

**GOVERNMENT OF JAMMU AND KASHMIR**  
**J&K SERVICES SELECTION BOARD**

Hema Complex, Sector -3, Channi Himmat, Jammu

[www.jkssb.nic.in](http://www.jkssb.nic.in)

**NOTICE**

J&K Services Selection Board has advertised various posts vide **Advertisement Notification No. 04 and 06 of 2020**. Accordingly, the syllabi for the posts shown below, advertised vide aforementioned advertisement notifications is notified as per the details given in **Annexure "A" to "G"** to this notification. The candidates are also intimated that there shall be negative marking for wrong answers (-0.25 for each wrong answer) attempted in the said examination.

This notice is for the purpose of intimation to the concerned candidates only.

**Secretary**  
**J&K Services Selection Board**  
**Jammu**

No. SSB/Secy/Sel/2021/4826-29

Dated: 06.07.2021

Copy to the: -

1. Director Information, J&K Government, Jammu with the request to get the said notification published in at least three leading local newspaper of Jammu/Srinagar for three consecutive dates.
2. Private Secretary to the Chairman, JKSSB for information of the Chairman.
3. I/c Web site.
4. Syllabus file.

**Syllabi for the posts advertised vide Advertisement Notification Nos 04 and 06 of 2020**

<b>S.No.</b>	<b>Advertisement No.</b>	<b>Item No.</b>	<b>Department</b>	<b>Sub Deptt/Appointing Authority.</b>	<b>Name of the post</b>	<b>Cadre of the post</b>	<b>Syllabus Annexed as Annexure</b>
1	04 of 2020	055	Culture	(Archives,Archacology & Museums)	Conservation Assistant	Div.Kashmir	A
2	04 of 2020	060	Culture	(Archives,Archacology & Museums)	Chemical Assistant	Div.Kashmir	B
3	04 of 2020	061	Culture	(Archives,Archacology & Museums)	Lab. Assistant	Div.Kashmir	C
4	04 of 2020	056	Culture	(Archives,Archacology & Museums)	Surveyor(Archives)	Div. Jammu	D
5	04 of 2020	058	Culture	(Archives,Archacology & Museums)	Photographer	Div.Kashmir	E
6	04 of 2020	057	Culture	(Archives,Archacology & Museums)	Modeller	Div.Kashmir	F
7	06 of 2020	231	Home	Dte Forensic Science Laboratory	Laboratory Assistant	UT	G

## Annexure "A"

### Syllabus for Conservation Assistant

**Total Marks 120**

**Time 2 Hours**

#### **Part-I: 16 Marks**

01. Definition of Museum, Museology and Museography.
02. History and development of Indian Museum.
03. Museum Collection.
  - a. Primary source
  - b. Secondary source
  - c. Documentation system
  - d. Catalogue
  - e. Exhibition
04. What is documentation system?
05. Museum and an educational research institution.
06. Communication policy of the Museum.
07. Importance of design of Museum gallery and Museum building.
08. Museum as an agency of non-formal education.

#### **Part-II: 8 Marks**

##### **Delocalized Chemical bonding**

Conjugation, Cross conjugation, rule of resonance, steric inhibition of resonance.

Aromaticity: Huckel rule and concept of aromaticity, Molecular orbital description of aromaticity and antiaromaticity, Relation between NMR and aromaticity. Annulenes (Two to more than ten-electronic system), Aromaticity of hetero annulenes and fullerenes (C-60). Homoaromaticity. Hyper conjugation: Explanation of hyper conjugative effect, isovalent and sacrificial hyper conjugation.

#### **Part-III: 8 Marks**

##### **Stereochemistry:**

Elements of symmetry, Chirality due to chiral centre, molecules with more than one Chiral centre, thero and erythron isomers optical activity in the absence of chiral carbon (biphenyls, allenes and spirans). Chirality due to helical shape. Enantiotropic and diastereotropic atoms, groups and faces.

#### **Part-IV: 8 Marks**

##### **Reaction Mechanism/Structure and reactivity**

Types of mechanisms. Types of reactions, thermodynamic and kinetic requirements.

##### **Effect of structure on reactivity**

### **Part-V: 8 Marks**

#### **Aliphatic Electrophilic substitutions**

General mechanism of SE1, SE2 and SEireactions, Mechanism of reactions involving migration of double bond. Effect of substrate, leaving group and solvent on reactivity.

