

JAMMU AND KASHMIR PUBLIC SERVICE COMMISSION

Solina Srinagar, Kashmir - 190001

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Subject: Filling up of the posts of Assistant Conservator of Forest (Wildlife), Range Officer Grade-I (Wildlife) and Range Officer Grade-I (Territorial) in J&K Forest Department.

Reference: FST/Ser/65/2020 dated 28.10.2020

NOTIFICATION NO: 34 - PSC (DR-P) OF 2023 **DATED: 06.07.2023**

Applications, through online mode, are invited from the applicants who are domiciled in the Union Territory of Jammu & Kashmir and are possessing the prescribed Academic/Professional qualification and age for the posts, Assistant Conservator of Forest (Wildlife), Range Officer Grade-I (Wildlife), in terms of J&K Wildlife (Gazetted) Service Recruitment Rules, 1994, notified vide SRO-158 of 1994 dated 12.8.1994 and Range Officer Grade-I (Territorial) in terms of J&K Forest Service (Gazetted) Recruitment Rules, 1970 notified vide SRO-359 dated 24.7.1970 read with SRO-106 dated 30.4.1992, SRO-272 dated 30.11.1992 and SRO-03 dated 05.01.1994, and Jammu & Kashmir Public Service Commission (Business and Procedure) Rules, 2021 as amended up to date. The details of posts are given in the following paras:-

IMPORTANT

- CANDIDATES ARE ADVISED TO UPDATE THEIR ONE TIME REGISTRATION BEFORE FILLING THE APPLICATION FORM.
- THE APPLICATION FORM TOGETHER WITH INSTRUCTIONS FOR FILLING UP THE APPLICATION FORMS WILL BE AVAILABLE AT THE WEBSITE OF THE COMMISSION FROM **10.07.2023**.
- CANDIDATES ARE ADVISED TO GO THROUGH THE INSTRUCTIONS AND ALL THE ELIGIBILITY CONDITIONS PRESCRIBED FOR THE POST BEFORE FILLING UP THE ONLINE APPLICATION FORM.
- LAST DATE FOR FILLING UP OF ONLINE APPLICATION FORM COMPLETE IN ALL RESPECTS ALONGWITH THE REQUISITE FEE (ONLINE MODE ONLY) IS **09.08.2023**.
- THE LAST DATE FOR RECEIPT OF ONLINE APPLICATIONS PROVIDED IN THE NOTIFICATION SHALL BE THE CUT-OFF DATE FOR DETERMINING THE ELIGIBILITY AS REGARDS ACQUISITION OF DOMICILE CERTIFICATE, EDUCATIONAL AND PROFESSIONAL QUALIFICATIONS.
- THE MINIMUM AND MAXIMUM AGE WILL HOWEVER BE RECKONED WITH REFERENCE TO **1ST JANUARY, 2023**.
- CANDIDATES CAN EDIT SOME OF THE FIELDS IN THEIR ONLINE APPLICATION FORM W.E.F **10.08.2023 TO 12.08.2023** (UP TO 11.59 PM). INSTRUCTIONS IN THIS REGARD WILL BE SEPARATELY MADE AVAILABLE ON THE WEBSITE.
- CANDIDATES ARE REQUIRED TO UPLOAD ALL THE MANDATORY PRESCRIBED/REQUISITE DOCUMENTS ALONGWITH THE ONLINE APPLICATION FORM.
- IN CASE THE MANDATORY PRESCRIBED/REQUISITE DOCUMENTS ARE NOT UPLOADED WITH THE ONLINE APPLICATION FORM, THE APPLICATION FORM/CANDIDATURE OF THE APPLICANT IS LIABLE TO BE REJECTED WITHOUT ANY FURTHER NOTICE.
- CANDIDATES WILL NOT BE REQUIRED TO SUBMIT A HARD COPY OF THE ONLINE APPLICATION FORM OR ANY OTHER DOCUMENTS TO THE COMMISSION AT THE TIME OF FILLING UP ONLINE APPLICATION FORM.
- THE CANDIDATE WILL HOWEVER BE REQUIRED TO PRESENT/PRODUCE A DOWNLOADED COPY OF THE ONLINE APPLICATION FORM ALONGWITH THE ORIGINAL CERTIFICATES AT THE TIME OF INTERVIEW.
- CANDIDATES ARE ADVISED IN THEIR OWN INTEREST TO SUBMIT ONLINE APPLICATIONS MUCH BEFORE THE CLOSING DATE AND NOT WAIT TILL THE LAST DATE TO AVOID THE POSSIBILITY OF DISCONNECTION/INABILITY TO PAY FEE OR FAILURE TO LOGIN TO THE ONLINE APPLICATION PORTAL ON ACCOUNT OF HEAVY LOAD ON THE WEBSITE DURING THE CLOSING DAYS.

