	ii	i

5. Identify the material which is popularly used in thermal energy storage system. CO3 [K_2]

a) Phase Change materials
b) Microfiber Fabric material
c) Shape memory polymer materials
d) 3D spacer fabric material

6. Which category of scar that progressively encroach on the surrounding of skin tissue resulting in cosmetic and emotional distress. CO3 [K_2]

a) Keloid scar
b) Burn scar
c) Hypertrophic scar
d) Hypotrophic scar

7. Examine the two statements carefully and select the answer using the codes given below: CO4 [K_4]

Assertion (A): Extracorporeal devices are the artificial organs that remain outside the body.
Reason (R): It is used to perform the function of the essential organs in the Human body.

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

8. Which type of material can be used for making artificial tendons and bones? CO5 [K_2]

a) Collagen
b) Carbon
c) Silicone
d) Elastomer

9. Which types of synthetic polymers are used in the manufacturing of modern artificial ligament CO5 [K_2]

a) Polyamide
b) Carbon
c) Polyethylene terephthalate
d) Polyester

10. Which category of testing requirements are especially needed for health-care garments CO6 [K4]

i. Anti-microbial ii. Comfort iii. Durability

a) i & iii only b) ii only

c) ii & iii only d) i & ii only

PART B (10 x 2 = 20 Marks)

11. State about the different factors to be involved in designing of sports apparels CO1 [K2]
12. Highlight about the role of biomimicry in garment designing with examples CO1 [K3]
13. Enlist the test methods and standards for different sport clothing CO2 [K2]
14. Discuss the factors involved in designing clothing for disabled persons with features CO3 [K2]
15. Indicate the steps for designing body shaping garments with examples CO3 [K3]
16. Outline the use of electronic based Sensors in medical textiles CO4 [K2]
17. Highlight the fundamental requirements used for assessing the scar management CO4 [K2
18. List the different types of Bandages. CO5 [K2]
19. State about the wound scar management with suitable examples CO6 [K2]
20. Infer about any two methods of mobile health monitoring system CO6 [K3]

PART C (6 x 5 = 30 Marks)

21. Design any one garment suitable for cycling sports and prepare a specification sheet for the same garment CO1 [K6]

22. Elucidate about the multi – functional performance of clothing with examples CO2 [K2]

23. Design any one women's sports garment with the application of any four principles of design factors with a neat sketch CO2 [K6]

24. Discuss about the different classification of medical textile products used for its end use . CO3 [K2]

25. With neat line diagram, explain in detail about the different kinds of wound care dressings classification with its applications CO6 [K4]

26. Illustrate about the any two bio- sensing monitor for assessing physiological parameters with suitable example. CO5 [K3]

Answer any FOUR Questions
PART D (4 x 10 = 40 Marks)

27.	Elucidate briefly about the process and steps involved in clothing design with examples	CO1	[K_2]
28.	Infer about therapeutic rehabilitative clothing and its role for healthcare applications.	CO4	[K_2]
29.	With neat line diagram, explain in detail about the phase change materials according to their application in medical field.	CO3	[K_4]
30.	Enumerate about wound healing process and requirements of wound dressings.	CO5	[K_2]
31.	Illustrate in detail about the smart medical textiles and explain elaborately on Moisture transport – wetting and wicking and water vapour transfer property test on materials.	CO6	[K_4]

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