#### **Aliphatic Nucleophilic substitutions**

Mechanisms and stereochemical implications of SN2, SN1, SNi and neighbouring group participation (by double and single-bonds) reactions. Effect of substrate structure, attacking nucleophile, leaving group and solvent on the rates of SN1 and SN2 reactions.

### **Part –VI: 8 Marks**

#### **Elimination reactions:**

Discussion of E1, E2, E1cB and E2C mechanisms. Effect of substrate structure base and the leaving group on reactivity. Competition between substitution and elimination reactions. Stereochemistry and orientation of E2 elimination. Mechanism and orientation in pyrolytic eliminations, Shapiro reaction.

### **Part-VII 8 Marks**

#### **Aromatic Electrophilic Substitution**

The arenium ion mechanism, orientation and reactivity, energy profile diagrams. The ortho/ratio, ipso attack. Orientation of substitution in benzene rings having more than one substituents. Orientation in other ring systems. Mechanisms of diazonium coupling, Vilsmeier-Haack and Gattermann-Koch reactions and Fries rearrangement.

### **Part-VIII: 8 Marks**

#### **Aromatic Nucleophilic substitution**

Discussion of different mechanism (SN1; SNAr, Benzyne and srn!) Structure reactivity relationships. Effect of leaving group and attacking nucleophile. Mechanisms of Von-Richter, Sommelet-Hauser and Smiles arrangements and Chichibabin reaction.

### **Part-IX: 8 Marks**

#### **Free Radical Substitution**

Free radical substitution mechanisms. Mechanism at an aromatic substrate, neighboring group assistances, reactivity for aliphatic and aromatic substrates. Reactivity in the attacking radical. Effect of solvent on reactivity. Allylic alogenations (NBS), oxidation of aldehydes to carboxylic

acids, auto-oxidation, coupling of alkynes and arylation of aromatic compounds by diazonium salts, Sandmeyer reaction, free radical rearrangement and Hunsdiecker reaction.

**Part-X: 24 Marks**

**I). Preventive conservation in terms of:**

1. Light
2. Insects
3. Fungus
4. Atmosphere
5. Pollution

**II). Curative Conservation**

1. Conservation of Paper Material-Currency notes, judicial papers, manuscripts in museums.
2. Care of bronze, brass and other alloy artefacts and metal objects like iron, copper and zinc etc.
3. Conservation of terracotta.
4. Conservation of mannequins using base materials.
5. Basic steps in conservation of paper mache artefacts/objects.
6. Conservation of animas in aquatic medium using alcoholic medium.

**Part-XI: 16 Marks**

**General Knowledge**

1. What is Preventive conservation?
2. What is curative conservations?
3. What is conservation
4. What is archaeology?
5. What is archives? When was achieves established in J&K.
6. What is museum?
7. When was SPS museum Srinagar established/Give history?
8. When was Dogra art museum Jammu established?
9. What is documentation?
10. How is Identification of Antiquities made?
11. What types of antiquities were recovered from the Harwan during the course of excavation?
12. When was Burzaham excavated and what type of antiquities were recovered?
13. How many periods are traced in Burzaham? Give their details period wise.
14. When is world Heritage Day celebrated?
15. When is world heritage week celebrated?
16. When was International museum day celebrated?
17. What is Indian treasure true act 1978.
18. What is Antiquities and Art Treasure Act 1971 AD.

19. Define Ancient Monument and Archaeological sites and remains Act 1958?
20. Define J&K Ancient monuments and preservation act 1977 (samvath).

## Annexure "B"

### Syllabus for Chemical Assistant

**Total Marks 120**

**Time 2 Hours**

#### **Part-I: 16 Marks**

1. Definition of Museum, Museology and Museography.
2. History and development of Indian Museum.
3. Museum Collection.
  - a. Primary source
  - b. Secondary source
  - c. Documentation system
  - d. Catalogue
  - e. Exhibition
4. What is documentation system?
5. Museum as an educational-research institution.
6. Communication policy of the Museum.
7. Importance of design of Museum galleries and Museum building.
8. Museum as an agency of non-formal education

#### **Part-II: 8 Marks**

##### **Stereochemistry:**

Elements of symmetry, Chirality due to chiral centre, molecules with more than one Chiral centre, threo and erythro isomers optical activity in the absence of chiral carbon (biphenyls, allenes and spirans). Chirality due to helical shape. Enantiotropic and diastereotropic atoms, groups and faces. Conformational analysis of cycloalkanes and decalines. Effect of conformation and reactivity in acyclic and cycloalkanes. Conformation of sugars, steric strains due to unavoidable crowding.

