JAMMU AND KASHMIR PUBLIC SERVICE COMMISSION

RESHAM GHAR COLONY, BAKSHI NAGAR, JAMMU - 180001

website:http://jkpsc.nic.in
email:jkpscsecretary@gmail.com

Jammu: 0191-2566528 (f) 2566530
Srinagar: 0194-2312629 (f) 2312631

Subject: Filling up of the posts of Assistant Director (E&S) in J&K, Planning, Development & Monitoring Department.

Reference: PDMD-HRM/38/2022 dated 21.02.2024

Notification No.: 01 -PSC (DR-P) OF 2024
Dated:- 05 -03-2024

Applications, through online mode, are invited from the applicants who are domiciled in the Union Territory of Jammu & Kashmir, possessing the prescribed academic/professional qualification and age, for the post of Assistant Director (E&S), in terms of J&K Economics & Statistics (Gazetted) Service Recruitment Rules, 1992, notified vide SRO-207 of 1992 dated 04.09.1992, read with J&K Statistical-cum-Evaluation (Competitive Examination) Regulations 1976, issued vide Government Order No. 299 of 1976 dated 04.12.1976, Govt. Order No. 53-PD of 2013 dated 30.5.2013, and the Jammu and Kashmir Public Service Commission (Business and Procedure) Rules, 2021 as amended up-to-date.

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 **07.03.2024**.
- 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 **27.03.2024**.
- 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, RESERVED CATEGORY CERTIFICATE, EDUCATIONAL AND PROFESSIONAL QUALIFICATIONS.
- THE MINIMUM AND MAXIMUM AGE WILL HOWEVER BE RECKONED WITH REFERENCE TO 1ST JANUARY, 2024.
- CANDIDATES CAN EDIT SOME OF THE FIELDS IN THEIR ONLINE APPLICATION FORM W.E.F **28.03.2024 to 30.03.2024(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 DOCUMENT VERIFICATION.
- 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.

1. <u>Name of the post and scale of pay</u>

S.No.	Name of the Post
01	Assistant Director (E&S) Level-8 (47600-151100)

2. <u>No. of posts with category-wise breakup</u>

Item No.	Post	OM	RBA	SC	ST	EWS	PSP	ALC/IB	SoC	Total
01	Assistant Director (E&S)	44	08	07	09	09	04	04	04	89

{Three vacancies have been reserved for persons with Bench mark disability, as per Government Order No. 59-JK(SWD) of 2021 dated 15.4.2021, issued by the Social Welfare Department}

3. <u>Prescribed Qualification</u>

Designation	Qualification
Assistant Director (E&S)	Master's Degree in Economics or Economics and Statistics or Commerce or Mathematics or M. Sc of Indian Statistical Institute or Master of Computer Application Degree from any recognized University

4. Age as on 1st January 2024

The prescribed age (minimum/maximum) for candidates belonging to Open Merit (OM) and Reserved Categories is as below:-

S.No	Category	Age limit	Not born after	Not born before
1	OM	40	01.01.2006	01.01.1984
2	RBA,SC,ST, EWS, PSP,ALC/IB, SoC.	43	01.01.2006	01.01.1981
3	PHC	42	01.01.2006	01.01.1982
4	In service candidate/Government	40	01.01.2006	01.01.1984

5. Reservation

i. 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.

The candidature of the candidates 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 the examination(s) 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 a valid Domicile Certificate issued by the Competent Authority in the prescribed format by or before the last date for filling of the application form. Certificates issued after the last date prescribed for submission of online application form shall not be entertained.

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	=	Nil

Note:

i. The application Form submitted without deposition of the fee, which gets substantiated through reflection of the same on the 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.

ii. 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 a 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 requested to upload the documents as per details given bellow:-

Documents (Mandatory):-
a) Date of birth certificate (secondary School/Matric Certificate)
b) Domicile Certificate of the UT of J&K.
c) PG Degree certificate.

Documents (Mandatory if claiming benefit under that category):-

a) Category Certificate. 01 leaf
b)In-service certificate signed by HOD

It may be noted that no further opportunity to upload any document shall be provided hereafter and action under rules including rejection of application/candidature may be taken.

09. Scheme of Examination

The Scheme of Examination and detailed syllabus is contained in Government Order No. 299 of 1976 dated 04.12.1976, appended with the notification.

10. On request of a visually impaired (Blind) or any other candidate who is handicapped to the extent that he/she is not able to write, the candidate shall be provided assistance of an amanuensis (Scribe) on production of a disability certificate issued by the Medical Board constituted by the Government. After verifying the genuineness of the certificate/satisfying itself, the Commission may provide services of Scribe to the candidate on the day of examination. The scribe should have one qualification down than the requirement for the post applied for by the candidate(s) and further should be from an academic stream different from that stipulated for the post. The scribe shall be paid remuneration charges equivalent to the Invigilator.

Provided the concerned Supervisor shall ensure that the scribe provided to the candidate shall not extend any type of help to the candidate in solving the questions. Blind candidates will be allowed an extra time of 20 minutes per hour.

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 01.01.2024.

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 examination" as shown against the respective post/examination you want to apply.

h. 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.

