Annexure-III

Department of Textile Technology

Senior Technician

Stage-I (Screening Test)

Stage-I (Screening Test): A screening test shall be conducted in the first phase in form of multiple choice written test. Written test shall be of **90 minutes'** duration comprising of **75 questions**. Each **correct answer will be awarded One [1] mark** and for each **wrong answer One-fourth [1/4] mark shall be deducted**. Screening test shall consist of questions on **General English**(Tenses, Active and Passive, Direct and Indirect speech, Punctuation, Correction of sentences, One word substitutes, Modals, Articles, Clauses, Synonyms, Antonyms, Idioms and Phrases); **Numerical Aptitude Arithmetic**(Simplification of Fractions, Simple and Compound Interest, Profit and Loss, Percentage, Averages, Number System, Time and Work, Problems on Trains, Calendar, Area, Problems on Numbers, Square root, Cube root, Time and Distance and Other basic Arithmetic related matters);**Reasoning and Data Interpretation** (Number Series Compilation, Missing Number finding, Pattern series, Direction Sense Test, Series Compilations, Classification, Missing Character finding, odd man out, Blood relations, Analogy, Coding and Decoding, Letter and Symbol Series, Verbal reasoning, Statement and Conclusions, Letter and Symbol Series, Logical Problems, Arithmetic reasoning, Logical Sequence of words, Pie Chart and Bar Chart).

Eligible candidates **Ten Times** of the positions in each category will be screened for the Stage-II subject to the fulfillment of all educational qualification etc. as per the Recruitment Rules-2019.

Stage-II (Skill test)

Stage-II (Skill Test): The skill test will be of qualifying nature.

Laboratory Experiments etc. as per nature of the postshall be conducted in the respective laboratories/field. Minimum qualifying marks in the skill test will be [UR:30%; EWS:27%; OBC:27%; SC;20%; ST:20%; PwD:15%].

The candidates, who will qualify the skill test, will be called for the final written test. The Candidates appearing in the written test must ensure their eligibility for the particular category of post. The documents in support of their eligibility shall be verified before the Final test. If any candidate will not have requisite qualification etc. as per the post for which he is appearing will not be allowed to sit in the final test (Stage-III).

Stage-III (Final test)

Stage-III (Final Test): Final written test shall be of 2 hours duration comprising of 100 multiple choice questions.

Each **correct answer will be awarded One [1] mark** and for each **wrong answer One-fourth [1/4] mark shall be deducted**. Only those who are screened in after the Screening test [Stage –I] and qualify the Skill Test [Stage-II] will be allowed to appear in the Final Test [Stage III]. The minimum passing marks in Final test will be [UR:30%; EWS:27%; OBC:27%; SC;20%; ST:20%; PwD:15%].

The final merit list shall be drawn on the basis of the stage-III written test.

SYLLABUS FOR SKILL TEST AND FINAL WRITTEN TEST IS AS PER ANNEXURE-IV.

Annexure-IV

Department of Textile Technology

Syllabus for Skill Test for post of Senior Technician

Textile Fiber

1. Identification of cotton
2. Identification of wool
3. Identification of silk
4. Identification of Bast fibres
5. Identification of polyester
6. Estimation of fiber/filament fineness using projection microscope.

Yarn Formation

1. Study of general outline of opener and clearer machine employed in B/R line process.
2. Study of gearing mechanism, calculation of the speed of different organs of carding machine.
3. Calculation of draft between different zones of carding machine and its production.
4. Calculation of the total draft and its distribution in draw frame machine.
5. Effects of break draft and roller settings on sliver uniformity.
6. Measurement of nip-load pressure, roller eccentricity and shore hardness of top roller drafting rollers.

Fabric Formation

1. Study of the motion transmission system in winding machine.
2. Study of Package stop motion in cone winding machine.
3. Calculation of winding speed on grooved drum winding system and study of anti-patterning system incorporated to it.
4. Study of the motion transmission system in Pirn winding machine.
5. Calculation of winding speed and traversing speed of Pirn winding machine.
6. Study of the sectional warping machine and planning the width of a section according to pattern of the given striped fabric.
7. Study of shedding mechanism of shuttle loom and cam positioning with respect to loom cycle.
8. Study of picking mechanism, Picker movement in relation with crank shaft rotation and calculation of average velocity of shuttle.
9. Study of sley movement, construction and calculation of sley eccentricity.