#### **Part-III: 8 Marks**

##### **Reaction Mechanism/Structure and reactivity**

Types of mechanisms. Types of reactions, thermodynamic and kinetic requirements, Methods of determining reaction mechanism, isotope effects. Effect of structure on reactivity: Resonance and field effects, steric effect, quantitative treatment. The Hammett equation and linear free energy relationship, substituent and reaction constants. Taft equation.

#### **Part-IV: 8 Marks**

##### **Aliphatic Electrophilic substitutions**

General mechanism of SE<sub>1</sub>, SE<sub>2</sub> and SE<sub>i</sub> reactions, Mechanism of reactions involving migration of double bond. Effect of substrate, leaving group and solvent on reactivity. Stork-enamine reaction.

## **Part-V: 8 Marks**

### **Aliphatic Nucleophilic substitutions**

Mechanisms and stereochemical implications of SN<sub>2</sub>, SN<sub>1</sub>, SN<sub>i</sub> and neighbouring group participation (by double and single-bonds) reactions. Effect of substrate structure attacking nucleophile, leaving group and solvent on the rates of SN<sub>1</sub> and SN<sub>2</sub> reactions. Mixed SN<sub>1</sub> and SN<sub>2</sub> reactions. Nucleophilic substitution at allylic, aliphatic trigonal and vinylic carbon.

## **Part -VI 8 Mark**

### **Elimination reactions:**

Discussion of E<sub>1</sub>, E<sub>2</sub>, E<sub>1cB</sub> and E<sub>2c</sub> mechanisms. Effect of substrate structure base and the leaving group on reactivity. Competition between substitution and elimination reactions, Stereochemistry and orientation of E<sub>2</sub> elimination. Mechanism and orientation in pyrolytic eliminations, Shapiro reaction.

## **Part-VII 8 Marks**

### **Aromatic Nucleophilic substitution**

Discussion of different mechanism (SN<sub>1</sub>:SN<sub>Ar</sub>, Benzyne and S<sub>N</sub>!) structure reactivity relationships. Effect of leaving group and attacking nucleophile.

## **Part-VIII: 8 Marks**

### **Free Radical Substitution**

Free radical substitution mechanisms. Mechanism at an aromatic substrate, neighboring group assistances, reactivity for aliphatic and aromatic substrates. Reactivity in the attacking radical. Effect of solvent on reactivity. Allylic alogenations (NBS), oxidation of aldehydes to carboxylic acids, auto-oxidation, coupling of alkynes and arylation of aromatic compounds by diazonium salts.

## **Part-IX: 24 Marks**

### **I). Preventive conservation in terms of:**

1. Light
2. Insects
3. Fungus
4. Atmosphere
5. Pollution

### **II). Curative Conservation**

01. Conservation of coins-copper, silver and gold.
02. Conservation of military/warfare equipment's-swords, guns etc.
03. Basic conservation of textile objects like cleaning, darning, lining etc.

04. Basic Conservation of stuffed birds/animals-natural history collection.

**Part-III). 8 Marks**

How to make a condition report?

Basic things to keep in mind during conservation

**General Knowledge: 16 Marks**

1. What is Preventive conservation?
2. What is curative conservations?
3. What is conservation
4. What is archaeology?
5. What is archives? When was achieves established in J&K?
6. What is museum?
7. When was SPS museum Srinagar established? Give history.
8. When was Dogra art museum Jammu established?
9. When was Burzaham archaeological site excavated first?
10. How many periods are traced in Burzaham? Give their details period wise.
11. When is world Heritage Day celebrated?
12. When is world heritage week celebrated?
13. When is International museum day celebrated?
14. Define Indian treasure true act 1978/
15. Define Antiquities and Art Treasure Act 1971 AD.
16. Define Ancient Monument and Archaeological sites and remains Act 1958?
17. Define J&K Ancient monuments and preservation act 1977 (samvath).
18. How many monuments in J&K are declared as State Protected Monuments?
19. How many monuments in J&K are declared as national protected monuments and is presently under the control of ASI?
20. Where are the ancient Buddhist sites located in Jammu and Kashmir?

## Annexure "C"

### Syllabus for Laboratory Assistant

**Total Marks 120**

**Time 2 Hours**

#### **Part-I: 16 Marks**

##### **Stereochemistry:**

Elements of symmetry, Chirality due to chiral centre, molecules with more than one Chiral centre, threo and erythron isomers optical activity in the absence of chiral carbon (biphenyls, allenes and spirans). Chirality due to helical shape. Enantiotropy and diastereotropic atoms, groups and faces. Asymmetric synthesis, stereospecific reactions. (Diels Alder reaction, anti-addition of halogens, enzyme catalyzed reactions and Rhodium complex reaction). Stereoselective synthesis of ephedrine and epiandrosterone and pheromone.

#### **Part-II: 16 Marks**

##### **Delocalized Chemical bonding**

Conjugation, Cross conjugation, rule of resonance, steric inhibition of resonance.

**Aromaticity:** Huckel rule and concept of aromaticity, Molecular orbital description of aromaticity and antiaromaticity, Relation between NMR and aromaticity. Annulenes (Two to more than ten-electron system), Aromaticity of hetero annulenes and fullerenes (C-60). Homoaromaticity.

**Hyper conjugation:** Explanation of hyper conjugative effect, isovalent and sacrificial hyper conjugations.

**Tautomerism:** Different types including valence tautomerism.

#### **Part-III: 16 Marks**

##### **Reaction Mechanism/Structure and reactivity**

Types of mechanisms. Types of reactions, thermodynamic and kinetic requirements, Hammond postulate, Curtrin-Hammett principle. Potential energy diagrams, transition states and intermediates. Methods of determining reaction mechanism, isotope effects. **Effect of structure on reactivity:** Resonance and field effects, steric effect, quantitative treatment. The Hammett equation and linear free energy relationship, substituent and reaction constants. Taft equation.

#### **Part-IV: 8 Marks**

##### **Aliphatic Electrophilic substitutions**

General mechanism of SE1, SE2 and Sei reactions, Mechanism of reactions involving migration of double bond. Effect of substrate, leaving group and solvent on reactivity. Strok-enamine reaction.

## **Part-V: 8 Marks**

### **Aliphatic Nucleophilic substitutions**

Mechanisms and stereochemical implications of SN<sub>2</sub>, SN<sub>1</sub>, S<sub>N</sub>i and neighbouring group participation (by double and single-bonds) reactions. Effect of substrate structure, attacking nucleophile, leaving group and solvent on the rates of SN<sub>1</sub> and SN<sub>2</sub> reactions. Mixed SN<sub>1</sub> and SN<sub>2</sub> reactions. Nucleophilic substitution at allylic, aliphatic trigonal and vinylic carbon.

## **Part -VI 8 Mark**

### **Elimination reactions:**

Discussion of E<sub>1</sub>, E<sub>2</sub>, E<sub>1</sub>cB and E<sub>2</sub>C mechanisms. Effect of substrate structure base and the leaving group on reactivity. Competition between substitution and elimination reactions, Stereochemistry and orientation of E<sub>2</sub> elimination. Mechanism and orientation in pyrolytic eliminations, Shapiro reaction.

## **Part-VII 8 Marks**

### **Aromatic Electrophilic substitution**

The arenium ion mechanism, orientation and reactivity, energy profile diagrams. The ortho/para ratio, ipso attack. Orientation of substitution in benzene rings having more than one substituents. Orientation in other ring systems. Mechanisms of diazonium coupling, Vilsmeier-Haack and Gattermann-Koch reactions and Fries rearrangements

## **Part-VIII:**

### **Part- I: 8 Marks**

#### **I). Preventive conservation in terms of:**

1. Light
2. Insects
3. Fungus
4. Atmosphere
5. Pollution

#### **Part-II): 8 Marks**

##### **Curative Conservation terms of:**

1. Care of stone collection.
2. Conservation of polished/unpolished wood.
3. Conservation of Animal Skin, Photographs, sketches.

#### **Part-III). 8 Marks**

How to make a condition report?

Basic things to keep in mind during conservation

### **General Knowledge: 16 Marks**

1. What is Preventive conservation?
2. What is curative conservations?
3. What is conservation
4. What is archaeology?
5. What is archives? When was achieves established in J&K?
6. What is museum? When was SPS museum Srinagar established/Give history?
7. When was Dogra art museum Jammu established?
8. What is documentation?
9. How is Identification of Antiquities made?
10. What type of antiquities were recovered from the archeological site at Harvan during the course of excavation?

