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Call for Applications for empanelment for consequent engagement to the posts of JRF and SRF

1. The Geoinformatics and Remote Sensing Cell under the Department of Science & Technology and Biotechnology (DSTBT) of the Government of West Bengal (GoWB) has been implementing satellite based remote sensing and GIS-based projects to provide strategic support to various Departments and Organizations in developmental planning and well-informed decision-making. The comprehensive and diverse applications of these projects include natural resources management, infrastructure development, climate change, disaster management, urban planning etc.

2. The Department has been using geospatial technologies integrated with AI/ML etc. as a state-of-the-art tool to effect efficient analysis and leverage the same for better identification of patterns and trends, and accurate prediction of the various geographic features in order to augment the services of the various sectors through scientific interventions. The Department has, inter alia, embarked on various RS and GIS based initiatives in the field of Agriculture, Climate change, Assessment of Registration Fees, Change of river dynamics etc. The resultant projects will be executed in conjunction with the nodal departments and will utilise state-of-the-artgeospatial technology.

3. To support the aforesaid interventions, there would be a requirement for preparing a merit based panel of individuals with academic background in Geology /Geography/ Agriculture / Environmental Science/ Civil Engineering / Remote Sensing & GIS or equivalent for engagement as **Junior Research Fellow (JRF)** and **Senior Research Fellow (SRF)** for these projects. Due to the nature of the work, it would be desirable for the individuals to have a PG Diploma in Geoinformatics or equivalent and/or Certificate in programming languages and/or Certificate in AI courses from any Govt. recognized Organization and/or NET/GATE/SLET qualified. This panel shall remain valid for a period of 1 year.

4. It may be mentioned that these projects may be of varying durations and options shall be given to the empaneled individuals, in order of merit, to pick a

project of choice. While the projects essentially involve similar skillsets, there would be certain project/ domain-specific learnings assimilated during project implementation that shall be utilized in the execution of the said projects. Normally, the DSTBT may not promote or have a requirement of inter-project movement, but such movement is not prohibited as long as the project work does not suffer.

5. To begin with, the DSTBT intends to engage individuals as JRF and SRF for the following 4 projects. In addition if the projects which are in pipeline are sanctioned during the intervening period then the empaneled candidates will also be engaged for those projects as per their positions in the merit list. The individuals remaining on panel would be offered engagements for future projects subsequently as long as the projects are started within a year of the notification of the said panel :

Sl. No.	Project Title	Project Duration	Manpower requirement for Project
1	Establishing / Strengthening of State Climate Change Centre/ Cell under NMSHE (SCCC-NMSHE) in the State of West Bengal – Phase-II	5 years	1. SRF: Total requirement : 2 (Unreserved : 1 SC: 01); 2. JRF:Total requirement:3 (Unreserved: 02, SC: 01)]
2	Development of a Digital Ecosystem for Crop Mapping, Crop Surveillance, Crop Yield and Production Estimation in West Bengal	5 years	1. SRF: Total requirement : 8 (Unreserved:04, SC: 02, ST: 01, OBC(A): 01); 2. JRF: Total requirement : 20 (Unreserved: 10, SC: 05, ST: 01, OBC(A): 02, OBC(B): 02
3	Studies on Tectonic Controls on River Dynamics in West Bengal	2 years	1. SRF: Total requirement : 1 (Unreserved:01) 2. JRF: Total requirement:1(Unreserved:01)]
4	Generation of Digital Database for Directorate of Registration	1 year	1. SRF: Total requirement : 3(SC: 01, ST: 01, OBC(A): 01) 2. JRF: Total requirement: 10 (Unreserved: 5, SC: 02, ST:

and Stamp Revenue (DoRSR)		01, OBC(A): 01, OBC(B): 01]

6. Accordingly, applications are invited from intending Indian nationals for empanelment for engagement as Junior Research Fellow (JRF) and Senior Research Fellow (SRF)

   a. **Details of posts :**

      i. **Position : Junior Research Fellow (JRF) :**

         α. **Remuneration :** Rs.25,000/- pm (consolidated)

         β. **Essential Qualifications :** At least 55% marks for the General Category candidates & at least 50% marks for SC/ST/OBC-A/OBC-B Category candidates in Master's Degree from any Govt. recognised University/ Institute in Geology/Geography/ Agriculture / Environmental Science/ Civil Engineering / Remote Sensing & GIS or equivalent

         γ. **Additional Desirable Qualifications :** PG Diploma in Geoinformatics and/or equivalent from any Govt. recognized Organization and/or Certificate in programming languages from any Govt. recognized Organization and/or Certificate in AI courses from any Govt. recognized Organization and/or NET/SLET/GATE qualified.

         δ. **Upper Age limit :**

            α. 30 years as of 01.01.2024 for General candidates.

            β. Relaxation of the upper age limit will be applicable for SC/ST/OBC - A/ OBC - B category candidates as per existing Govt. order.

         ε. **Duration :** Co-terminus with the project. The initial engagement will be for one year, extendable till the completion of the project based on the satisfactory performance of the JRF.

         ζ. **Nature of Job :** Satellite image processing for purpose oriented applications, On-screen image interpretation, Digital database creation, Preparation of thematic maps, Field work (Ground truth verification), Documentation etc.

      ii. **Position : Senior Research Fellow (SRF)**

         α. **Remuneration :** Rs.30,000/- pm (consolidated)

         β. **Essential Qualifications & Experience :** At least 55% marks for the General Category candidates & at least 50% marks for SC/ST/OBC-A/OBC-B Category candidates in

Master's Degree from any Govt. recognised University/ Institute in Geology /Geography/Agriculture/ Environmental Science/ Civil Engineering / Remote Sensing & GIS or equivalent and at least 2 years of working experience in using RS and GIS technologies in any reputed and registered Organization

γ. **Additional Desirable Qualifications**: PG Diploma in Geoinformatics or equivalent from any Govt. recognized Organization and/**or** Certificate in programming languages from any Govt. recognized Organization and/**or** Certificate in AI courses from any Govt. recognized Organization and/or NET/GATE/SLET qualified.

δ. **Upper Age limit :**
  α. 35 years as of 01.01.2024
  β. Relaxation of the upper age limit will be applicable for SC/ST/OBC - A/ OBC - B category candidates as per existing Govt. order.
  γ. Candidates who are working or have worked earlier in any GIS based project of the DSTBT or any of its parastatal will be granted a relaxation in age equal to the the period as long as they have worked in various GIS based projects under DSTBT or its parastatal(s) subject to an upper age limit of 55 years.
  ε. **Duration**: Co-terminus with the project. The initial engagement will be for one year, extendable till the completion of the project based on the satisfactory performance of the SRF. No engagement shall continue after the SRF attains the age of 60 years.
  ζ. **Nature of Job** : Satellite image processing for purpose oriented applications, On-screen image interpretation, Digital database creation, Preparation of thematic maps, Field work (Ground truth verification), Documentation, Supervision of the works of JRFs in coordination with PI, Project Execution and Management, Data Analysis, Interpretation and Report preparation etc.

b. **Number of positions and Caste Category-wise**

breakup : As on date 4 projects are to be started. In addition if the projects which are in pipeline are sanctioned during the intervening period then the empaneled candidates will also be engaged for those projects as per their positions in the merit list. The individuals remaining on panel would be offered engagements for future projects subsequently as long as the projects are started within a year of the notification of the said panel. Accordingly, the initial number of engagements caste category-wise shall be as follows :

i. **JRF** :
   1. Total: 34
   2. Unreserved: 18
   3. SC: 08
   4. ST: 02
   5. OBC(A): 03
   6. OBC(B): 03
ii. **SRF** :
   1. Total: 14
   2. Unreserved: 06
   3. SC: 04
   4. ST: 02
   5. OBC(A): 02
   6. OBC(B): NIL

7. **Examination/ evaluation Procedure and empanelment process :**

   a. **General** : The evaluation of the otherwise qualified applicants shall be through a two stage procedure, viz., there shall be a Written Test which shall be of qualifying nature and the qualified candidates shall become eligible to participate in an Interview/ Personality Test.

   b. **Written examination :**
      i. The written examination will be of 50 marks and the qualifying marks shall be 30.
      ii. The medium of Questioning/ instructions will be in English and the duration will be of one hour.
      iii. The questions will be of MCQ type and the weightage of each question will be one. There will be four alternatives for the answers to every question, but only one of these alternatives will be correct. The candidate has to mark the correct alternative in the appropriate box. If a candidate selects more than one option, it will be treated as a wrong answer even if, one of the given options happens to be correct.

        iv. There will be no negative marking for the wrong answers.

        v. All candidates who score 30 marks or more in the written test shall be invited to appear before an Interview Board for an Interview/ Personality Test

   c. **Interview/ Personality Test :**

        i. All candidates who qualify in the written test shall be invited to appear before an Interview Board for an Interview/ Personality Test of 20 marks.

        ii. While the objective of the Interview/ Personality Test will be to assess the mental calibre/ intellectual qualities and assess the personality of the candidate, there will be queries on the use of Geoinformatics in the different sectors to cater for the needs of the projects.

   d. **Preparation of the Merit List and empanelment :**

        i. The final merit list will be prepared by adding the marks obtained by the candidate in the written test and interview taken together.

        ii. All candidates that score 40 marks or more overall shall be empaneled for 1 year validity and this panel shall be prepared in order of merit and taking into account SC/ ST/ OBC-A/OBC-B status.

        iii. Candidates shall be offered engagement strictly in order of merit and based on reservation requirements.

8. **Engagement process :**
   a. The empaneled candidates will initially be offered an engagement for a period of 1 year based on their rank in the panel strictly in order of merit and the reservation of the post under consideration.
   b. For the projects of more than one-year duration, the performance of the associated candidates will be reviewed by the Selection Committee and he will be allowed to continue for the next year if his contribution to the project is found satisfactory.

9. **Termination :** The engagement to the above contractual posts will be terminated on the following conditions-
   a. On completion of the Project
   b. On attainment of 60 years of age by the JRF/ SRF.
   c. If the project is terminated mid-way due to any unforeseen reason
   d. The Competent Authority shall reserve the right to terminate the contractual employee at any stage even after appointment on one month's notice on the

grounds of submission of fraudulent documents, unsatisfactory performance, misconduct etc.

10. **How to Apply**:
    a. Interested Candidates are to apply online by using the website of the Dept. of Science and Technology and Biotechnology, Govt. of West Bengal www.dstbt.bangla.gov.in. Detailed instructions for filling up the online application format are available on the above website **(Recruitment Section)**.
    b. The Candidates will upload the self-attested scanned copy of the following documents including their recent passport-size photograph as per the online application format.
        i. Admit Card of Secondary Examination (Class-X)
        ii. Mark sheet of Secondary Examination (Class-X)
        iii. Certificate of Secondary Examination(Class-X)
        iv. Mark sheet of Higher Secondary Examination (Class-XII)
        v. Certificate of Higher Secondary Examination (Class-XII)
        vi. Mark sheet of Graduation.
        vii. Certificate of Graduation.
        viii. Mark sheet of Post-Graduation.
        ix. Certificate of Post-Graduation.
        x. Voter Identity Card/PAN Card/ Passport/ Driving License/ Identity Card (with photograph of the applicant) issued by the Central/ State Govt. - as proof of identity.
        xi. Valid SC/ST/OBC-A/OBC-B Certificate issued by the Competent Authority, if applicable
        xii. Certificate/s of other Higher studies/ desirable qualifications, if any
        xiii. Experience Certificate issued by the Employer/competent authority
    c. The candidates who are in service whether in a permanent or temporary capacity, have to submit an NOC from the employer/competent authority that they have no objection to releasing the candidate if he/she is selected for the contractual post.

11. **Verification of the documents**: The admissibility of the Candidates to all the stages of the examination will be purely provisional subject to satisfying the prescribed eligibility conditions. The mere issue of an Admit Card to the candidate will not imply that his/her candidature has been finally accepted by the authority. The verification of eligibility conditions with reference to original documents will only be taken up after the

candidate has qualified for the Interview/Personality Test.