2- NAME OF THE POST, PAY SCALE AND THE CATEGORY WISE BREAKUP.

S. No.	Name of the Post	OM	RBA	TOTAL
1	Assistant Conservator of Forest (Wildlife) (Level-8 (47600-151100))	01	01	02
2	Range Officer Grade-I (Wildlife), (Level-6E (35900-113500))	01	-	01
3	Range Officer Grade-I (Territorial), (Level-6E (35900-113500))	01	01	02

3- Prescribed qualification

Designation	Qualification
Assistant Conservator of Forest (Wildlife)	M. Sc. Wildlife Science, Bachelor's Degree in Natural Science with Diploma in Wildlife Management.
Range Officer Grade-I (Wildlife),	<p>i. B. Sc with Botany as one of the subjects or B. Sc Agriculture or B. Sc Forestry.</p> <p>ii. Physical Standard</p> <p>a. Height=163 cms</p> <p>b. Chest girth (fully expanded 84 cms chest expansion 5 cms</p> <p>c. Physical test consisting of a walk test of 25 Kms to be completed in four hours.</p> <p>d. D. Physical fitness certificate from CMO.</p>
Range Officer Grade-I (Territorial),	<p>i. B. Sc Forestry or its equivalent from any University recognized by the Indian Council of Agriculture Research.</p> <p>ii. Physical Standard</p> <p>a. Height for general category= 5'.6"</p> <p>b. Chest girth (fully expanded 84 cms chest expansion 5 cms</p> <p>c. Physical test consisting of a walk test of 25 Kms to be completed in four hours.</p> <p>d. Physical fitness certificate from CMO.</p>

4- AGE AS ON 1ST, JANUARY, 2023.

The requirement of age for candidates belonging to Open Merit (OM) & Reserved Categories is as follows:-

S.NO.	CATEGORY	AGE LIMIT	NOT BORN AFTER	NOT BORN BEFORE
1	OM	40	01.01.2005	01.01.1983
2	RBA	43	01.01.2005	01.01.1980
3	IN SERVICE CANDIDATE	40	01.01.2005	01.01.1983

THE CANDIDATES WHO ARE ALREADY IN GOVERNMENT SERVICE AND INTEND TO APPLY AS IN-SERVICE CANDIDATES SHALL, BESIDES APPLYING ONLINE, ROUTE THEIR APPLICATION FORM THROUGH ADMINISTRATIVE DEPARTMENT.

5- RESERVATION

A candidate seeking his/her consideration under a Reserved Category must ensure that he/she possesses a valid requisite Category certificate on the cut-off date.

- i. The candidature will be provisional till the genuineness of the reserved category certificate is verified by the Appointing Authority.
- ii. Candidates may note that in case a claim for reservation is made on the basis of false/fake/fraudulent certificate, he/she shall be debarred from participation in the selection process conducted by the J&K Public Service Commission, in addition to any other penal action as may be deemed appropriate.

6. DOMICILE

The candidate should be a Domicile of the Union Territory of Jammu & Kashmir. The candidate must possess the Domicile Certificate issued by the Competent Authority in the prescribed format as on the last date prescribed for submission of online application form.

7. REQUISITE FEE

After successful submission of the online application form, candidate will be required to deposit requisite fee through online mode. The amount of fee to be paid is given below:

General Category	• Rs.1000.00
Reserved Categories	Rs.500.00
PHC Candidates	Nil

NOTE

The Application Form submitted without deposition of the fee, which gets substantiated through reflection of the same on the application form, such application form shall be treated as incomplete and candidature shall be deemed to have been rejected without any notice. No representation against such rejection shall be entertained.

Submission of multiple applications by way of prefixing Mr./Ms. or through generation of multiple User ID's or any other mode, followed by either non-payment of fee particulars or fee particulars (TID) of one application (RID) being mentioned against another application with a different RID would lead to rejection of the online application. The applicants who are submitting multiple applications should note that only the applications with higher Registration ID (RID) number shall be entertained by the Commission and fee paid against one RID shall not be adjusted against any other RID number. Besides strict disciplinary action shall be taken including the cancellation of candidature and debarment for future examinations of J&K PSC will be taken against such applicants.