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 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.

l. 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.

m. 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.

n. Candidates can pay the requisite fee through online mode in the "SUBMITTED APPLICATIONS" menu in their account.

o. 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.

p. The candidate would be able to get the printout of his/her submitted application only after the payment of the requisite fee and uploading of requisite documents *viz Date of Birth Certificate, Degree Certificate, Category Certificate and Domicile Certificate.*

q. The JKPSC will not undertake detailed scrutiny of applications for the eligibility and other aspects at the time of written examination and therefore, candidature will be accepted only provisionally. The candidates are advised to go through the requirements of educational qualification, age, etc. and satisfy themselves that they are eligible for the post(s). Copies of supporting documents will be sought at the time of document verification. When scrutiny is under taken, if any claim made in the application is not found/substantiated by proof, the candidature will be cancelled and the Commission's decision shall be final and binding.

r. 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.
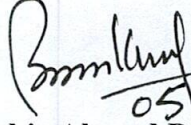
12. Action against candidates found guilty of misconduct

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

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

i. obtaining by wrongful support 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, or

viii. misbehaving in any other manner, or

ix. harassing or doing bodily harm to the staff employed by the commission for the conduct of their test, or

x. 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 the specified actions given below render the candidate liable to criminal prosecution.

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 him/her under the appropriate rules.

05/03/2024

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

No: PSC/DR/Asstt. Director-Planning/2024   Dated: 05.03.2024
Copy to the: -

1. Principal Secretary to Government, Planning, Development & Monitoring Department , Civil Secretariat, Jammu

2. Director, Information Department J&K. He is requested to publish the Notification in all the leading local dailies of the Union Territory of J&K.

3. P.S. to Chairman, J&K Public Service Commission for information of the Hon'ble Chairman.

4. PA to Controller of Examination for information of the Controller of Examination.

5. In charge website, J&K Public Service Commission for uploading of the Notification on the website.

6. In charge Camp Office, Srinagar for pasting the notice on the notice board.

7. Notice Board, J&K Public Service Commission, Srinagar/Jammu.

8. Stock file/Main file.

Government Order No. 299 of 1976
Dated: 04.12.1976

In pursuance of the powers conferred by rule 6 of the Jammu and Kashmir Statistical-cum-Evaluation Service Rules, 1974, the Government in consultation with the Jammu and Kashmir Public Service Commission, hereby make the following Regulations, namely:

1. Short title:-

(1) These Regulations may be called the Jammu and Kashmir Statistical-cum-Evaluation Service (Competitive Examination) Regulations, 1976.

(2) These Shall come into force at once.

2. Definitions:-

(1) In these Regulations, unless the context otherwise requires;-

    (a) "available vacancies" means the vacancies in the service which as determined by the Government under the rules, are to be filled on the results of any examination.

    (b) "Commission" means the Jammu and Kashmir Public Service Commission.

    (c) "Examination" means a competitive examination for recruitment to the Service held under sub-rule (1) or rule (6) of the Rules.

    (d) "List" means the Jammu and Kashmir Statistical-cum-Evaluation Service Rules, 1974.

(2) All other words and expressions used in these regulations and not defined shall have the same meaning as assigned to them in Rules.

3. The examination shall be held at such intervals as the Government may, in consultation with the Commission, from time to time determine, but at least once in a calendar year unless cancelled for good and sufficient reasons.

4. (1) The examination will be conducted by the Commission in accordance with the provisions of the Jammu and Kashmir Public Service Commission (Conduct of Examination) Rules, 1973.

    (2) Applications for admission to the examination shall be accompanied by the attested copies of the following documents which shall be produced in original at the time of viva voce test:

    (i) Academic Qualification;

    (ii) Date of Birth Certificate;

    (iii) Permanent Resident Certificate;

    (iv) Crossed Bank Draft or Indian Postal Order for the amount as may be fixed by the Commission as Examination fee; and

    (v) Three copies of the latest passport size photographs.

(3)   An application complete in all respects shall be submitted by the candidate desiring to appear in the examination direct to the Secretary of the Commission. In case of candidates already in Government service another copy of the application shall be submitted by them through proper channel but the copy addressed to the Secretary should be accompanied by the Crossed Bank Draft or Indian Postal Order for the examination fee and the certificate mentioned in para (2) above. No. admission provisional or absolute will be given unless the application routed by the Government employee through his Department is received duly supported by the Head of the Department concerned.

5.   **Examination:** - The examination shall consist of two parts:-

    (i)   Written Examination   600 marks

    (ii)   Viva Voce   100 marks[1]

Written Examination:

(1)   The written examination shall include compulsory and optional papers. Every candidate shall have to take all the compulsory papers in addition to two optional papers.

(2)   Syllabus for the written examination, maximum marks and time allowed for each paper and standard of the examination shall be shown in Appendix-I to these regulations.

(3)   Every candidate shall specify the optional papers in his application form in which he wants to appear. The option once made shall be final.

(4)   Unless otherwise required by the examiner all question papers shall be answered in English.

(5)   Credit will be given for orderly, effective and exact expression combined with the economy of words in all the papers of the examination.

(6)   If a candidate's handwriting is not easily legible deduction will be made on this account from the total marks otherwise awarded to him.

7.   **Viva Voce Test:-**

(1)   Candidates, who obtain such minimum qualifying marks in the written examination, as may be fixed by the Commission in their direction, shall be called for viva voce test.

(2)   The object of the Viva Voce test shall be to assess the candidate's intelligence, perspicacity and aptitude. Questions regarding matters of general interest may also be asked.

8.   **Qualified candidates to be arranged in order of merit:-** After the conclusion of the examination, the candidates will be arranged by the Commission in order of merit as disclosed by the aggregate marks finally awarded to each candidate, and in that order so many candidates as are found by the Commission in their discretion

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[1] Amended vide Govt. Order No. 2-PD of 2009 dated:13.01.2009

to be qualified by the examination, shall be recommended for appointment up to the number of unreserved vacancies decided to be filled up on the results of the examination; provided that any candidate belonging to a class regarding which a provision for reservation of appointment or post has been made who though not qualified by the standard prescribed by the Commission in declared by them to be suitable for appointment thereto with due regard to the maintenance of efficiency and administration, shall be recommended for appointment to vacancies reserved for members of such class in that service.

