THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA, VADODARA

Ph. D. ENTRANCE TEST (PET) 2023

Signature of Invigilator

Roll. No.

Paper - II
Textile Chemistry

Maximum Marks: 50 **No. Of Printed Pages: 8**

Instruction for the Candidate:

1. This paper consists of **FIFTY (50)** multiple choice type questions. Each Question carries **ONE (1)** mark.
2. There is no Negative Marking for Wrong Answer.
3. A separate OMR Answer Sheet has been provided to answer questions. Your answers will be evaluated based on your response in the OMR Sheet only. No credit will be given for any answering made in question booklet.
4. Defective question booklet or OMR if noticed may immediately replace by the concerned invigilator.
5. Write roll number, subject code, booklet type, category and other information correctly in the OMR Sheet else your OMR Sheet will not be evaluated by machine.
6. Select most appropriate answer to the question and darken appropriate oval on the OMR answer sheet, with black / blue ball pen only. DO NOT USE PENCIL for darkening. In case of over writing on any answer, the same will be treated as invalid. Each question has exactly one correct answer and has four alternative responses (A), (B), (C) and (D). You have to darken the circle as indicated below on the correct response against each item.
   Example: Ⓐ ● Ⓒ Ⓓ where (B) is correct response.
7. Rough Work is to be done in the end of this booklet.
8. If you write your Name, Roll Number, Phone Number or put any mark on any part of the OMR Answer Sheet, except for the space allotted for the relevant entries, which may disclose your identity, or use abusive language or employ any other unfair means, such as change of response by scratching or using white fluid, you will render yourself liable to disqualification.
9. Calculators, Log tables any other calculating devices, mobiles, slide rule, text manuals etc are NOT allowed in the examination hall. If any of above is seized from the candidates during examination time; he/ she will be immediately debarred from the examination and corresponding disciplinary action will be initiated by the Center Supervisor as deemed fit.
10. DO NOT FOLD or TEAR OMR Answer sheet as machine will not be able to recognize torn or folded OMR Answer sheet.
11. **You have to return the OMR Answer Sheet to the invigilator at the end of the examination compulsorily** and must not carry it with you outside the Examination Hall. You are however, allowed to carry original question booklet on conclusion of examination.

Paper - II
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Note: This paper contains **FIFTY (50)** multiple-choice questions. Each Question carries **ONE (1)** mark.

01) Which chemical is used for delustering of the viscose rayon fibre?
A) Titanium dioxide
B) Sodium thioxide
C) Sodium dioxide
D) None of these

02) The chemical formula of Rongalite C is
A) $Na_2S_2O_4$
B) $Na_2SO_4.10\ H_2O$
C) $NaClO_2$
D) $NaH.SO_2CH_2O$

03) Acid dye form which bond with the nylon fibre ?
A) Ionic
B) Covalent
C) Co-ordinate
D) Hydrogen

04) Density of polyester fibre is
A) 1 – 1.1
B) 0.9 – 1.0
C) 1.35 – 1.4
D) 1.45 – 1.5

05) Shrinkage of cotton fabric during wetting is caused by
A) Extension of fibre
B) Swelling of fibre
C) Crimping of fibre
D) Compression of fibre

06) α– Amino acid monomer is used in polymerization of ..
A) Silk Fibre
B) Acrylic Fiber
C) Nylon 6 Fiber
D) Flax Fiber

07) Melting point of Nylon 6 & Nylon 6,6 are respectively..
A) 255 & 210°C
B) 155 & 110°C
C) 110 & 155°C
D) 210 & 255°C

08) Arrange the ideal cycle for acrylic fibre processing in sequence (1) Crabbing (2) Dyeing (3) Scouring (4) Finishing
A) 1,2,3 & 4
B) 3,1,2 & 4
C) 4,3,1 & 2
D) 1,3,2 & 4

09) What should be ideal temperature of IN class of vat dye?
A) 30 – 40°C
B) 70 – 80°C
C) 80 – 90°C
D) 50 – 60°C

10) Which of the temperature is used in thermosol dyeing of polyester?
A) 100°C
B) 130°C
C) 110°C
D) 200°C

11) Solubilised vat dyes are generally applied on cellulosic under
A) Neutral pH
B) Mild alkaline pH
C) Acidic pH
D) Strong alkaline

12) Sodium silicate is used in following process
A) Desizing
B) Mercerisation
C) Scouring
D) Bleaching

13) What is the roll of Magnesium Chloride in finishing?
A) Retarding agent
B) Swelling agent
C) Catalyst
D) Wetting agent

14) Following is not a chromophore
A) Azo
B) Anthraquinone
C) Carboxyl
D) Indigoid

15) Fillers are generally used for improving
A) Lustre
B) Weight
C) Shrinkage
D) Softness

16) For Bio finishing of cotton denim which pH range is acceptable?
A) 2-3
B) 4-5
C) 9-10
D) 6-7

17) The optimum conditions for bleaching cotton with hydrogen peroxide are
A) pH 7, 60^0 C
B) pH 10, Boil
C) pH 7, Boil
D) pH 10, 60^0C

18) Mercerization is carried out with NaOH of

A) 5-10% NaOH
B) 10-15% NaOH
C) 18-25% NaOH
D) 30-35% NaOH

19) A Wool/Acrylic blended fabric can be dyed to solid shade using a combination of
A) Direct and acid dyes
B) Acid and basic dyes
C) Vat and acid dyes
D) Reactive and direct dyes

