THE TEXTILE ASSOCIATION (INDIA)
A.T.A. PART III EXAMINATION 2020
PAPER – A3. OC1
PRE-TREATMENT AND DYEING (WET PROCESSING – I)

Date: 26.12.2020  MARKS: 100  Time: 10.00 am to 01.00 pm

Instructions:
1. Attempt any Six questions out of which **Q.1 is Compulsory.**
2. Answer each next question on new page.
3. Figures to the right indicate full marks.
4. Illustrate your answers with neat sketches & flow charts wherever necessary.
5. Use of non-programmable electronic pocket calculator is permissible.
6. Mobile and any other communication devices are not allowed in the Examination hall.
7. Assume suitable data wherever necessary.

**Q.1** Attempt any Five  
1. Describe the significance of fabric inspection from wet processing viewpoint.
2. Elaborate the objectives of scouring process.
3. Explain in brief the different methods of desizing.
4. Discuss the general procedure in determining the colour fastness of textiles.
5. What do you understand by the term optical whitening of textiles? Elaborate it.
6. Draw a neat labeled diagram of a Winch dyeing machine.
7. Define the terms “Apparent shade” and “Percentage expression” with one example.
8. Define “Dyes” and “Pigments” and mention the specialty of it.

**Q.2**

a. Draw the structure of the reactive groups present in cold brand, hot brand, ME class and vinyl sulphone reactive dyes. Also write the step by step general dyeing procedure of reactive dyes.  

b. With a neat labeled diagram, explain the working and principle involved in scouring of cotton on continuous range machine. Also explain the various changes taking in cotton due to scouring.

**Q.3**

a. Draw a neat labeled diagram of a two-sided gas singeing machine and write its working principle. Enlist the various precautions to be taken while operation the machine.

b. 541 kg of cotton fabric is to be dyed with reactive dye for 1.8% shade keeping MLR 1:8 & using 40 gpl of common salt as exhausting agent and 15 gpl soda. If the stock dye solution concentration = 1.0%, Stock salt concentration = 20% i.e. 200 gpl & Stock soda concentration = 10% i.e. 100 gpl, Calculate the amount of dye solution, salt solution, soda
solution & water required for dyeing the lot. Also calculate the amount of dye solution, salt solution, soda solution & water required for dyeing the lot if the material is dyed by maintaining MLR of 1:13.

Q.4
a Elaborate the dyeing procedure of I_k class vat dye and I_n class vat dye on cotton with the help of neat dyeing ramp.
b Draw a neat labeled diagram of a Continuous Dyeing Range machine and write its working principle as well as two advantages and two limitations.

Q.5
a With a neat labeled diagram, explain the working principle of a Soft-flow dyeing machine. Also write the dyeing procedure of disperse dyes on polyester.
b Elaborate the reason for selecting hydrogen peroxide for bleaching of textiles. Also elaborate the bleaching conditions with the help of reactions.

Q.6
a Explain the procedure of dyeing silk using metal-complex dyes and wool using acid dyes. Comment on the fastness properties of both dyeing.
b Discuss the classification of direct dyes and elaborate the procedure of dyeing of cotton with direct dyes. Comment on the fastness properties.

Q.7
a Enlist the different methods of degumming silk. Elaborate the industrial method of degumming and write its advantages over the other methods.
b Elaborate the different methods of dyeing Polyester. Also write any one advantage and one limitation of each method.

Q.8
a 768 kg cotton fabric is to be dyed by using vat dye for 1.9% shade with MLR of 1:12. Find out the amount of dye and total dyeing solution required. Also find out the amount of Hydrosol and alkali required if the desired concentration is 12 gpl and 8 gpl respectively. Find out the difference in consumption of dye & chemicals if the weight of fabric is wrongly written as 786 kg.
b Write a detailed note on the different types of mercerization methods used for mercerizing cotton.

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