9. **Medical Fitness:-** A candidate must be mentally fir, and bodily sound and free from any physical defect likely to interfere with the discharge of his duties as an officer of the service. A candidate who after such medical examination as the government may prescribe is found not to satisfy these requirements will not be appointed. Any candidate called for the viva voce by the Commission may be required to undergo medical examination.

Note.- Instructions to appear before Medical Board should not be deemed to mean that a candidate for direct recruitment, if found fit, is necessarily, given an appointment as the number of candidates who will be asked to appear for medical examination will generally be in excess of the total number of available vacancies. The medical examination will be conducted by a Medical Board in accordance with Appendix-II to be arranged for by the Commission for which the candidate will have to pay to the Medical Board a fee as may be prescribed from time to time for his/her medical examination.

10. **Determination of Order of Merit in the case of tie[2]: -** Order of merit in the case of tie shall be determined in accordance with the highest marks secured in the viva voce. Should the marks in the viva voce of the candidates be also equal, the order of merit shall be decided in accordance with the highest marks obtained by such candidates, in the aggregate of the compulsory papers.

11. Success in the examination confers no right to appointment unless Government are satisfied, after such enquiry as may be considered necessary, that the candidate is suitable in all respects for appointment to the service.

By order of the Government of Jammu and Kashmir

Sd/-
S.B. Mathur
Additional Secretary to Government
Planning & Development Department

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[2] Added vide Govt. Order No. 2-PD of 2009 dated: 13.01.2009

APPENDIX-I

A. **Compulsory Subjects**

(i)	General English	100 marks.
(ii)	General Knowledge (with emphasison topics pertaining to Jammu & Kashmir)[3]	100 marks.
(iii)	General Economics	100 marks.
(iv)	Theory and Practice of Statistics	100 marks.

B. **Optional Subjects**

(i) Statistical Interfere

(ii) Sample Surveys

(iii) Economics – I

(iv) Economics – II

(v) Comparative Economic Development

(vi) Pure Mathematics – I

(vii) Pure Mathematics – II

(viii) Pure Mathematics – III

(ix) Applied Mathematics

(x) Statistics – I

(xi) Statistics – II

(xii) Rural Economics & Cooperation

(xiii) Principles of Office Management

(xiv) Principles of Business Management

(xv) Labour problems and Industrial Relations in India.

(xvi) Higher Accounting

Note:

(i) The standard of the examination in compulsory subjects will be that of Degree of an Indian University and for the optional subjects that of a Master's Degree of an Indian University in the relevant discipline. The candidates will be expected to illustrate theory by facts and analyze problems with the help of theory. They will be expected to be particularly conversant with Indian problems in the field(s) of Statistics.

(ii) Each paper will be of 3 hours duration carrying a total of 100 marks.

(iii) The detailed syllabus for the written examination will be as under:-

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[3] Added vide Govt. Order No. 2-PD of 2009 dated: 13.01.2009

A-Compulsory Papers

1. General English

Candidates will be required to write an essay in English. Other questions will be designed to test their understanding of English and workman like use of words. Passage will usually be set for summary of précis.

2. General Knowledge

The paper will consist of two parts.

In the first part candidates will be required to answer questions designed to test their knowledge of current events and of such matters of everyday observations and experience in their scientific aspects as may be expected of an educated person who has not made a special study of any scientific subject. Questions may also be set on History of India and Geography of a nature which candidates should be able to answer without special study. **In this part the emphasis shall be on the topics pertaining to Jammu & Kashmir[4].**

In the second part candidates will be required to answer questions designed to test their ability to deal with facts and figures and to make logical deductions there from, their capacity to perceive implications, and their ability to distinguish between the important and the less important.

3. General Economics

Scope and methodology Theory of consumers demand consumers surplus Theory of distribution pricing of factors and production Laws of returns pricing under various forms of marketing organizations.

Theory of production Factors of production- Theory of rent, wages, interest and profit.
Welfare Economics scope of welfare, economics Classical and neo-classical approach.

Concept of economic growth and its measurement social Institutions and economic growth characteristics and problems of a developing economy - Population growth and economic development.

Planning concepts and methods Evolution of planning in India Five Years Plans objectives and techniques.

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[4] Added vide Govt. Order No. 2-PD of 2009 dated: 13.01.2009

Theory and Practice of Statistics

Part – A: Statistical Methods:-

(i) Primary and Secondary data, Methods of collecting primary data and preparation of questionnaires- Tabulation and compilation of data.

(ii) Measures of Central Tendency and dispersion.

(iii) Theory of probability – Definition, Law of large Numbers, Additive and multiplicative laws of probability and their applications, Independence of events.

(iv) Elementary knowledge of theoretical distributions (Binomial, Poissons and Normal).

(v) Correlation and regression- Concept and definition and simple applications.

(vi) Theory of attributes- Basic concepts and their applications, Co-efficient and Association and Coefficient of contingency.

(vii) Testing of hypothesis- Applications of t, x^2 and f tests.

(viii) Analysis of various concept, definition and importance. Simple applications with particular reference to Randomized Blocks and Latin squares.

Part-II: Applied Statistics

(i) Elementary knowledge of sampling techniques- simple Random Sampling with and without replacement, stratified sampling, Ratio and Regression estimates, cluster sampling and systematic sampling. Sampling and non-sampling errors.

(ii) Theory of Index Number: Tests of Index numbers. Wholesale and consumer price Index numbers.

(iii) Analysis of time series components, Measurement of Trend and Seasonal variation.

(iv) Interpolation. Graphic and Algebraic methods.