20) The dyeing pH required for 1 : 1 Metal complex dye is
A) Neutral
B) 8 – 10
C) 5 – 6
D) 3 – 4

21) The hygroscopic agent used in reactive colour printing is
A) Sodium alginate
B) Urea
C) Sodium bicarbonate
D) Resist Salt B

22) Exhausting agent in reactive colour dyeing influence on following effluent parameters

A) T.D.S
B) Alkaline pH
C) B.O.D.
D) Suspended solids

23) Which chemical is used for weight reduction of polyester fabrics?
A) Caustic soda
B) Common salt
C) Sulfuric acid
D) Glauber's salt

24) Approximate fibroin and sericine compositions respectively of raw silk is about
A) 25 & 75 %
B) 90 & 10 %
C) 50 & 50 %
D) 75 & 25 %

25) T.R.Oil is used in dyeing as
A) Detergent
B) Leveling agent
C) Exhausting agent
D) Wetting agent

26) Which one is not a surfactant?
A) Detergent
B) Wetting agent
C) Reducing agent
D) Dispersing agent

27) Crease recovery of cotton fabric can be improved by
A) Sanforising
B) Singeing
C) Resin finishing
D) Scouring

28) Dyeing is _____reaction.

A) Endothermic
B) Exothermic
C) Isothermic
D) Apsothermic

29) A good fibre forming polymer should not have
A) Linear polymeric chain
B) Very good cohesiveness
C) Branched polymeric chain
D) Higher inter-molecular interaction

30) Bleached cotton fabric was sent to a laboratory for determination of copper number which is an estimate of the presence of
A) Hydroxyl groups
B) Carboxyl groups
C) Reducing groups
D) Oxidizing groups

31) Which one of the following stereo structures of polypropylene is used for commercial fibre manufacturing ?
A) Atactic
B) Syndiotactic
C) Isotactic & synsiotactic
D) Isotactic

32) K/S ratio is related to R as
A) $K/S = (1-R^2)/2R$
B) $K/S= (1+ R)/2R$
C) $K/S= (1-R)/2R$
D) $K/S= (1-R)^2/2R$

33) The fibre which has a mineral origin is
A) Asbestos
B) Silk
C) Flax
D) Acrylic

34) Nylon 6 and Nylon 6,6 filaments are distinguished from each other by
A) Burning test
B) Melting point test
C) Optical microscopy
D) Density measurement

35) Condensation polymerization cannot be used in polymerization of
A) Terelyne fiber
B) Nylon 6,6 fiber
C) Nylon 6 fiber
D) Dacron fiber

36) The efficiency of the wash-n-wear treatment can be estimated by measuring its
A) Bending length
B) Tensile strength
C) Dye uptake
D) Crease recovery

37) Match elements in Group – I and Group – II and choose the correct answers from amongst the alternatives a, b, c and d.

Group – I	**Group – II**
P – Optical brightening agent	1. Stilbene based compound
Q – Reducing agent	2. Cationic compound
R – Oxidising agent	3. Sodium bisulphite
S – Dye fixing agent	4. Sodium hypochlorite
	5. Sodium hydrosulphite
	6. Hydrogen peroxide

A) P-1, Q-3, R-4, S-2
B) P-6, Q-3, R-4, S-2
C) P-2, Q-3, R-4, S-5
D) P-1, Q-6, R-4, S-2

38) Cystine linkage is present in following fiber
A) Silk
B) Wool
C) Nylon
D) None of these

39) Textile fibre which composed of ester-cellulose is called
A) Wool
B) Acetate
C) Polyethylene
D) Silk

40) Following dye is suitable for sublimation transfer printing of polyester
A) Reactive dye
B) Vat dye
C) Acid dye
D) Disperse dye

41) Group I lists chemical processes. Group II lists chemicals used in these processes. Match the process with the corresponding chemical

Group – I	**Group – II**
P. Carbonising	1. Sodium carbonate
Q. Scouring	2. Sulphuric acid
R. Bleaching	3. Sodium hydroxide
S. Mercerizing	4. Hydrogen peroxide

A) P-2, Q-3, R-4, S-1
B) P-3, Q-1, R-2, S-3
C) P-2, Q-1, R-4, S-3
D) P-2, Q-1, R-3, S-4

42) Folling dye can notbe used for dyeing silk fiber.

A) Direct
B) Basic
C) Acid
D) Metal complex

43) Resist salt used in printing is
A) Discharging agent
B) Acid liberating agent
C) Hygroscopic agent
D) Mild Oxidising agent

44) The highest rate of production in printing is obtained on
A) Flat bed printing
B) Block printing
C) Digital printing
D) Rotary screen printing

45) Jet dyeing machines are built to used with M:L ratio of
A) 1:1
B) 1:50
C) 1:30
D) 1:8

46) EDTA is used in textile processing as
A) Swelling agent
B) Resin finish
C) Water repellent
D) Water softener

47) Disperse colour attach with polyester fibre with
A) Hydrogen bond
B) Van der walls bond
C) Covalent bond
D) Ionic bond

48) Sodium chlorite is used as bleaching agent in
A) Acidic pH
B) Neutral pH
C) Neutral
D) None of these

49) Most of the disperse dyes in following hue, exhibits poor light fastness
A) Blue
B) Yellow
C) Red
D) None of these

50) Pectinase enzyme can be used for
A) Polyester scouring
B) Bio-finishing
C) Cotton scouring
D) Brasso printing

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Rough Work: