website:www.jkpsc.nic.in
Email: secypsc@nic.in

May-Oct: 0194-2310523 (f) 2312631-(S)
Nov-April: 0191-2566541 (f) 2566530-(J)

JAMMU & KASHMIR PUBLIC SERVICE COMMISSION

Resham Ghar Colony, Bakshi Nagar, Jammu -180001

Subject: Filling up of posts of Range Officers Soil Conservation in the J&K Forest Department.

Ref: Letter No FST/COORD/17/2012 dated: 04.02.2013, FST/COORD/69/2012 dated: 19.02.2018 from J&K Forest Department.

Notification No : PSC/Exam/2018/28
Dated: 23-04-2018

Applications through online mode are invited from the permanent residents of Jammu & Kashmir State for appearing in the Competitive Examination for direct recruitment to the posts of **Range Officers Soil Conservation** in the J&K Forest Department in accordance with the rules laid down vide SRO No.287 dated 28.06.1980 and SRO 201 dated 30.06.2015 read with J&K Public Service Commission (Conduct of Examination) Rules, 2005**.** The details of syllabus and scheme of examination is given in Annexure "A" to this notification. The category-wise break-up of the vacancies is given below;-

IMPORTANT

- The Commission has developed an online Application Form for the Range Officers Grade-I (Forest). The Application Form together with instructions for filling up the Application Forms will be available at the website of the Commission from **25.04.2018.**
- Candidates are advised to go through the instructions and all the eligibility conditions prescribed for the post before filing the online Application Form.
- Last date for filing of **online Application** complete in all respects **along with the requisite fee (online mode only)** is **24.05.2018.**
- The last date for receipt of online applications provided in the notification shall be the cut off date for determining the eligibility.
- Candidates will also be required to submit a hard copy of the downloaded online application form alongwith with other requisite documents at the Office of the J&K Public Service Commission, Resham Ghar Colony, Bakshi Nagar, Jammu/Solina, Srinagar upto **24.05.2018** or by registered post by or before 20 .05.2018.
- The Commission shall not be responsible for any postal delay, if any.

a) Date of commencement for submission of online applications = **25 .04.2018**
b) Last date for submission of Online Applications and Fee = **24.05.2018**

1- The following item no. (post) carry the pay scale as indicated below;-

S.No.	Item No.	Pay Scale
1		Rs.9300-34800 with Grade Pay of Rs.4280

2- The Category wise Breakup of the posts is as under;-

ITEM NO.	DEPARTMENT/POST	OM	RBA	SC	ST	ALC	SLC	TOTAL
06	**Range Officer (Soil Conservation) 1st Special Drive.**	01	-	01 (1st spl drive)	-	-	-	01

3- <u>Eligibility conditions: -</u>

A. **<u>Qualification:-</u>**

B.Sc with three Science Subjects preferably with Botany as one of the subjects.

or

B.Sc. Agriculture

or

B.Sc. Mechanical

B. **<u>Age as on 1st January 2018:</u>**

Minimum : 18 Years
Maximum : 40 Years
Candidates belonging to RBA/SC/ST/ALC/SLC : 43 Years

C. **<u>Physical Standard:-</u>**

The candidate should possess the following standards of physical fitness:-

			General	**<u>Leh/Kargil</u>**
i.	Height	=	5'6''	5'4''
ii.	Chest girth (Fully expanded)	=	84 Cm	84 Cm
iii.	Chest Expansion	=	05 Cm	05 Cm

iv. Physical fitness
(The physical fitness certificate with above standards should be obtained from Chief Medical Officer concerned.)

v. Physical Test consisting of a walk of 25 Kms to be completed in four hours.

Note: If the Commission considers that the number of Application Forms received for admission is unduly large it may direct the candidates to appear in a Preliminary Objective Type Test (Screening Test) for shortlisting the candidates for Main Examination in accordance with J&K Public Service Commission (Conduct of Examination) Rules, 2005 and as per syllabus given in Annexure "A".