(v) Demography- (a) Census, its features and functions. Methods of Census taking.

(b) Vital Statistics- Measures of fertility, measures of Mortality- Life table, Abridge and comple. Standarised rates.

(c) Population projections. Mathematical and component methods of projections of logistic curve fitting.

B-OPTIONAL PAPERS

1. Statistical Inference

Note: - Candidates will be required to answer questions from Sections 'A' and 'B' of selections A and C.

A.   (i)   Estimation.

Different methods of estimation; method of maximum likelihood, method of minimum, chi-square, method of moments, method of least squares, asymptotic properties of maximum likelihood estimators, Cramer-Rao inequality and its generalisation to the multiparametic case. Bhattacharya bounds, sufficient statistics, Factorisation theroem, Pitman-Koopman-Darmois form of distributions, minimal set of sufficient statistics. Rao-Blackwell theorem. Complete family of probability distributions, complete statistics. Lehmann-Scheffe, theorem on minimum variance estimation.

(ii)   Testing of Hypotheses

Neyman-Pearson theory of testing of hypotheses. Randomized and non-randomized tests.Most powerful and uniforamly most powerful tests Neyman-Pearson fundamental Lemma-Unbiasedness, consistency and efficiency of tests. Similar regions, tests with locally optimum properties. Type A, A1, B, C and D critical regions. Relationship between nations of completeness and similarity. Likelihood ratio principle of test construction and some of its applications Bartlets test for homogeneity of variances.

(iii)   Non-para metric tests

Orders statistics, small sample and large sample distribution theory, distribution free confidence intervals for qualities. Distribution-free test for

(i)   Goodness of fit, chi-square test, kol-mogorov Simrnov test.

(ii)   Comparison of two populations, Run test, Dixon's test, Wilcoxon's test, Median test, Sign test, Fisher Pitman test.

(iii)   Independence, Contingency, Chi-square, Spearman's and Kendall's rank correlation coefficients.

Large sample properties of non-parametric text. U-Statistics and their limiting distributions.

B. Decision Functions

Statistical game and principles of choice associated with it. Formulation of statistical problems as a statistical game, decision unctions, randomised and non-randomised decision rules. Minimax Bayes and minimum regret decision rules. Admissible and Minimax tests. Admissible and minimax estimates under square error loss function. Minimal complete class of tests.

Principle of sufficiency and principle of invariance. Huntstein theorem. Minimax invarient decision rules.

C. Multivariate Analysis

Multivariate Normal Distributions Estimation of Mean Vector and covariance matrix, Distribution of sample mean vector and interference relating to mean vector with unknown matrix; Hotelling's Tests based on T^2, power functions of T^2 and F; Optimum properties of T^2. Partial and multiple regression co-efficeints in normal correlation, Behren's Fisher problem; Wishart distribution, Reproductive property of Wishart, Generalized analysis variance, Mahalanobis's D^2 Discriminant function; Principal Component analysis; Canonical variates and canonical correlation; equality of several convariance matrices.

2. Sample Surveys

Place of sampling in census and survey work. Concept of frame and sampling unit.

Sampling techniques random sampling stratified sampling choice of strara, multistage sampling cluster sampling, systematic sampling, double sampling, variable sampling, fraction sampling with the provability of proportional to size multiphase sampling inverse and sampling.

Estimation procedures; Estimates of population total and mean of bias in estimates; standard error of estimates; Ratio regression and product estimates.

Optimum designs; cost and variance functions. Use of pilot surveys, Optimum size and structure of sampling units. Optimum allocation in stratified Multiphase and multistage designs. Optimum replacement fraction in repetitive surveys. Non-sampling errors and their control, theory of non-response, inter penetrating sample.

Design and organisation of pilot and large scale sample surveys. Operational procedures for drawing samples, use of random sampling numbers, various methods of drawing P P S samples. Procedures for collection and tabulation of data. Analysis of survey data and preparation of reports.

3. Economics-I

Scope and methodology.

Equilibrium analysis.

Theory of Consumer's demand. Indifference curve analysis revealed preference approach consumer's surplus.

Theory of production. Factors of production.

Production functions. Laws of returns, Equilibrium of the firm and the industry.

Pricing under various forms of market organisation. Pricing in a socialist economy. Pricing in a mixed economy.

Public utilities: economic characteristics of public utilities, price determination in public utilities, regulation of public utilities.

Theory of distribution. Pricing of Factors of production.

Production theories of rent, wages, interest and profit.

Macro-distribution theory. Share of wages in national income.

Profits and economic progress, Inequalities in income distribution.

Theory of employment and output the classical and neoclassical approaches-Keynesian theory of employment- Post Kenynesian development.

(Economic fluctuations Theory of business cycle) Fiscal and monetary policies for control of business cycles.

Welfare economics: Scope of Welfare economics: Classical and neo-classical approaches, New Welfare economics and the compensation principles, optimum conditions, policy implications.

4. Economics-II

Concept of economic growth and its measurement.

Social accounts, natural income accounts flow of funds on economic growth-characteristics accounts input output accounting.

Social Institutions and economic growth, Characteristic and problems of developing economies.

Population growth and economic development.

Planning concept and methods, Planning under capitalist and Socialist forms of economic organisation. Planning in a mixed economy. Perspective Planning. Regional Planning. Investment criteria and choice of techniques. Cost benefit analysis. Planning models.

Planning in India. Evolution of planning. Five year Plans Objectives and technique, Problems of resources mobilization, administration and public co-operation. Role of monetary and fiscal policies, price policy. Controls and market mechanism. Trade policy and Balance of payments. Role of public enterprises.