**Annexure "D"**  
**Syllabus for the post of Surveyor in the Department of**  
**Archives, Archaeology and Museum, Jammu**

**Total Marks 120**

**Time 2 Hours**

**A). 24 Marks**

- Panchtantra ke lekhak Vishnu Sharma ka Parichaya.
- Rupak ka lakshan evam bhed.
- Jyotish Shastra ka Udhbhav evam Vikas.
- Pali prakrit ki visheshta.
- RaMAYAN Kaleen Samaj

**B). 24 Marks**

- Upnishad-Samanaya parichaya.
- Kalhan ki Rajtarangini ka samanayan parichaya.
- Natya Shatra ki paribasha.
- Dhayan aur Samadhi me antar.

**C). 24 Marks**

- Manuscriptology and Palaeography (Ancient writing system).
- Meaning of Manuscriptology.
- Meaning of Palaeography.
- Difference between epigraphy and paleography.
- Knowledge of maintenance of Parchment, Birch Bark, Plam leaf Manuscripts.

**D). 24 Marks**

- Transcription/Deciphering of Manuscripts of Different scripts.
- Origin of Sharda, Takri, Gurmukhi and Devnagri Scripts.
- Introduction of Sharda, Takri, Gurmukhi and Devanagri Scripts.
- Reading And waiting skill of Sharda, Takri, Gurmukhi and Devangri Scripts.

**E). 24 Marks**

- History of Jammu and Kashmir.
- Widely spoken languages in J&K.
- Art and culture of J&K, Folk Art of J&K.
- Heritage of J&K (Tangible & Non-tangible).

## **Annexure "E"**

### **Syllabus for the post of Photographer**

**Total Marks 120**

**Time 2 Hours**

**(HISTORY OF INDIAN PHOTOGRAPHER (1840 to 1900))**      **15 Marks**

Importance of photography before independence – Photojournalists and Freelancing - Amateurs on and after Indian Mutiny in 1857- Indian Photographers Dr. Narayan Dajee – Lala Deen Dayal –Raja Savai Man Singh.

**(HISTORY OF INDIAN PHOTOGRAPHER 1900 ONWARDS)**

Honors of Deen Dayal before 1905-06- His establishments at Hyderabad - - Early photography Societies and its impact on Indian photography-Federation of Indian Photography- India International Photographic Council – Contemporary Indian Photographers – Atul Lasbekar, Mittal Bedi Brother – O.P. Sharma – Goutham Rathyesa – Dr. G. Thomas – Dr. N,Bhagwandas – O.C. Edwards – Raghubir Singh-Raghu Rai – T.N. Perumal – Raja Thriambak Raj Rau Bhahadur- P.N. Mehara-

**BASIC PHOTOGRAPHER**

**15 Marks**

**UNIT- I**

Camera-Type of Cameras-Pinhole Camera-Box Camera-View Camera-Ranger finder Camera-Single lens reflex Camera-Twin lens Reflex Camera – Polaroid Camera-Panoramic Camera-Process Camera- Cine Camera- Video Camera-Digital Camera- Different formats of Camera-Large Format-Medium Format-Small format.

**UNIT- II**

Optics-positive and negative lenses-Focal Length-Resolving power of lens-lens aberration and rectification- spherical chromatic-coma-astigmatism-distortion-Curvature of field-types of lenses-Normal-wide angle-telephoto-zoom lenses-supplementary lenses-digital Lenses.

**UNIT- III**

Anatomy of camera-body -lens-view finder-Aperture-Shutter-Horizontal -vertical moving shutters-Shutter Speed-Shutter efficiency—merits and de-merits of between the lens shutter and focal plane shutters-aperture and shutter relation-film compartment-self timer.

## **UNIT- IV**

Focusing-rack and pinon focusing-scale focusing-automatic focusing- types of Focusing in Digital-Exposure-Exposure meters-incident Light meters-reflected light meters-built in light meters-Depth of field-Circle of confusion-Depth of focus-Hyper focal distance.

## **PHOTO AESTHETICS**

**15 Marks**

### **UNIT- I**

Definition of Light-Principles of Light-Properties of Light-Reflection-Refraction-Absorption-Transmission-Dispersion-Light-Characteristics-Quality-Quantity-Color-Direct Light-Indirect Light-Diffused light-light as subject-Shadow as subject.

### **UNIT- II**

Need for the light in photography -Light Sources-Natural Light-Sunlight-Moon Light-Ambient- Artificial Light Source-Flood Light-Spot Light-Halogens Light-Electronic flash light-Digital lights.

## **BASIC PHOTO TECH**

**15 Marks**

### **UNIT- I**

1. Key light or main light or principle light.
2. Fill in light
3. Bounce light.
4. Diffused light & Directional Diffused Light.
5. Exposure Calculation & Light Meters.