8- DOCUMENTS TO BE UPLOADED

While filling the online application form the applicants are required to upload the documents as per details given below:

• DOCUMENTS (MANDATORY):-

- i. Date of Birth certificate (Secondary School/Matric Certificate- 01 leaf.
- ii. Domicile certificate – 01 leaf
- iii. B. Sc Degree in the relevant subject.
- iv. PG Degree certificate.
- v. Diploma Certificate

• DOCUMENTS (MANDATORY) IF CLAIMING BENEFIT UNDER THAT CATEGORY:-

- i. Valid category certificate – 01 leaf
- ii. In-Service Certificate Signed by HOD

ANY OTHER DOCUMENT FOR WHICH THE CANDIDATE IS CLAIMING WEIGHTAGE AS PER J&K (BUSINESS AND PROCEDURE)RULES2021:-

- i. M. Phil certificate alongwith result notification.
- ii. Ph.D Degree certificate.
- iii. NCC C certificate/NSS(National Level Two Campus).01 in NCC activities. 01 leaf.

IT MAY BE NOTED THAT NO FURTHER OPPORTUNITY TO UPLOAD ANY DOCUMENT SHALL BE PROVIDED HEREAFTER AND ACTION UNDER RULES INCLUDING REJECTION OF APPLICATION FORM/CANDIDATURE ETC WILL BE TAKEN.

9. SCHEME OF EXAMINATION

I. Assistant Conservator of Forest (Wildlife)

(The Syllabus /scheme of selection shall be notified separately)

SCHEME OF SELECTION

II. Range Officer Grade-I (Wildlife)/Range Officer Grade-I(Territorial)

The examination shall be conducted in the following order:-

- i. Written test.
- ii. Viva voce Test
- iii. Walking Test.
- iv. Medical Test.

(I) Written Test:-

Main Examination (Essay Type)

There will be four subjects in the Main examination. The time allowed for each paper shall be three hours. The paper wise marks for written examination and viva voce is as under:-

<u>Compulsory Subjects</u>	<u>Maximum Marks</u>
General English	100
An Essay to be written in English	100
General Knowledge	200

Optional Subject (Any one of the following subjects)

a. Botany	}	200
b. Silviculture	}	
c. Field Crop	}	

(II) Viva Voce

The candidate who obtained minimum of 40% marks in each subject/paper shall be called for the viva voce test in the ratio of 1:5 (posts : candidates) in each category of reservation on the basis of their score in the written examination. The viva voce test shall carry 100 marks.

Total Marks (Written+ Viva Voce):- 700

(III) Walking Test

The date and time for the waling test will be intimated to the eligible candidates.

(IV) Medical Test:-

The successful candidates will be required to undergo a medical test before the Medical Board. The candidates shall have to pay fee to the Medical Board as may be prescribed for the said Medical examination.

NOTE

Instruction to appear before the Medical Board shall not be understood to mean that a candidate, if found fit, will necessarily be selected and appointed. Summoning of candidates for medical examination conveys no assurance whatsoever that they will be selected or appointed. Appointment orders of selected candidates will be issued by the Government in accordance with the availability of vacancies.

10. The syllabus for the post of Range Officer-I (Wildlife) and Range Officer Grade-I (Territorial) is enclosed at annexure-"A".

Interview

In the interview, the candidates will be asked, in addition to the demonstration of domain knowledge/skills/teaching skills questions on matters of general interest and matters related to the post for which the candidate is being interviewed. The object of the interview is to assess the personal suitability of the candidate for a career in public service. The interview test is intended to judge the mental calibre of a candidate. In broad terms, this is really an assessment of not only the intellectual qualities but also social traits and interest of the candidate in current affairs. Some of the qualities to be judged are mental alertness, critical powers of assimilation, clear and logical exposition, balance of judgement, variety and depth of interest, ability for social cohesion and leadership, intellectual and moral integrity.