5. Comparative economic development

A comparative and historical study of modern economic development under different social systems with special reference to India, Japan, France, U.K, USA and USSR. The candidates will be expected to make a critical appraisal of the historical evolution and operational features of the various types of economic e.g. market oriented free enterprise economy, centrally planned economy and their variations, particularly from the point of view of the lessons that they have for the developing economies.

6. Pure Mathematics-I

Functions of a real variable; construction of system of real numbers from rational numbers by Dedekinds methods. Bounds and limits of sequences and functions. Convergence point-wise and uniform of sequences, Infinite series and Infinite products.

Metric spaces: Open and closed sets, continuous functions and homorphism, convergence and completeness, theorem on nested closed sets in complete metric spaces. Compactness for metric spaces and euclideant spaces. Uniform continuity and Arzela's theorem. Connected sets in metric spaces.

Differentiability of functions, of one and several real variables. Mean value theorems. Tylor expansion of functions of one and more variables. Extreme value of functions including methods of labrange multipliers. Implict and inverse function theorems. Functional dependence and Jacobian.

Riemann integration mean value theorems of integral calculus. Improper integrals. Convergence of integral. Differentiation and integration under the integral sign. Live and surface integrals. Multiple integral, Green's and Stokes theorems.

Measures Theory, Lebesgue measure, measurable sets and their properties, measurable functions, Lebesgue integral of bounded functions over sets of finite measures. The integral of a non-negative function. The general Lebesgue integral Convergence in measure. Fatou's lemma. Monotone, dominated and bounded convergence theorem vital covering theorem. Functions of bounded variation. Absolutely continuous functions. Fundamental theorem of integral calculus, stielties integral.

Functions of a complex variable, Analytic functions, Cauchy Riemann equations. Integration of complex functions Cauchy's fundamental theorem and integral formulae, Morera's theorem. Taylor and Laurent expansions. Zeros and Poles, Singularities. The residue theorem and its applications Argument, Principle, Rouches theorem. Maximum modulus principles and Schwarz lemma.

Bilinear transformations, Conformal representation.

7. Pure Mathematics-II

Modern Algebra including Matrices an determinants-semi-group and groups; Isomorphism; Transformation group Cayley's theorem. Cyclic groups. Permutations, even and odd permutations. Coset decomposition of groups Lagranges theorem. Invariant sub-groups and factor groups. Normal series composition series and Jordan-Holder theorem. Rings: Integral domain Division rings. Fields, Matrix rings, Quatermions, Sub-rings Ideals maximals, Prime and Principle ideals, Unique factorization domains. Difference rings, Ideals and difference rings of integrals. Format's theorem Homomorphism of rings.

Field extensions algebraic and transcendental f field extensions. Elements of Galois theory and its applications to solution of equations by radicals.

Vector space over a field. Sub spaces and their algebra linear independence basis dimension. Factor spaces. Isomorphism of vector spaces.

System of linear equations. Rank of a matrix. Equivalence relations on matrics elementary metrices how equivalence similarity.

Linear transformations on vector spaces, their rank and multility. Dual spaces and dual basis. Linear, bilinear and quadratic forms. Rank and signature. Reduction of a quadratic form to canonical form and simultaneous reduction of two quadratic forms.

Determinant functions. Its existence and uniqueness. Laplace's method of expanding a determinant. Product of two determinals. Binet Cauchy formula, characteristics and minimal Polynomials, eigen values and eigen vectors. Cayley Hamilton theorem. Diagonalization theorems.

N dimensional geometry Elements of the geometry of n-dimension, Desargues theorem. Degrees of freedom of linear spaces. Dauality, Parallel lines. Elliptic hyperbolic , Euclidean and projective geometries. Line normal to (n-1) Flat. System of n/mutually orthogonal lines. Distances and angles between flat spaces.

Convex sets and convex cones. Convex hull. Theorems on separating hyperplanes. Theorem that a closed convex set which is bounded from below has extreme points in very supporting hypen plane. Convex hull of extreme points. Convex polyhedral cones. Linear transformations of regions.

Differential geometry curves in space. Envelopes Developable surfaces. Developable associated with a curve. Curvilinear co-ordinates on a surface. First and second fundamental forms curvature of normal section. Lines of curvature. Conjugate system Asymptotic lines. The equations of gauss and of codazzi. Geodesics and Geodsic parallels. Rules surfaces.

8. Pure Mathematics-III

Numerical Analysis and Difference Equations, Finite differences, Interpolation. Extrapolation Inverse interpolation. Numerical differentiation and numerical integration. Solution of the linear difference equation. Linear difference equations with constant co-efficients.

Solution of ordinary differential equations. Methods of starting the solution and continuing the solution. Simultaneous linear equation and their solution. Roofs of polynomial equations. Solution of simple problems by relaxation method Nomograms.

Differential Equations Existence theorem for the solution of $dy/dx = f(x,y)$.

First order linear and non-linear equations. Linear equations with constant co-efficients, Homogeneous linear equations. Second order linear equations. Frobenius method of integration in series. Solutions of legendre. Bessel and Hermite equations. Elementary properties of Legendre and Hermite polynomials and Bessel functions. System of simultaneous linear equations. Total differential equations with three variables.

Partial differential equations. Partial differential equations of first and second order Lagrange's Charpit's and Mongre's method. Linear partial differential equations with constant co-efficients. Solutions of Laplace wave and diffusion equations by separation of variables.

Calculus of variations: Necessary conditions for a minimum. Derivation of the Euler Equations. Hamilton's principle. Hamiltonian. Isoperimetric problems. Variable and point problems. Minima of functions of integrals. Bolza's problems. Multiple integral problems. Direct methods in calculus of variation. Second variation and Legendre's necessary condition for a minimum.