After successful submission of the online form, the 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**

4- <u>Documents to be attached with the photocopy of online application form:-</u>

a. Matriculate or Secondary School certificate as proof of date of birth;
b. Educational qualification certificate viz. Provisional Degree Certificate/Degree Certificate issued by the concerned University;
c. Permanent Resident Certificate;
d. Category certificate, if any, issued under SRO 294 of 2005 dated 21.10.2005 duly revalidated and valid on the last date of receipt of Application Form.
e. Certificate regarding holding of a civil post in the State as required under rules;
f. Physical fitness certificate certifying the physical fitness of the candidate alongwith height and chest measurement from Chief Medical Officer concerned.

Note: In-service candidates will have to submit the photocopy of online application form after certificate from the Head of Office recorded in the format given at the end of the online application form.

5. <u>Centre of Examination</u>:

i. The Examination will be held at different centres located in Srinagar and Jammu cities.

ii. The allotment of centres shall be at the sole discretion of the Commission and once a centre is allotted to a candidate, request for change of centre will neither be entertained nor will the Commission respond to request for such change.

6. <u>The necessary instructions regarding filling up of online applications are given herein below:-</u>

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 and uploading of documents etc.

d) The candidate shall also be required to upload the images of recent photograph and signature. Photograph image must mention the date in which it is taken.

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) Click on the "show jobs" as shown against the respective post/examination you want to apply.

h) On Clicking on the "show jobs" 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.

i) 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.

j) 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.

k) On clicking "APPLY" button, the system will display all facts/particulars that a candidate have mentioned while filling up the necessary fields of his/her OTR account.

l) Once the candidate is satisfied about the filled in details, then, he or she may click on "SUBMIT" button to finally push the data into server with successful submission report, which he or she can print. In case, a candidate feels that the fields/data filled are/is wrong then he or she will be required to edit the details by pressing the EDIT button, until he or she is satisfied about the correctness of the information required to be filled in the desired fields.

m) **Note that the Online Application Form once submitted cannot be edited.**

n) On successful submission of the online application, a window will open with a link to print application form.

o) **Candidates can pay the requisite fee through online mode only in the "SUBMITTED APPLICATIONS" menu in your account.**

p) 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 account. In case the payment status has not been reflected on your form, candidate may contact the JKPSC Office at Solina/Resham Ghar Colony Jammu.

q) Hard copy of the Online Application form (having fee payment details) along with other requisite documents are to be submitted in the office of the Commission at Resham Ghar Colony, Bakshi Nagar Jammu/ Solina Srinagar or through portal service in registered cover provided the said service is invoked 04 days before the cut-off dates fixed for the purpose (personal delivery).

r) Submission of fee payment shall not be accepted/entertained after cut-off date fixed for the Advertisement Notification.

s) 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.

7- <u>Action against candidates found guilty of misconduct</u>: -

Candidates are advised that they should not furnish any particulars that are false or suppress any material information. While submitting hard copy of the application in the Commission, candidates are warned that they should, in no case, alter or otherwise temper with any entry in a document or its attested/certified copy submitted by them, nor should they submit a tampered/fabricated document. If there is any inaccuracy or discrepancy between two or more such documents or their attested /certified copies, an explanation regarding this discrepancy should be furnished.

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

i. obtaining by wrongful support of his/her candidature by any means, or

ii. impersonating, or
iii. procuring impersonation by any person, or
iv. submitting fabricated documents or documents which have been tampered with or
v. making statements which are incorrect, or false or suppressing material information, or
vi. resorting to any other irregular or improper means in connection with his/her candidature for the selection, or
vii. using unfair means during the test, or
viii. writing irrelevant matter including obscene language or pornographic matter , in the script(s), or
ix. misbehaving in any other manner in the examination hall, or
x. harassing or doing bodily harm to the staff employed by the Commission for the conduct of their test, or
xi. 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;

(a) to be debarred by the Commission for appearing in the examination, and/or
(b) to be debarred either permanently or for a specified period:-
    (i) By the Commission from any examination or selection held by them.
    (ii) By the State Government from any employment under them.