11. IMPORTANT INSTRUCTIONS REGARDING FILLING UP OF ONLINE APPLICATIONS ARE GIVEN HEREIN BELOW:

- a. Candidates are required to apply online through the website of the Commission i.e. <http://www.jkpsc.nic.in>. No other means/ mode of application shall be accepted.
- b. Candidates are first required to go to the JKPSC website www.jkpsc.nic.in and click on the link "**One Time Registration**" or click on Login menu if you have already created your profile with the JK PSC.
- c. After logging into your account, candidates are required to fill all the requisite fields of One Time Registration (OTR) i.e. personal information, contact information & educational qualification, service details etc.
- d. The candidate shall also be required to upload the image of date stamped recent passport size color photograph and signature. The photograph should not be taken earlier than 01.01.2023.
- e. Size of the photograph (passport size) and signature must be between 10kB to 20kB in *.jpeg or *.jpg only.
- f. After successful submission of all the details in your OTR account, check the eligibility conditions as mentioned in the advertisement notification before applying for the post.
- g. On Clicking on the "show examination" a window will appear on your computer screen. Select the month of the advertisement notification for which you want to apply, a link(s) for the post(s) will appear on the computer screen.
- h. An "APPLY" button is shown against the respective post and the candidates will click on the APPLY button against the post he/she is eligible.
- i. On clicking "APPLY" button, an instruction window will appear. Candidates should read instructions carefully before clicking on "APPLY" button at the bottom of the webpage.
- j. On clicking "APPLY" button, the system will display all facts/particulars that a candidate may have mentioned while filling up the necessary fields of his/her OTR account. Candidate shall fill up the remaining required fields in the application form and accept the declaration thereof.
- k. Once the candidate is satisfied *about the correctness* of the filled in details, then, he or she may click on "SUBMIT" button to finally push the data into server with successful submission report.
- l. On successful submission of the basic details, the candidates will be required to pay the online fee and uploading of the documents, for final submission of the online application form.
- m. Candidates can pay the requisite fee through online mode in the "SUBMITTED APPLICATIONS" menu in your account.
- n. After successful payment of the fee, the fee status will get reflected on the Online Application form. Candidates can check the fee status by clicking on the **Print Application Button** in the submitted Applications menu in your JKPSC account. In case the payment status shows either "not submitted or under processing or status has not been reflected on your submitted application form", candidates(s) are advised to contact the JKPSC office at Solina Srinagar/Resham Ghar Colony Jammu immediately for clarification. Further where the online fee is paid through other service providers the candidate must ensure that not only the amount of fee is debited from his/service provider's Account but also credited into the official account of JKPSC.
- o. After successful submission of fee, the candidates will be required to upload requisite documents as specified in the advertisement/application form.

- p. The candidate would be able get the printout of his/her submitted application only after the payment of the requisite fee and uploading of requisite documents.
- q. Please note that the above procedure is the only valid procedure for applying. No other mode of application or incomplete steps would be accepted and such applications would be rejected.

12. EDITING OF THE ONLINE APPLICATION FORM

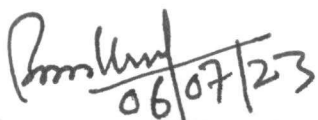
Candidates who have successfully submitted the online application form along with requisite fee will be allowed to edit some of the fields in their submitted online application form within three days after the cut-off date i.e. from -----. Detailed instruction in this regard will be made available on the website.

13. ACTION AGAINST CANDIDATES FOUND GUILTY OF MISCONDUCT

Candidates are advised not to furnish any particulars that are false or suppress any material information.

A candidate who is, or has been, declared by the Commission, to be guilty of:

- a. obtaining by wrongful support his/her candidature by any means, or
- b. impersonating, or
- c. procuring impersonation by any person, or
- d. submitting fabricated documents or documents which have been tampered with or
- e. making statements which are incorrect, or false or suppressing material information, or
- f. resorting to any other irregular or improper means in connection with his/her candidature for the selection, or
- g. using unfair means, or
- h. writing irrelevant matter including obscene language or pornographic matter, in the script, or
- i. misbehaving in any other manner , or
- j. harassing or doing bodily harm to the staff employed by the commission for the conduct of their test, or
- k. attempting to commit or , as the case may be, abetting the commission of all or any of the acts specified in the foregoing clauses may, in addition to rendering himself/herself liable to criminal prosecution shall be liable to;
 - a. to be disqualified by the Commission from selection for which he/she is a candidate , and/or
 - b. to be debarred either permanently or for a specified period:-
 - i. By the Commission from any selection held by them.
 - ii. By the Union Territory Government from any employment under them, and
 - c. if he/she is already in service under Government, disciplinary action can be taken against his/her under the appropriate rules.


(Bashir Ahmad Dar) JKAS
Secretary
J&K Public Service Commission

No: PSC/DR/Range Officer/2020

Dated: 06.07.2022

Copy to the: -

1. Commissioner/Secretary to the Government, Forest Department, Civil Secretariat, J&K
2. Director Information Department, J&K. He is requested to publish the notification in all the leading local dailies of UT of J&K for three consecutive days.
3. General Manager, Government Press for publication of the notification in the next issue of the Government Gazette.
4. P.S. to Chairman, J&K Public Service Commission for information of the Hon'ble Chairman.
5. P.S. to Member _____, J&K PSC for information of Hon'ble Member.
6. P.A. to Controller of Examinations, J&K Public Service Commission
7. In charge website, J&K Public Service Commission for uploading of the Notification on the website.
8. Notice Board, J&K Public Service Commission, Srinagar/Jammu.
9. Stock file/Main file.

Annexure-"A"

Syllabus for the posts of Range Officers Grade-I (Wildlife)

Total: 100 marks

General Sciences:-

Questions on General Science will cover general appreciation and understanding of science, including matters of everyday observation and experience, as may be expected of a well-educated person who has not made a special study of any specific discipline. The questions will be designed to test elementary knowledge of the candidates.