### **UNIT- II**

Digital Basics-Introduction to Digital Imaging Principles.

### **UNIT- III**

The digital Camera-Components of Digital Camera-Sensor-Sensor Characteristics & Configuration-LCD Display-Menu & Operations.

### **UNIT- IV**

Digital Camera Lenses-Digital Zoom-Auto Focus System-Optical Zoom-Focal Length-Depth of field-Depth of focus.

## **DIGITAL PHOTOGRAPHY TECH**

**15 Marks**

## **UNIT- I**

How to use Digital Camera- shooting images with correct Exposure – Application of Histogram.

## **UNIT - II**

Understanding the applications of ISO settings and Noise Problems.

## **UNIT – III**

Shooting with manual Settings Auto Exposure Modes in Indoor & Studio Exercises.

## **ADVERTISING PHOTOGRAPHY**

**7 Marks**

### **UNIT-I**

Evolution of Advertising-The age of technology Print Media-Newspapers-Magazines-Electronic Media-Radio-Television-Literature.

## **APPLIED PHOTOGRAPHY**

**15 Marks**

### **UNIT-I**

Forms & Specializations in Photography-Agriculture-Sports-Table Top-Commercial Photography-Architectural Photography-Interiors Photography—Jewelry-People Photography-War Photography.

### **UNIT-II**

Scientific application-Ultra Violet Photography-Infrared Photography-Forensic Photography.

### **UNIT-III**

Medium format-Large format cameras-Working Principles-Camera Movements-Tripods-Digital Backs-Industrial Photography-Variou Branches-Interactions-Shooting Machineries-Shooting large Industrial Set Up-Techniques involved in shooting.

## **PRODUCT PHOTOGRAPHY TECH**

**8 Marks**

### **UNIT-I**

**Electronic Products**-Shooting Script-Lighting Schemes-Exercise

### **UNIT-II**

**House Hold Products**-Shooting Scripts-Lighting Schemes-Exercises

## **PORTRAIT PHOTOGRAPHY**

**15 Marks**

### **UNIT-I**

LIGHTING & EQUIPMENT

### **UNIT-II**

**CHARACTERISTIC PORTRAIT-** LIGHTEN FOR DIFFERENT PREDOMINANT  
FACES (Big forehead/chin/nose, etc.)

### **UNIT-III**

Window light portrait

### **UNIT-IV**

GLAMOUR PORTRAIT/CHILD PORTRAIT/CHARACTER PORTRAIT

### **UNIT-V**

WEDDING PORTRAIT-ON LOCATION-PROPOSAL PORTRAIT

## **Annexure "F"**

### **Syllabus for Modeller**

**Total Marks 120**

**Time 2 Hours**

- |   |          |
|---|----------|
| 1. History of Art                                   | 6 Marks  |
| 2. Antique study                                    | 6 Marks  |
| 3. Drawing, Drawing (Memory), Drawing (Perspective) | 12 Marks |
| 4. Modelling (Head Study)                           | 6 Marks  |
| 5. Sculptural Design (C)                            | 6 Marks  |
| 6. Sculpture (M)                                    | 6 Marks  |
| 7. Aesthetics                                       | 6 Marks  |
| 8. Drawing from Life                                | 6 Marks  |
| 9. Modelling (Full figure and bust study from life) | 6 Marks  |
| 10. Sculptural Composition                          | 6 Marks  |
| 11. Metal Sculpture & Bronze Casting                | 6 Marks  |
| 12. Anatomy   | 6 Marks  |
| 13. Sculpture (Modelling and Carving Design)        | 6 Marks  |
| 14. Dissertation                                    | 6 Marks  |
| 15. Drawing (Human Figure)                          | 6 Marks  |
| 16. Sculptural Composition (Relief)                 | 6 Marks  |
| 17. Sculptural Composition (Round)                  | 6 Marks  |
| 18. Portraiture                                     | 6 Marks  |
| 19. Metal Sculpture                                 | 6 Marks  |

## **Annexure "G"**

**Total Marks 120**

**Time 2 Hours**

### **Paper I (Non Medical Subjects)**

**13 Marks**

➤ **Chemistry**

- Chemical periodicity, main group of elements and their compounds, concept of acids and bases, Hard Soft acid Concept, Non aqueous solvents, organometallic compounds - synthesis bonding and structure and reactivity, characterisation of in organic compounds
- Periodic properties, atomic structure, chemical structure, chemical bonding, and molecular structure, electrochemistry, Basic principles of electrochemistry.
- Qualitative Analysis Sample preparation, dissolution, digestion, and fusion, nature of trace analysis, spot test and spectroscopic methods.
- Quantitative Analysis - Volumetric and gravimetric analysis
- Solvent Extraction.
- Chromatography- Introduction, Principle, procedure and applications.
- Spectrophotometry
- Forensic Chemistry and Toxicology.