Sd/-
(Sunita Anand), KAS
Secretary
J&K Public Service Commission

No: PSC/Exam/RO(Soil)/2018/02 Dated:23.04.2018

CC: -

1. Chief Secretary to J&K Govt., Jammu.
2. Secretary to Govt., Forest Department, Civil Secretariat, Jammu.
3. Principal Chief Conservator of Forest, Jammu.
4. Assistant Chief Conservator of Forests, Jammu/Srinagar.
5. Director, Information Department, J&K Govt. The notification be published in all the leading local dailies in Jammu/Srinagar.
6. Director Radio Kashmir, Jammu/Srinagar/Leh.
7. Director Doordarshan Kendra Jammu/ Srinagar/Leh.
8. General Manager, Govt. Press, Jammu for publication of notification in the next Govt. Gazette.
9. P.S. to Hon'ble Chairman, J&K Public Service Commission for information of the Hon'ble Chairman.
10. P.S. to Member for information of _____ Hon'ble Member.
11. All Sr. Standing /Standing Counsel J&K PSC, Jammu.
12. P.A. to Secretary & Controller of Examinations, J&K Public Service Commission.
13. I/C Computerisation, J&K PSC.
14. I/C Camp Office, Srinagar for pasting the notification on the notice board.
15. Notice Board, J&K PSC, Jammu.
16. Stock file/Main file.

ANNEXURE 'A'
SCHEME OF EXAMINATION

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: -

Compulsory Subjects		**Maximum Marks**
1.	Gen. English.	100
2.	An essay to be written in English.	100
3.	General Knowledge	200
Optional Subject (Any one of the following subjects)		
1.	Botany	200
2.	Silviculture	
3.	Field Crop	

(II) **Viva Voce**:-

The candidates who obtained minimum of 40% marks in each subject/paper shall be called for the viva voce test. The viva-voce test shall carry 100 marks.

Total Marks (written + viva voce):- 700

(III) **Walking Test: -**

The date and time for the walking 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

a/ Instructions 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 selected or appointed. A appointment orders of selected candidates will be issued by the Government in accordance with the availability of vacancies.

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, précis 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), Exonomic 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 hepaticeal 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, ID, 2-D, and 3 D structure of proteins.

8.4 Extranuclear genome: structure and functions of mitochondrial and Plastid DNA, Plasmids.

9. Alternations on the genome.

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

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-transpons, mechanism and salient features, DNA damages, causes and repair mechanisms.
10.3 Mexdelism, 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 chamberlein.
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 : Bennititales- 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 Histroy of angiosperm taxonomy; Aims and Fundamental components of taxonomy;- Taxonomy, omega taxonomy and holotaxonomy.
13.3 Taxonomic identification; taxonomic keys and literature (Floras, Monograohs 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 taximetrics 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 baring 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 merstem 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 moncotyledons 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 two photo systems in photosynthesis, Z- scheme, photophosphorylation, calvin cycle: C4 pathway, CAM plants, photorespiration.

21.9 ATP- the biological energy, currency, aerobic and anaerobic respiration, krebs cycle, electron transport mechanism (Chemi-osmotic theory).

21.10 Redox potential, oxdidative phosphorylation, pentose phosphate pathway.

21.11 Biology of nitrogen fixation, importance of nitrate reductase and its requiation. ammonium assimilation.

21.12 Structure and function of Lipids, fatty acid and biosynthesis B- Oxidation, saturated and unsaturated fatty acides, 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 Histroy and discovery of plant hormones, auxins, gibberellins, cytokinins, absoisic acid and ethylene, biosythesis 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 sucession.

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: Botony and processing of tea and coffee.

24.4 Spices: history and the parts used of Asafoctida. Cumin, Fennel, Goriander, Cloves, Cinnamomum and Cardamon..

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 drown 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) ands 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 climbers and undesirable trees. Weed Management. Pruning and lopping. 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, siviculture characters, regeneration methods, management of soft woods such as Cedrus deodara, cupressus torrulosa, pinus wallichiana; P. roxiburghii, P. helpenusis, 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. Siliviculture of Indian trees-II

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

Quercus species, Alus nitida, Acer Spp. Acacia nilotica, A catechu, Dalbergia Sisso, Juglans regia. Toona Ciliata Bauhinia Variegata, 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.

3. 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.

Sd/-
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