30 Marks

Geography:-

Questions on the geography of India will relate to physical, social and economic Geography of the country, including the main features of Indian agricultural and natural resources including general issues on Environmental ecology, Bio-diversity and Climate Change- that do not require subject specialization; questions will also be asked to test the candidate's awareness of the role and impact of science and technology in India; emphasis will be on applied aspects.

30 Marks

Current events of National and International importance:-

40 Marks

Note: - Questions pertaining to the State of Jammu and Kashmir may also be asked.

Syllabus for the written examination

(a) Compulsory subjects

1. General English
This paper will be of 10+2 standard and shall consist of a short essay, comprehension, precis writing, usage and vocabulary.
2. Essay in English
One essay to be written on a topic out of given topics in the paper. The essay will be of 10+2 standard.
3. General Knowledge
This paper will contain questions on Elementary Science, Geography and Current events etc.

Optional Papers/Subjects

The candidate may choose only one paper from amongst the three optional papers/subjects. The scope of the syllabus will be broadly of bachelor's degree level.

(b) SYLLABUS OF OPTIONAL PAPERS/SUBJECTS

(i) BOTANY

1. Microbes and Microbiology.
 - 1.1 General account of viruses, Mycoplasma and Cynaobacteria.
 - 1.2 Bacteria-Structure, Nutrition and reproduction (A general account with broad classification).
 - 1.3 Economic importance of Bacteria; Bacteria as indicators of pollution; bacteria in industry and agriculture.
 - 1.4 Microbiology of air, water, soil and food materials.
2. Algae.
 - 2.1 General characteristics and classification of algae (Fritsch 1935,1945)
 - 2.2 Important features of Chlorophyceae and Xanthophyceae, life histories of Chlamydomonas, Volvox, Oedogonium, Coleochaete, Chara, and Vaucheria.
 - 2.3 Important features of Phaeophyceae and Rhodophyceae, Life histories of Ectocarpus, Sargassum and Polysiphonia.
 - 2.4 Economic importance of algae-algae as food, feed and source of fibre; algae as indicators of pollution; algae blooms; algae toxins; algae in industry.



3. **Fungi**

- 3.1 General characteristics and classification of fungi (Ainsworth (1971), Economic importance of fungi, General account of Lichens.
- 3.2 Important features of Mastigomycotina; Life histories of Pythium and Allomyces.
- 3.3 Important characteristics of Zygomycotina and Ascomycotina; Life history of Mucor, Saccharomyces, Eurotium and Peziza.
- 3.4 Important characteristics of Basidiomycotina and Deuteromycotina; life histories of Puccinia, Agaricus, Collectotrichum and Cercospora.

4. **Bryophytes**

- 4.1 General characteristics, classification (Smith, 1955) and Alternation of Generations in Bryophytes.
- 4.2 Structure and reproduction in hepaticae with reference to Marchantia.
- 4.3 Structure and reproduction in Anthocerotales and Musci with reference to Anthoceros and Funaria.
- 4.4 Importance of bryophytes in preventing soil erosion; management of forest floors; monitoring and controlling pollution; geobotanical prospecting; in horticulture and as source of antibiotics.

5. **Pteridophytes.**

- 5.1 General Characteristics, classification (Sporne 1975) and origin of pteridophytes (the first vascular plants); stelar system and alternation of generations in pteridophytes.
- 5.2 Important characteristics of Psilopsida and Lycopsida; structure and reproduction in Psilotum, Rhynia, Lycopodium and Selaginella.
- 5.3 Important characteristics of sphenopsida, structure and reproduction in Equisetum.
- 5.4 Important characteristics of pteropsida, structure and reproduction in pteris and Marsilea.

6. **Cell Structure.**

- 6.1 Cell wall; Primary cell wall, its structure, formation and function.
- 6.2 Plasma membrane; The bilayer lipid structure fluid mosaic model, its functions.
- 6.3 Cell organelles: structure and functions of E.R., Golgi bodies, Plastids and mitochondria.
- 6.4 Ultra-structure of nuclear membrane. Nucleolus: Organization and function.

7. **Chromosome structure and multiplication.**

- 7.1 chromosome structure : physical and chemical structure and importance of centromere and telomere; sex chromosomes.
- 7.2 Organization of DNA in prokaryotica and eukaryotic genomes. Role of proteins; nucleosome model.
- 7.3 Equational division, factors triggering mitosis, various stages of mitosis.
- 7.4 Reductional division, detailed structure of pairing and crossing over.

8. **Genome organization and function/Gene protein.**

- 8.1 Basic unit: DNA, structure and replication; satellite and repetitive DNA.
- 8.2 Gene function: Genetic Code, transcriptions; Regulation of gene expression in prokaryotes and eukaryotes.
- 8.3 Protein synthesis: Ribosomes and tRNA, structure and function, 1D, 2-D, and 3 D structure of proteins.
- 8.4 Extranuclear genome: structure and functions of mitochondrial and Plastid DNA, Plasmids.

9. **Alterations on the genome.**

- 9.1 Structural alterations; types, effect and detections of intra chromosomal alterations- deletions, duplications and inversions.

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- 9.2 Mechanism, effect and detection of interchromosomal alterations.
- 9.3 Euploidy-type, origin and effect with suitable examples.
- 9.4 Aneuploidy -types, origin and effect with suitable examples.

10. Alterations in the basic unit of inheritance and inheritance patterns.

- 10.1 Gene/Point mutations-spontaneous and induced;mechanism of induction; uses.
- 10.2 Shift of Genes through mobile elements-transposons, mechanism and salient features, DNA damages, causes and repair mechanisms.
- 10.3 Mendelism, laws of segregation and independent assortment, allelic and non-allelic interactions.
- 10.4 Linkage and recombination; linkage in mapping of genes.

11. Seed Plants-origin evolution and characteristics.

- 11.1 Characteristics of seed plants; evolution of seed habit seed plants with and without fruit.
- 11.2 Geological time scale; fossilization-process and types; age of fossils and their importance.
- 11.3 General characteristics of gymnosperms; classification of gymnosperms by Coulter and Chamberlain.
- 11.4 Evolution and diversity of gymnosperms.

12. Morphology and Reproduction in Gymnosperms

- 12.1 Morphology, anatomy, reproduction and life cycle in Cycas.
- 12.2 Morphology, anatomy, reproduction and life cycle in Cedrus.
- 12.3 Morphology, anatomy, reproduction and life cycle in Ephedra.
- 12.4 Fossil gymnosperms : Bennettitales- History and

13. Angiosperm origin and nomenclature.

- 13.1 Origin and evolution of angiosperms, characteristics and examples of some primitive angiosperms (Magnolia). Fossil angiosperms- a general account with reference to angiosperm floras.'
- 13.2 History of angiosperm taxonomy; Aims and Fundamental components of taxonomy;- Taxonomy, omega taxonomy and holotaxonomy.
- 13.3 Taxonomic identification; taxonomic keys and literature (Floras, Monographs and reviews).
- 13.4 Botanical nomenclature-principles and rules; taxonomic ranks; type concept and principle of priority.

14. Classification and tools in angiosperm taxonomy

- 14.1 Salient features of the classification of Bentham and Hooker, merits and demerits.
- 14.2 Salient features of the classification of Engler and Prantl; merits and demerits.
- 14.3 Contribution of cytology to taxonomy.
- 14.4 Contribution of phytochemistry and taxometrics to taxonomy.

15. Diversity of angiosperms.

- 15.1 Morphological diversity of families Ranunculaceae, Brassicaceae, Malvaceae and Rutaceae.
- 15.2 Morphological diversity of families Fabaceae, Rosaceae, Apiaceae and Acanthaceae.
- 15.3 Morphological diversity of families Apocyanaceae, Solanaceae, Lamiaceae and Euphorbiaceae.
- 15.4 Morphological diversity of Families Liliaceae, Amaryllidaceae and Poaceae.

16. Structure, Development and Reproduction in seed bearing plants.

- 16.1 Basic body plan of a flowering plants; Modular type of growth.

- 16.2 Diversity in plant form in annuals, biennials and perennials.
16.3 Convergence of evolution of tree habit in gymnosperms monocotyledons and dicotyledons.
16.4 The largest and oldest trees of the world; canopy architecture.

17. **Root and Shoot.**

- 17.1 Apical meristem of root, its position, structure and derivatives.
17.2 Structural modifications of root for storage, respiration, reproduction and for interaction with microbes.
17.3 Apical meristem, its organization and role.
17.4 Vascularisation of primary shoot in monocotyledons and dicotyledons; formation of internodes; branching pattern; monopodial and sympodial growth.

18. **Secondary and Basic structure.**

- 18.1 Vascular cambium and its derivatives; wood structure in relation to translocation of water and minerals.
18.2 Growth rings; heart wood, sapwood, role of woody Skelton.; structure and functions of secondary phloem; periderm.
18.3 Leaf, Initiation; development, arrangement and diversity in size and shape; senescence and abscission.
18.4 Internal structure of leaf in relation to photosynthesis and water loss; adaptation to water stress.

19. **Flower**

- 19.1 Flower: A modified shoot; structure, development, variety and functions of flower.
19.2 Structure of anther and Pistill; Male gametophyte and female gametophyte.
19.3 Pollination: Type, attractants and rewards for pollination; Polen-Pistil interaction, self incompatibility.
19.4 Double fertilization : Endosperm-typescytology and function; formation of fruit.

20. **Units and mechanisms of multiplication.**

- 20.1 Seed formation and its significance.
20.2 Seed dormancy; Genetic recombination and replenishment through seed.
20.3 Seed dispersal strategies.
20.4 Vegetative propagation-grafting, layering, budding and economic aspects.

21. **Physiology, Biochemistry and biotechnology.**

- 21.1 Discovery and nomenclature of enzymes, characteristics of enzymes, concept of holoenzymes, apoenzyme, eo-enzyme and co-factors.
21.2 Regulation of enzyme activity, mechanism of enzyme action.
21.3 Importance of water to plant life; physical properties of water .
21.4 Diffusion of water, Osmosis, absorption, transport of water through xylem & transpiration; physiology of opening and closing of stomata.
21.5 Macro and Micro elements, importance of mineral nutrients to the plant and their role, mineral uptake, deficiency and toxicity symptoms.
21.2 Mechanism of transport of organic substance in phloem, source sink relationship, factors affecting translocation.
21.7 Significances and historical aspects of photosynthesis, photosynthetic pigments, action spectra and enhancement, effect.

- 21.8 Concept of the plant cycle: C4 pathway, CAM plants, photorespiration
- 21.9 ATP- the biological energy, currency, aerobic and anaerobic respiration, krebs cycle, electron transport mechanism (Chemio-osmotic theory)
- 21.10 Redox potential, oxidative phosphorylation, pentose phosphate pathway.
- 21.11 Biology of nitrogen fixation, importance of nitrate reductase and its regulation, ammonium assimilation.
- 21.12 Structure and function of Lipids, Fatty acid and biosynthesis B- Oxidation, saturated and unsaturated fatty acids, storage and mobilization of fatty acids.
- 21.13 Definition and phases of growth, development and kinetics of growth, seed germination and factors of their regulation.
- 21.14 Plant movements- the concept of photoperiodism, physiology of flowering, florigen concept, biological clocks, physiology of senescence, fruit ripening.
- 21.15 History and discovery of plant hormones, auxins, gibberellins, cytokinins, absoisic acid and ethylene, biosynthesis and mechanism of action.
- 21.16 Photomorphogenesis: phytochromes and cryptochromes, their discovery, physiological role and mechanism of action.
- 21.17 Tool and techniques of recombinant DNA Technology, cloning vectors: genomic and DNA library.
- 21.18 Transposable elements, techniques of gene mapping and chromosome walking.
- 21.19 Functional definition of biotechnology, basic concepts for plant tissue culture, cellular totipotency, differentiation and morphogenesis.
- 21.20 Biology of Agrobacterium, vectors for gene delivery and market genes, salient achievements in crop biotechnology.

22. Plant and Environment

- 22.1 Atmosphere-gaseous composition: water-water cycle, and its significance, global radiation, photosynthetically active radiation, temperature.
- 22.2 Soil structure; soil profiles and development, physico-chemical properties of soil and biotic components.
- 22.3 Morphological, anatomical and physiological responses of plants to water (hydrophytes and xerophytes) and salinity.
- 22.4 Morphological, anatomical and physiological responses of plants to light (potoperiodism, heliophytes, sciophytes) and temp. (thermoperiodically and vernalization).
- 22.5 Population ecology, growth curves: Ecotypes and ecads.
- 22.6 Community ecology: Community characteristics; frequency, density, cover, life forms, biological spectrum, ecological succession.
- 22.7 Ecosystem: structure, abiotic and biotic components, food chain, food web, ecological pyramids and energy flow.
- 22.8 Biogeochemical cycles of carbon, nitrogen and phosphorus.

23. Natural Resources and Management

- 23.1 Biogeographical regions of India.
- 23.2 Vegetation types of India; Forests and grasslands.
- 23.3 Strategies for environmental Management.
- 23.4 Conservation of Natural resources.

24. Utilization of plants.

- 24.1 Food Plants: origin of wheat, maize and potato and their cultivation in India.

- 24.2 Fibres: cultivation and processing of cotton and jute.
- 24.3 Beverages: Botany and processing of tea and coffee.
- 24.4 Spices: history and the parts used of Asafetida, Cumin, Fennel, Coriander, Cloves, Cammonum and Cardamom.

- 25. **Utilization of Plants.**
- 25.1 Veg. oils: Source of vegetable oils: Botany, Cultivation and utilization of Groundnut, mustard and coconut.
- 25.2 A general account of firewood and timber sources of J&K State and utilization of Bamboos.
- 25.3 Medicinal plants of J&K State: a general account.
- 25.4 Rubber: sources of rubber, extraction and processing of commercial rubber.

(II) SILVICULTURE

1. Principles of Silviculture

Definition of Forestry: Stages of forestry development and its influence on forestry today. Definition of silvics and silviculture role of silviculture. Major forest types, distribution and composition in India and J&K.