Harmonic Analysis: The representation of function by Fourier series, Dirichlet integral Reimann Lebesgue Theorem. Reimann's localization theorem, sufficient conditions for the convergences of Fourier series (Jorden, Dini and dela Valee poussin) Fourier integrals, Sampling theorem power spectrum Auto correlation and cross correlation.

9. Applied Mathematics

Statistics: Vector treatment of equilibrium of a rigid body under forces not necessary coplanar. Central axis. Principles of virtual work. Stability, strings under central forces equilibrium of strings on rough and smooth plane curves Elastic strings. Attractions and potentials of a rod, Disc and sphere.

Dynamics: Newton's law of motion. 'D' Alembert's principle. Rectiliner motion. Motion in two dimensions. Motion in a resiting medium. Planetary motion. Impulsive forces and impacts. Principle of momentum and energy. Degrees of freedom and constraints. Generalized co-ordinates Labrange's equations for holonomic system. Euler's dynamical and geometrical equations. Hamilton's Principle. Hamiltons equations. Introduction of manbody problem.

Hydrodynamics: Eulerian and Lagrangian equations of motion stream lines. Vorticity and circulation and their constancy in ideal fluid.

Bernoulli's theorem and its application. Potential flow around cylinders and spheres. Blasius theorem and its application. Techniques of Images and coformal transformation for solution of hydrodynamical problems. Simple properties of vortex motion, uniqueness theorem. Viscousfluid Napier strokes equations. Flow between parallel walls and straight pipes. Oseen and strokes approximation. Slow motion past a sphere.

Electricity and magnetism Coulomb Law. Charges conductors and condensers. Deilectrics. Steady currebts Magnetic effects of currents. Induced currents and fields. Maxwell equations. Electromagnetic conditions at an interface between two media. Electromagnetic conditions at an interface between two media. Electromagnetic potentials, stress and energy. Poynting's theorem, Joule heat. Alternating currents, Electromagnetic waves in isotropic dielectric. Reflections and refraction of electromagnetic waves. Waves in conducting media.

Thermodynamics: Concepts of quantity of heat, temperature and entropy. First and second laws of thermodynamics. Specific heats, change of phase vapour pressure. Conduction of heat. Radiation, Planck's law. Stefan's law. Thermodynamic function and potentials. Heterogenous system and Gibb's phase rule.

Statistical Mechanics: Geometry and Kinematics of the phase space. Maxwell Bottzmann Bose Einstein and Fermi Dirac Statistics.

10. Statistics-I

Different types of numerical approximations, finite differences standard interpolation formulae and their accuracies; inverse interpolation, Numerical methods of differentiation and integration.

Definition of probability, Classical approach, axiomatic approach, sample space, Laws of total and compound probability. Conditional probability. Independent events. Bay's formula. Random Variable; probability distribution, Mathematical exception. Moment generating functions and characteristic functions. Inversion theorem. Tchebychevis inequality. Conditional distribution. Laws of large numbers and central limit theorems.

Standard distributions, Binomial, Poisson, Normal rectangular Exponential, Negative binomial, Hypergeometic, Cauchy, Laplace, Beta and Gamma distributions. Bivariate and Multivariate normal distributions.

Large and small sample theory, Asymptotic sampling distribution and large sample tests Standard sampling distributions such as t, x^2 F and tests of significance based on them. Association and analysis of contingency tables.

Correlation co-efficient and its distribution; Fishers 'Z' transformation. Regression. Linesr and Polynomial multiple regression-partial and multiple correlation co-efficient including their distributions in null cases intra class correlation. Curve fitting and orthogonal polynomials.

Analysis of variance. Theory of linear estimation. Two way classification with interaction. Analysis of covariance. Basic principles of design of experiments. Layout and analysis of common designs such as randomized blocks. Latin square. Factorial experiments and confounding. Missing plot techniques.

Sampling techniques: Simple random sampling with and without replacement. Stratified sampling. Ratio and regression estimates. Cluster sampling. Multistage sampling and systematic sampling. Non-sampling errors.

Computer Science & Application.

Planning and Development Department earlier vide letter

Estimation: Basic concepts. Characteristic of a good estimate. Point and interval estimates. Maximum likelihood estimates and their properties. Tests of hypotheses. Statistical hypotheses. Simple and Composite. Concept of a statistical tests. Two kinds of error power function. Likelihood ratio tests. Confidence interval estimation. Optimum confidence bounds.

Common non-parametric test such as sign test medium test and run test. Wald's sequential probability ratio test for testing a simple hypothesis against a simple alternative OC and ASN functions and their approximations.

11. Statistics-II

Note:- In this subject, there will be one question paper on the following four branches viz.

(i) Industrial Statistics (including statistical quality control); (ii) Economic Statistics; (iii) Educational Statistics (including Psychometry) and (iv) Demography and Vital Statistics. Candidates offering this subject will be required to answer the questions at least on two branches.

(i) Industrial Statistics (including Statistical Quality Control).

Theoretical basis of quality control in industry, Tolerance limits. Different kinds of control charts- X, R charts, P and C charts, group control charts.

Acceptance sampling. Single, double, multiple and sequential sampling plans OC and ASN functions. Sampling by attributes and by variables. Use of Dodge-Roming and other tables.

Designs of industrial experimentations. Use of regression techniques and analysis of variance techniques in industry.

Applications of operational research techniques including linear programming in industry.

(ii) Economic Statistics.

Index numbers of prices and quantities. Different types of index numbers i.e. index numbers of wholesales prices and cost of living index numbers. Theory of index numbers.

Income distributions. Pareto and other curves Concentration curves and their uses.

