

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI  
(END SEMESTER EXAMINATION)**

**CLASS: B.TECH.  
BRANCH: CHEMICAL ENGG**

**SEMESTER : VII  
SESSION : MO/2023**

**SUBJECT: CL421 FIBRE SCIENCE AND TECH.**

**TIME: 3hours**

**FULL MARKS: 50**

**INSTRUCTIONS:**

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
  2. Attempt all questions.
  3. The missing data, if any, may be assumed suitably.
  4. Before attempting the question paper, be sure that you have got the correct question paper.
  5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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			CO	BL
1a	Write down the principle of scanning electron microscopy. Describe the steps followed during experiment on TEM.	2+3	CO4	Describe
b	Draw the typical graphs of $G'$ , $G''$ and $\tan\delta$ vs. temperature for viscoelastic materials. Explain the reasons behind the trends seen in this graphs.	2+3	CO4	Draw
2a	Why does crystallinity of fibre decrease with an increase in heat transfer coefficient? Illustrate the process of texturing of wet spun fibres .	2+3	CO2	Illustrate
b	What are the limitations of drying solution spun fibres? Describe the effect of solidification by drying and coagulation of solution spun fibres.	5	CO2	Describe
3a	Write down the salient features of air cooling systems used after melt spinning. Draw the cooling arrangements in melt spinning line.	5	CO3	Draw
b	What are the various mixing units used to melt polymer before spinning? List the functions of various parts in an extruder.	5	CO3	List
4a	List the steps followed during weaving of fibres to produce a fabric. Classify YARNs on the basis of process of manufacturing and size of filament used.	2+3	CO5	List
b	Describe the compositions, use and limitations of acid, basic and vat dyes to colour fibres.	5	CO5	Describe
5a	Describe the surface treatments applied to glass fibres. Write the chemical reactions carried out during reduction of viscose rayon.	5	CO1	Describe
b	Compare between aromatic and aliphatic polyamide fibres in respect to their morphology, chemical structure and application.	5	CO1	Compare

:::28/11/2023:::M