Study of site factors like climatic, edaphic, physiographic and biotic in relation to forest.

Classification of climatic factors, the role played by light, temperature, rainfall, snow, wind, humidity and evaporation in relation to forest vegetation.

Edaphic factors of biological agencies parent rock topography etc. on the soil formation. Soil profiles physical and chemical properties, mineral nutrients, nutrient cycling, soil moisture and their influences on forest production.

Tree growth photosynthesis biotic factor-influence of plants, insects, wild animals man and domestic animals on vegetation.

Tree growth photosynthesis, respiration, translocation and transpiration. Cambial development, growth rings, effects on environment on cambial development. Shoot and crown development. Flowering, fruiting and seed production.

Root growth-distribution and biomass. Environmental effects on development silvicultural manipulation of root growth.

Stand dynamics- Plant succession, competition and tolerance stand development- basal area and yield table.

2. Practices of Silviculture

Classification of forests. Forest regeneration, natural, artificial (Plantation forests) and mixed regeneration. Natural forest types and their management. Plantation forests: planting survey, planting plan, plantation records, maps, ecological aspects for the choice of tree species, site preparation, planting tools and planting, direct seeding gap filling, afforestation of dryland, wetland and adverse sites and taungya. Enrichment planting; fertilizer, application, nursery crops, cover crops. Tending, control of trimmers and undesirable trees. Weed Management. Pruning and

logging. Thinning- thinning of irregular crops, increment felling, improvement felling. Fire prescribed burning. Conflicts between afforestation and cattle ranching.

3. Silviculture of trees and shrubs (Soft wood)

The origin, distribution, general description, economic value, Phenology, siculture characters, regeneration methods, management of soft woods such as Cedrus deodara, cupressus torrulosa, pinus wallichiana; P. roxiburghii, P. helpenensis, P. gerardiana, Abies Pindrow, Picca Smethana and Tropical Pines like P. oocarpa, P. petula, P. inesia Rhododendrons, Pyrus passia, and indigofera species, Juniperus, aqathis robusta.

4. Silvicultural Systems

Silvicultural system:- definition modern silviculture, classical silviculture, classification and detailed study of the following systems.

Clear felling, system (Including clear strip and alternate strip system); shelter wood system; uniform system, the group system the ship shelter wood system; the wedge system; the irregular shelter wood system; the coppice of two rotation system; the shelter wood coppice system; coppice selection system; coppice with standard system; coppice with reserve system; pollard system and culm selection system in bamboo.

5. Silviculture of Indian trees-II

General description, growth and silviculture characters and regeneration methods of following species:-

Quercus species, Alus nitida, Acer Spp. Acacia nilotica, A catechu, Dalbergia Sisso, Juglans regia. Toona Ciliata Bauhinia Variiegata, Fraxinus spp. Celtis australis, Grewia optiva, morus species, platinus orientalis, Eucalyptus spp, populus spp. salix species, Robinea pseudoacacia, ulmus wallichiana, catalpa bigninoides, Albizzia spp Dondonaea viscoso, parrotia spp. viburnum, olea cuspidate, Aesculus indica, Ailanthus excelsa; Tectona grandis, shorea robusta Berberis spp. prosopis spp Leucaena leucocephala, Hippophae rhamanoidls.

(III) FIELD CROPS

1. Cereals, Millets and Pulses

Economic importance-origin and distribution, soil climatic requirement land preparation, varieties, seed-rate/seed treatment, sowing time density growth stages, water management nutrient and weed management after cultivation, harvest and processing.

Cereals:- Rice, maize, wheat, oats, barley.

Millets:- Sorghum pearl - millet; finger millet and small millets.

Pulses:- Beans, blackgram, greengram. cowpea, soyabean, lentil and peas.

2. Oil seeds and commercial crops.

Economic importance-origin and distribution-soil and climatic requirement, land preparation varieties, seed rate, seed treatment, sowing density crop growth stages, integrated nutrient management- irrigation, weed management, harvest and processing cropping system and yield constraints together utilization.

Oil seeds:- Groundnut Sesamum, Sunflower, Castor, Safflower, rapeseed, mustard, niger and linseed.

Commercial Crops:- Tobacco , cotton, sugarcane, sugarbeet, saffron, zeera, potato, onion and garlic.

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Forages and Grasses

Forage crops - definition, classification of forage crops (annual and perennial), leguminous and cereal forages crops with their characteristics. Quality characteristics of forages crops, storage and preservation of forages (hay and silage) making. Grassland improvement problems and prospects. Renovations of degraded grasslands. Role of grasses and legumes in soil fertility. Brief description about the cultivation of important grasses and legumes.

[Signature]
Secretary
J&K Public Service Commission