➤ **Physics**

**12 Marks**

- Theory of motion, Special Theory of relativity, metrics system, Mechanics, Fundamentals of Nuclear Physics, magnetism and electricity, Basic concept of spectroscopy- Fundamental ideas, Holography, Heat, Light, Sound, Metric System, Fundamental Newtonian.
- Basic concept of spectroscopy
- Forensic Physics and forensic Ballistics.
- Forensic Questioned Documents.

➤ **Electronics**

**13 Marks**

- Electronics Devices and Circuits, Electronics Instrumentation, Digital Electronics, Basic concept of Computer Programming, Electronic devices( Active and Passive devices only), Digital electronics (Number system, logic operations, logic devices).

➤ **Mathematics**

**12 Marks**

- Differential equations, Differential Calculus, Real Analysis, Logic and Sets, Analytical Geometry, Integral Calculus, Algebra, Vector Calculus, Number Theory, Mechanics, Probability and Statistics, Numerical Methods, Complex Analysis, Linear Programming.

➤ **Kinematics**

**13 Marks**

- Displacement, velocity and acceleration of a particle moving in a straight line: Including the derivation and use of the formulae for constant acceleration, and the use of displacement-time and velocity-time graphs, Non-uniform acceleration problems involving the setting up and solution of first-order differential equations of the separable type, Appreciation of the identity  $dv/dt = v \, dv/dx$ , Angular speed, constant angular acceleration, Motion in a horizontal circle with uniform speed including the conical pendulum and banked tracks, Problems on projectiles: equation of the path of a projectile, its horizontal range, its associated time of flight, and the maximum height.

➤ **Computer Science/ Information Technology**

**12 Marks**

- Digital Forensics and Cyber crimes, working with windows and DOS system, current computer forensic tools, Computer Hardware, Computer Software, Assembly language and High Level Language, Multiprogramming and time sharing operating system, Fundamentals of operating system, Basics of internet, Programming languages, Artificial intelligence, Network security, Cyber laws, Digital image processing, information security.
- Number System
- M.S. Office
- Installation of Operating System and device drivers
- Basics of Networking
- IP Addressing

**Besides the candidates should possess the following**

➤ **Introduction to Forensics**

**15 Marks**

- Introduction, Definition, Principles, Scope and branches of Forensic Science.
- Development of Forensic Science in India.

- Crime Scene investigation and management, Physical Evidence
- Tools and techniques in Forensic Science.
- Basic Principles of Statistics  
Probability, Mean, Median, Mode, Chi square, F-Test, measurement of uncertainty, Systematic and random sampling
- **Verbal Ability:** **10 Marks**
- The candidates are expected to have good command over English language and its usage. It will be tested with focus on Articles, Verbs, Tenses, Prepositions, Synonyms, Antonyms, Punctuation, Reading comprehension, Cloze passage, Grammar, Idioms and phrases
- **Analytical Ability:** **10 Marks**
- The candidates will be tested primarily on the various cognitive abilities using qualitative reasoning. The broad areas will include Letter Series, Number Series, Relationship Concepts, Direction Sense, Concept of Speed-Time-Distance, Coding-Decoding, Analogy etc.
- **General Awareness and Current Affairs:** **10 Marks**
- The objective of this section is to assess candidates' general knowledge of the candidate.

**Total Marks 120**

**Time 2 Hours**

**Paper II (Medical Subjects)**

**1. Zoology**

**12 Marks**

- Biochemistry, Developmental biology, ecology, microbiology, evolutionary biology and animal behaviour, cell biology, Economic Zoology, Immunology, Genetics and Genomics, Human Physiology, Human Anatomy.
- Properties, functions and classification of carbohydrates, proteins, Nucleic acid and lipids.
- Forensic Anthropology.

**2. Botany**

**13 Marks**

- Plant taxonomy, Modern trends in taxonomy, Plant ecology, Plant Biotechnology, Plant Physiology, Biochemistry.
- Cell Biology and Genetics.
- Plant anatomy.