Fabric structure and design analysis

To analyze the yarn and fabric particulars of the different weave structures along with their graphical presentation and weaving plans.

k. Plain weave
l. Twill weave
m. Satin/sateen weave
n. Diamond weave
o. Honeycomb weaves
p. Bed ford cord weaves

q. Stripe and check weaves
r. Huck a back weaves
s. Double fabrics
t. Backed fabrics

Textile Testing

23. To prepare and analyze Baer Sorter diagram and determine the following:
24. Determine the micronaire value of a given cotton sample by Air-Flow method. Convert the result into SI units and give a suitable rating to the fibre sample.
25. Determine Pressley Index of a cotton sample by Pressley Tester at zero and 3mm gauge
26. Determine crimp (crimp %) of a given manmade fibre sample.
27. Determine fibre fineness of a manmade fibres/filaments by:
28. Prepare yarns Appearance Boards and compare with ASTM standards.
29. Determine bending rigidity by (HEART) loop method.
30. Determine the Lea C.S.P by Lea CSP Tester and Autosorter and compare the results of various yarn.
31. Determine the tensile properties of yarn by single thread strength tester.
32. Determine twist of yarn using different principle of measurement.
33. Characterize a woven fabric with respect to its dimensional properties.
34. Determine the tensile strength and elongation of a woven fabric and compare the Load-elongation curve with non-woven and knitted fabric.

Department of Textile Technology

Syllabus for Final written test (Senior Technician)

Computer awareness: Basic knowledge of Computer Applications, viz; MS Word, MS Excel, Power Point etc. Internet, MS-DOS, Computer Generation & Development, Windows, Data Entry, Softwares knowledge, Networking Platforms, applications of computers in textile technology and instrumentation.

Section-1: Textile fibre

Properties of textile fibres, classification of textile, microscopic, physical and chemical test methods for fibre identification, physical & chemical properties of fibres, fibre properties essential for spinning, requirements of fibre forming polymers, spinning of polymers, post spinning operations –drawing, crimping, heat setting, texturisation and spin finish application.

Section-2: Yarn manufacturing

Ginning – principle, machines and gin out-turn, objectives / principles of opening, cleaning and mixing/blending machines , working mechanisms of blowroom, card, draw frame, comber, comber preparatory, speed frame, ring frame, doubling machinery, salient features of blowroom, card, draw frame, comber, comber preparatory, speed frame, ring frame, doubling machinery, working principles and features of open end spinning machines, fibre characteristics required for different spinning technologies, norms and critical settings related to quality/production in spinning machinery, yarn conditioning, reeling, bundling and baling, maintenance of spinning machines and spinning machine calculations.

Section-3: Fabric manufacturing

Objectives of preparatory processes, preparatory processes for handloom industry, warp winding - random and precision winding, winding drum parameters, stop motions, yarn clearers, tensioners and knotters/splicers, package faults-causes and remedies, warping–types of warping, creels, length measurement, stop motion, working principles of pirn winders , sizing –ingredients, size recipes, principles of drawing- and denting, motions of loom, loom timing , tappet, dobby and jacquard shedding, drop box mechanism, features of pit loom, raised pit loom, frame loom, semi-automatic loom and improved handlooms, principles of shuttleless weft insertion systems, maintenance of shuttle and shuttleless looms and fabric defects – causes and remedies. Elements of woven fabric design, construction of weaves, extra warp and extra weft figuring, terry pile, cut pile, gauze and leno structures, colour and weave effect, computer aided textile designing and weaving calculations. **Knitting** - yarn quality requirements, principles of weft and warp knitting, basic weft and warp knitted structures and its properties. **Nonwoven**-classification, production, properties and application of nonwoven fabrics, principle of web formation & bonding. Calculations.

Garments - Pattern making, spreading, marking, bundling, cutting, cutting tools and sewing machinery, trims and accessories, Quality control in garment production.

Section-4: Chemical processing

Basic knowledge of analytical and organic chemistry. Preparatory wet processing, chemistry and mechanism of dyes of natural, synthetics and their blends, dyeing techniques, dyeing machines, styles and methods of printing, various chemical finishes and their application techniques. Quality control parameters of water, various auxiliaries, dyeing, printing & finishing operations. Exposure of analytical and textile wet processing instruments. Sustainability aspects in textile wet processing, pollution control and effluent treatment.

Section-5: Textile testing

Important terms in textile quality control – mean, median, mode, SD, SE and CV, calculations related to test of significance, control charts and their applications in textile quality control, sampling techniques –objectives and types of sampling, count systems–tex and denier, conversion of yarn count from one system to other, resultant count of folded yarn, average count humidity control –standard and testing atmosphere, measurement of relative humidity, measurement of fibre length, strength, fineness, maturity and trash, application of HVI and AFIS, testing of wool and man-made staple fibres, measurement of fibre friction and crimp, determination of yarn count, twist, twist multiplier, strength, elongation, hairiness, evenness testing of yarn,principles and methods of evenness testing, evaluations and interpretation of evenness results, determination of fabric strength, stiffness, handle, drape, thickness, gsm, crease resistance, abrasion resistance,tear strength, bursting strength, pilling resistance, air / water permeability, dimensional stability, determination of fastness to washing, rubbing and light.