National Income: Different sectors of national income. Methods of estimating national income. Inter-sectoral flows. Problems of regional income estimates. Inter-industry table. Applications of input-output analysis and linear programming.

Analysis and interpretation of economic. Time series. The four component of an economic Time series, multiplicative and additive models. Trends determination by curve fitting and by moving average methods. Determination of constant and moving seasonal indices. Auto-correlation, periodogram analysis. Tests of randomness.

Theory of consumption and demand, demand functions. Elasticities of demand, statistical analysis of demand with the help of time series and family budget data.

(iii)   Educational Statistics (including psychometry).

Scaling of test items, scores, standard scores, normal scores. T and C scales, Stanine scale, percentile scale.

Mental tests. Reliability and validity of tests. Different methods for computing reliability. Index of reliability procedures for determining validity. Validation of a test battery. Speed versus power tests.

Factory Analysis, Item analysis. Use of correlation methods in aptitude tests.

Measurement of learning and forgetting. Learning models. Attitude and opinion measurement. Measurements of group behaviour.

(iv)   Demography and vital Statistics.

The life table, its construction and properties. Makeham's and Compert curves. Derivation of annual and central rates of mortality. National life tables. U.N. Model life tables. A bridged life tables. Stable population. Stationary population.

Crude fertility rates, specific fertility rates, gross and net reproduction fates, family size; crude mortality rate, infant mortality rates, Mortality by cause of death; Standardized rates.

Internal and international migration; net migration; backward and forward survivorship ratio methods.

Demographic transition; social and economic determinants of populations.

Population projections. Mathematical and Component methods- Logistic curve fitting.

12. Rural economics and Co-operation

Role of agriculture in economic development.

Agricultural production and resource use production functions, returns to scale, cost and supply curves; factor combination and selection of techniques under uncertainity. Crop Planning.

Factor Markets. Land market, land value and rent. Labour market, wages and employment, unemployment and under employment, Capital market, savings and capital formations.

Commodity demands; demand for food.

International trade in agricultural commodities- prices tariffs, commodity agreements, International programmes for agricultural development.

Problems of Indian rural economy. Agricultural holdings. Land utilisation, Cropping pattern. Problems of agricultural inputs, land tenure reforms. Community Development and Panchayati Raj. Agricultural labour. Subsidiary occupations and rural industries. Rural indebitedness. Agricultural credit. Agricultural marketing and price spread. Commodity demands and demand for food. Price support and stabilization, Taxation of agricultural land and income. Growth rate in Indian agriculture under Planning.

Agriculture in Five Year Plans. Major programmes of agricultural development.

Co-operation: Principles, origin and development. Comparative study of co-operation in India and abroad. Structure Organisation and working of various types of co-operative instructions in India. Role of these institutions in the rural economy. The State and the co-operative movement. Role of Reserve Bank of India.

13. Principles of Office Management

1.   Office work in Modern enterprises.

2.   Role of Office Management.

3.   Scientific Office Management.

4.   Office Services.

   (i)   Reports

   (ii)   Correspondence

   (iii) Calculating and checking.

   (iv)   Filling.

(v)   Records retention.

(vi)   Duplicating.

(vii)   Handling the mail.

(viii) Communication.

5.   Planning Office work and environments.

    (i)   Office location and layout.

    (ii)   Equipment and Machines.

    (iii)   Working conditions.

    (iv)   Office work and procedures.

6.   Organisation.

    (i)   Principles of Office Organisation.

    (ii)   Organisational relationship.

7.   Motivating office personnel.

8.   Office Supervision.

14. Principles of Business Management

(i)   Industrial Revolution and the growth of manufacturing processes; Economic and social effects of Industrilisation.

(ii)   Nature, scope and significance of Management and Administration. The modern concept of management.

(iii)   The process of Management-Planning Organisation, Co-ordination, Command and Control, Levels of authority and responsibility. Centralisation and decentralisation communication and delegation.

(iv)   Process of Control: Production Planning and Control quality control, Inventory control, Budgetory control and cost control.

(v)   Output efficiency: Plan location and Plan layout, Material handling, simplification of processes, standardisation.

(vi)   Office Administration: Location and layout of office. Organisation of the office and Principle of the office Organisation.

15. Labour Problems and Industrial relations in India

Labour problems in India. The working class in India sources of supply. Methods of recruitment, Employment exchanges.

Survey of labour conditions in Indian Industries working conditions wages, absenteeism, Labour turnover, leaves and holidays, Disciplinary actions.

Women and child labour.

Social Security, Industrial housing and labour efficiency.

Labour Legislation in India: Development and trend of Law, dealing with factories, wages, social security and workmen's compensation.

Trade Unions in India: History and development, present structure policies, methods and legal status. Collective Bargaining and Government regulations of labour relations. Industrial relations. Causes of unrest machinery for the settlement of Industrial disputes in India-conciliation and Arbitration adjudication and other methods of adjustment workers participation in Management in India.

Roll of LL.O. in the field of labour.

16. Higher Accounting

1. Construction, Interpretation and Criticism of published Accounts.

2. Preparation of Annual Accounts of Banking Companies and Insurance Companies.

3. Preparation of consolidated balance sheet and profit and loss accounts. Statements under section 212-214 of Indian Companies Act.

4. Special problem in Reconstruction and Amalgamation of Companies.

5. Valuation of shares.

6. Valuation of goodwill.

7. Prepareciation and changing price levels.

8. Profits-concepts of profits In Accountancy; nature and measurements- Profit according to Indian Companies Act, their determination and disposal.

9. Budget and Budgetary control: Use of preparation of scales budget, purchase budget, production budget, income budget, Budgets as a means of controlling costs and increasing profits.