**3. Biology and Serology/Genetics/Molecular Biology/Biotechnology 13 Marks**

- Molecular Biology, Genetics and Genomics, Microbiology, Human Physiology, Human anatomy
- Types Formation, composition and Distribution of Body Fluids- Their analysis and forensic significance.
- ABO system of Blood Grouping, types and properties of antigens and antibodies, serological techniques.
- Properties, functions and classification of carbohydrates, proteins , Nucleic acid and lipids.
- Microscopy:- Principals and different types of microscopes, its forensic applications
- Nucleic Acids: Structure and functions, Isolation of DNA and RNA from biological sources, types of DNA and their role in human identification, DNA amplification, electrophoretic Techniques.
- History and concept of Mendelian Genetics, Molecular Genetics, Pedigree linkage, Genetic maps, laws of Mendelian Genetics, concept of population Genetics
- RNA Metabolism, DNA Metabolism, DNA Profiling, History of DNA typing, Human Genetics, Hereditary alleles, mutations, Hardy Weinberg law, Genetic Code, Variation and Polymorphism, Mitosis and Meiosis Division, extraction of DNA from different types of biological samples, protein synthesis.
- Immunology and animal Biotechnology.
- Forensic Odontology, Forensic Anthropology, Forensic Genetic.

**4. Biochemistry 12 Marks**

- Cell Biology, Properties, Classification and functions of carbohydrates, proteins, nucleic acid, lipids, amino acids, Introduction to enzymes and enzymes kinetics, Mechanism, Bio synthesis and degradation of Bio molecules, Basic introduction to membrane biology and bio energetics, and

thermodynamics, Basic principles functioning and application of spectroscopic techniques, chromatography, Gene organisation, hormones - Biochemistry and functions.

- Molecular Biology, Genetics and Genomics, Microbiology, Human Physiology, Human anatomy.
- Nucleic Acids: Structure and functions, Isolation of DNA and RNA from biological sources, types of DNA and their role in human identification, DNA amplification, electrophoretic Techniques.
- Hormone Biochemistry and Functions.

## 5. **Microbiology**

**12 Marks**

- History, classification and diversity of microbes, environmental microbiology.
- Basics of Biochemical Process: Bio synthesis and degradation of carbohydrates, lipids, proteins, and nucleic acids.
- Application of Microbiology in agriculture, waste management, food industry.
- Microbial physiology and metabolism, cell biology, Principles of Genetics, Biochemistry, Medical microbiology.
- Virology.
- Recombinant DNA Technology.
- Cell Biology and Biochemistry.
- Advances in Microbiology

## ➤ **Chemistry**

**13 Marks**

- Chemical periodicity, main group of elements and their compounds, concept of acids and bases, Hard Soft acid Concept, Non aqueous solvents, organometallic compounds - synthesis bonding and structure and reactivity, characterisation of in organic compounds
- Periodic properties, atomic structure, chemical structure, chemical bonding, and molecular structure, electrochemistry, Basic principles of electrochemistry.
- Qualitative Analysis Sample preparation, dissolution, digestion, and fusion, nature of trace analysis, spot test and spectroscopic methods.
- Quantitative Analysis - Volumetric and gravimetric analysis

- Solvent Extraction.
- Chromatography- Introduction, Principle, procedure and applications.
- Spectrophotometry
- Forensic Chemistry and Toxicology

**7. Besides the candidates should possess the following**

**Introduction to Forensics**

**15 Marks**

- Introduction, Definition, Principles, Scope and branches of Forensic Science.
- Development of Forensic Science in India.
- Crime Scene investigation and management, Physical Evidence
- Tools and techniques in Forensic Science.
- Basic Principles of Statistics  
Probability, Mean, Median, Mode, Chi square, F-Test, measurement of uncertainty, Systematic and random sampling

**Verbal Ability:**

**10 Marks**

- The candidates are expected to have good command over English language and its usage. It will be tested with focus on Articles, Verbs, Tenses, Prepositions, Synonyms, Antonyms, Punctuation, Reading comprehension, Cloze passage, Grammar, Idioms and phrases

**Analytical Ability:**

**10 Marks**

- The candidates will be tested primarily on the various cognitive abilities using qualitative reasoning. The broad areas will include Letter Series, Number Series, Relationship Concepts, Direction Sense, Concept of Speed-Time-Distance, Coding-Decoding, Analogy etc.

**General Awareness and Current Affairs:**

**10 Marks**

- The objective of this section is to assess candidates' general knowledge of the candidate.

**Secretary  
J&K Services Selection Board  
Jammu**