RAJASTHAN PUBLIC SERVICE COMMISSION, AJMER

SYLLABUS OF COMPETITIVE EXAMINATION FOR
THE POST OF STATISTICAL OFFICER
AGRICULTURE DEPARTMENT

Part-A   - 40 Questions
General Knowledge of Rajasthan

Unit-I: History, Culture & Heritage of Rajasthan -

Pre & early history of Rajasthan. Age of Rajputs: Major dynasties of Rajasthan and the achievements of prominent rulers. Emergence of Modern Rajasthan: factors of socio-political awakening of 19th century; Peasants and tribal movements of 20th century; Political struggle of 20th century and the integration of Rajasthan.

Visual Art of Rajasthan - Architecture of forts and temples of Rajasthan; Sculpture traditions of Rajasthan and various schools of painting of Rajasthan.

Performing Arts of Rajasthan - Folk music and musical instruments of Rajasthan; folk dance and folk drama of Rajasthan.

Various religious cults, saints and folk deities of Rajasthan.

Various dialects and its distribution in Rajasthan; literature of Rajasthani language.

Unit-II: Geography, Natural Resource & Socio-Economic Development of Rajasthan -

Geography of Rajasthan: Broad physical features- Mountains, Plateaus, Plains & Desert; Major rivers and lakes; Climate and Agro-climatic regions; Major soil types and distribution; Major forest types and distribution; Demographic characteristics; Desertification, Droughts & Floods, Deforestation, Environmental Pollution and Ecological Concerns.

Economy of Rajasthan: Major Minerals- Metallic & Non- Metallic; Power Resources- Renewable and Non Renewable; Major agro based industries- Textile, Sugar, Paper & Vegetable oil; Poverty and Unemployment; Agro food parks.

Unit-III: Current Events and Issues of Rajasthan and India -

Important Persons, Places and Current events of the State. National and International events of importance. New Schemes & Initiatives taken recently for welfare & development in Rajasthan.

Part-B   — 110 Questions

(1) Descriptive Statistics: Classification, tabulation and frequency distribution. Diagrammatic and Graphical Representation: Bar diagram, Pie chart, histogram, frequency polygon, frequency curve. Measures of central tendency, quartiles, deciles and percentiles. Measures of Dispersion, coefficient of variation, moments, measures of skewness and kurtosis.

(2) Probability: Classical and Axiomatic approaches of probability, Conditional Probability, Bayes theorem, Simple problems on probability. Random variable and Mathematical Expectation with applications, Chebyshev's inequality. Concept of moment generating function, cumulant generating function and characteristic function.

(3) Theoretical distributions: Discrete probability distributions: Bernoulli, binomial, Poisson, negative binomial. Continuous probability distributions: Rectangular, normal, gamma and beta type one and type two. Sampling distributions: Chi-square, t-distribution, F-distribution their applications and inter-relationship.

(4) Correlation, Regression and Multivariate Analysis: Karl-Pearson's co-efficient of correlation and Spearman's rank correlation co-efficient, simple linear regression, method of least squares. Multivariate Normal Distribution, Hotelling's T^2 distribution. Discriminant, Principal Component and Factor Analysis. Wishart's distribution and its properties.

(5) Sampling methods: Simple random sampling with and without replacement, stratified random sampling, cluster sampling, systematic sampling, sampling for proportions. Multistage sampling with equal probability, Probability proportional to size with and without replacement, Ratio and Regression methods of estimation, sampling and non-sampling errors.

(6) Experimental Design: Concept of analysis of variance (ANOVA) for one way and two-way classified data, uniformity trials, principles of design of experiments. Completely Randomized Design (CRD), Randomized Block Design (RBD), Latin Square Design (LSD), missing plot technique, 2^2 and 2^3 factorial experiments in RBD, complete and partial confounding. Split plot and Strip plot designs.

(7) Statistical Inference: Point and interval estimation, properties of estimators. Methods of estimation: method of least squares and maximum likelihood estimation. Confidence interval and confidence limits. Concept of hypothesis, types of errors, Neyman-Pearson's lemma, parametric tests for large and small samples. Non-parametric tests: run, sign and median.

(8) Time Series Analysis and Index Number: Components, Measurements of Trend, Seasonal, Cyclical and Irregular variations, Auto correlation, Auto regression, Periodogram. Uses, types, tests and limitations of index numbers, construction of index numbers, simple and weighted aggregate method, Simple and weighted average, price-relatives, Chain base index numbers, base shifting, Splicing and Deflating of Index numbers, cost of Living index numbers.

(9) Agriculture Statistics and Statistical Organization in India: Importance of Statistics in Agriculture, Agricultural statistical system in India, Agricultural Census, Livestock Census, Land use statistics. Agriculture Survey. National Agricultural Production Index. Crop production Index, CSO, NSSO, National Income Statistics.

(10) Numerical Analysis: Difference operators, Newton's forward and backward interpolation formula, Newton's divided difference interpolation formula, Lagrange's interpolation formula, Sterling's interpolation formula and Bessel's interpolation formula, Simpson's $1/3^{rd}$ and $3/8^{th}$ rule of numerical integration.

(11) Mathematics and Information Technology: Perimeter and Area of Plane figures, triangles, square, rectangle and quadrilaterals. Lines and Angles.

Matrix: Various types of matrices, their basic operations and properties. Rank of a Matrix, Invertible matrices and their inverse. Determinants, their basic operations and properties.

Information Technology in Agriculture, MS-Office, Operating system, use of ICT in agriculture, Introduction to various statistical packages: R, SAS, SPSS

* * * * *

	Scheme of Examination			
S. No.	**Subject**	**No. of Questions**	**Total Marks**	**Examination Duration**
Part-A	**General Knowledge of Rajasthan**	40	40	**2.30 Hours**
Part-B	**Concerned Subject (as prescribed in qualification)**	110	110	
	Total	**150**	**150**	

1. The competitive examination shall carry 150 marks and 150 questions of Multiple Choice Type questions.
2. There shall be one paper. Duration of Paper will be Two hours and Thirty Minutes.
3. Negative marking shall be applicable in the evaluation of answers. For every wrong answer one-third of the marks prescribed for that particular question shall be deducted.
   Explanation :- Wrong answer shall mean an incorrect answer or multiple answers.

उक्त पद हेतु आयोजित की जाने वाली परीक्षा के लिए ओ.एम.आर. उत्तरपत्रक में प्रश्नों के विकल्प भरने के संबंध में विशेष निर्देशः—

1. Each question has five options marked as 1, 2, 3, 4, 5. You have to darken only one circle (bubble) indicating the correct answer on the Answer Sheet using BLUE BALL POINT PEN.
2. It is mandatory to fill one option for each question.
3. If you are not attempting a question then you have to darken the circle '5'. If none of the five circles is darkened, one third (1/3) part of the marks of question shall be deducted.
4. After solving question paper, candidate must ascertain that he/she has darkened one of the circles (bubbles) for each of the questions. Extra time of 10 minutes beyond scheduled time, is provided for this.
   A candidate who has not darkened any of the five circles in more than 10% questions shall be disqualified.