Government of Jammu and Kashmir
Planning and Development Department
Civil Sectt. Srinagar
*****

Subject: Jammu & Kashmir Statistical cum Evaluation Service (Competitive Examination) Regulations, 1976- inclusion of Computer Science Applications in the optional subjects.

Reference: Govt. order No. 299- PD of 1976 dated 04-12-1976, SRO-207 dated:04-09-1992 read with SRO-318 dated 17-10-2011.

Government Order No: 53 -PD of 2013.
D a t e d: 30 -05-2013.

In continuation to Government order and SROs under reference, sanction is hereby accorded to the:-

1. Inclusion of the subject of Computer Science & Applications having two papers i.e Computer Science & Applications –I and II as an optional subject for the conduct of the written examination for the selection of Assistant Directors, Statistics cum Evaluation, through J&K Public Service Commission. The standard of the subject during the above said examination for the subject shall be of the level of Masters Degree in Computer Science & Applications from any recognized University/Institute.

2. Adoption of syllabus for the subject of Computer Science & Applications paper I & II annexed as annexure (A) to this order.

By order of the Government of Jammu & Kashmir.

Sd/-
(B. R. Sharma) IAS
Principal Secretary to Government
Planning & Development Department.

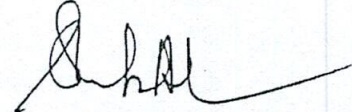**No.PD/HRM/66-1/2013.**   Dated.30-05-2013

Copy for information to the:-
1. Secretary to Government General Administration Department.
2. Secretary J&K Public Service Commission.
3. Director Economics & Statistics Bemina Srinagar.
4. General Manager, Government Press for Publication in Government Gazetted.
5. Senior Programme, Core Computer Unit Planning & Dev. Department with the request to kindly load the order on Departmental Website.
6. Private Secretary to Hon'ble Minister for Planning & Dev. Department.

7. Private Secretary to Hon'ble Minister of State for Planning & Dev. Deptt.
8. Private Secretary to Principal Secretary to Govt. Planning & Dev. Deptt.
9. PA to Special Secretary to Govt. Planning & Dev. Department.
10. Government order file.
11. Concerned file.

(Shabir Ahmad Bhat), KAS
Special Secretary to Government
Planning & Development Department

Syllabus for Computer Science and Applications

PAPER -I

Unit-I Re-programmable. Microcomputers, General Architecture of Micro-computer, Software Model of 8088 / 8086 Microprocessor, Segment Registers, Instruction formats, Addressing modes, Memory types and Organization, I / O Interfaces, Interrupt handling, Instruction set and programming (8086)

Unit-II Database concepts, ER Modelling, Design of relational databases, Normalization, Query processing, centralized and distributed databases, SQL, Security Concurrency control, recovery in centralized and distributed DBMS, Object oriented database management systems(concepts, composite objects, Integration with RDBMS applications).

Unit-III Displays Systems, Input devices, 2D graphics , transformations and drawing algorithms, clipping and filling, 3D graphics and transformations, Window to Viewport transformation, Hidden Surface removal.

Unit-IV Objects, messages Classes , Inheritance, Polymorphism, Aggregation, Abstract classes, Multiple inheritance, Virtual functions, operator overloading.

Unit-V Artificial Intelligence – Definitions and AI problems, Automated reasoning with propositional and predicate logic fundamentals, Proof procedure, refutation, resolution, refinements to resolution (ordering/pruning/restriction strategies). State space representation of problems, bounding functions, breadth first and depth first search other AI search techniques and their performance evaluation.

Components of an expert system, Knowledge representation and acquisition techniques, Building and expert system.

Systems approach to planning, designing. development, Implementation and evaluation of an MIS. Decision making processes, Evaluation of a DSS, Group DSS, Design approach of a DSS, Integrating Expert and Decision Support System.

17/5

Special Secretary to Govt
Planning & Dev. Deptt.

Syllabus for Computer Science and Applications

PAPER - II

Unit-I: Programming language concepts, flowcharts, Data types, algorithm , variables, constant, literals, operators, Expressions, Flow of control- control structures, I/O statements, User-defined and built-in functions, parameter passing , recursions, structures , files and graphics features in 'C' language.
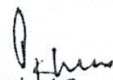
Finite state machines, Regular expressions, Finite memory programs, DFA and NFA, Grammars and Languages Type-0 , Type-1, Type-2, Type-3, Context free grammars. Pushdown automata, Turing machine, Recursions, Recursive finite domain programs,
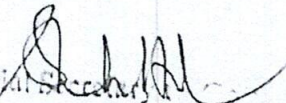
Unit-II: Analog and Digital transmission, Synchronous and Asynchronous transmission. Transmission media, Multiplexing and concentration, Switching techniques, Polling and handshaking. Computer networks , networking hardware devices , topologies. OSI Reference Models, Protocols (TCP/IP), Network security and administration.

Unit-III Data structures, linear and non-linear, arrays, stacks, queues , priority queues , linked list and types, trees , its traversal and applications, graphs, their traversal and applications, different sorting and searching techniques, algorithms and their analysis of algorithms using asymptotic notations. Different algorithmic solving techniques like greedy method , backtracking , dynamic programming, N-queens method. NP-hard and NP-Complete problems.

Unit-IV Software development life cycle, software process models , requirement analysis and specification, software analysis and design tools , software validation and quality assurance techniques. software maintenance and software management.

Unit–V Operating systems , Process scheduling, Inter process communication, deadlock detection and handling .Memory management , Multiprogramming system, I/O and file management. Distributed operating systems, case study of unix.

Principal Secretary to Govt. 17/5/13
Planning and Dev. Department
Jammu and Kashmir.

Special Secretary
Planning & Devpt. Dept.