12. **Application Fee**: Nil

13. **Reservation and Caste Certificate**: A candidate will be eligible to get the benefits of reservation only if the particular caste to which the candidate belongs is included in the list of reserved communities notified by the BCW Dept. Govt. of W.B. The Caste certificate of OBC-A/ OBC-B candidates must have been issued within one year from the date of submission of application by the candidates for the above contractual positions.

14. **Last Date for Receipt of Applications** : The Candidates will be allowed to submit online applications up to **5.30 pm on 1.4.2024 (Monday).** Applications received after the last date and time for submission will not be entertained.

15. After scrutiny of the Applications, the list of the valid candidatures will be uploaded on the website www.dstbt.bangla.gov.in

16. **Venue of examination :** The venue, date and time of the written examination will be communicated in due course through uploading on the Departmental website. No individual communication shall be made in this connection.

17. **Issue of Admit Cards** :The Admit Cards containing the Roll no., Venue, Date and time of Examination will be sent to the eligible candidates through the email indicated in the application. The candidates are to download the same and carry the hardcopy of the Admit card along with the ID proof (as mentioned in 10(b)(x)) while appearing for the written examination/interview. No Admit Card will be sent by post.

18. Candidates who will obtain the qualifying marks in the written examination will be called for an Interview/ Personality Test. The date and time of the Interview will be communicated to the qualified candidates through email besides the website ventilation.

19. **General Information/ instructions for the Candidates**
    a. An Application Form not properly filled up or incomplete in any respect would be summarily rejected.
    b. Engagement will be on a purely contractual basis and will not be regularized in future in any manner whatsoever. The candidates, so engaged shall not be eligible for appointment under any other establishment of the Government by virtue of this engagement in future.
    c. Eligible candidates will be deployed at the Office Headquarters and they have to undertake field

visits/tours as per the requirement of the concerned Project.

d. No accommodation will be provided to the selected candidates.

e. All correspondences regarding this engagement will be sent to the email ID and Mobile No. of the candidates, as disclosed in the online Application Form.

f. The applicants are to browse the website www.dstbt.bangla.gov.in from time to time for additional information, if any.

g. For any query, pl send an email to onlinedstbt@gmail.com

h. **Ban on Mobile phone etc.** : The use of a Mobile Phone or any kind of electronic device is strictly prohibited inside the Examination Hall. Any infringement of these instructions shall entail strict actions against the wrongdoers.

i. Canvassing/offering illegal gratification/ impersonation/ submitting fabricated documents/ being in possession of or using unfair means during examination are strictly prohibited. If any candidate is found guilty of any of the above offences, he shall be disqualified from the examination and liable to criminal prosecution. The decision of the authority will be final in this regard.

Appendix-I

SYLLABUS
Written Examination for the post of JRF & SRF
Total Marks:50

1. **Principles of Remote Sensing (Marks:20)**

   a. Definition of Remote sensing, Advantages and limitations, Remote sensing process, Electromagnetic Radiation (EMR): EMR Spectrum and its properties, EMR wavelength regions and their applications, Atmospheric windows, Interaction of EMR with matter, Spectral signatures, Resolutions: Spectral, Spatial, Temporal and Radiometric; Spectral Signature and Response of Soil, Vegetation and Water, Basics of visual interpretation of satellite images

   b. Orbits of satellite, Kepler's laws of motion, IRS Series of Satellites, LANDSAT, SPOT, IKONOS,

QUICKBIRD, MODIS, RADARSAT, NOAA, TERRA, MOS and ERS, Brief introduction to Weather and Communication Satellites

c. Fundamentals of aerial photography, Vertical and Oblique aerial photography, Aerial cameras, Photogrammetry; Basic concepts of scale, object height and length, object area and perimeter, grayscale tone/colour of objects, Photo interpretation techniques, Stereo photogrammetry and stereovision, Parallax bar and its applications.

d. Cameras, Sensor classification: Active and Passive, along track and across track scanners, Infrared Scanners, Thermal Sensors and Microwave Sensors

e. Introduction to Thermal Infrared Radiation Properties: Kinetic Heat, Temperature, Radiant Energy and Flux, methods of transferring heat, Thermal properties of terrain: Thermal Capacity, Thermal conductivity, Thermal Inertia, Thermal Infrared Multispectral scanners, Thermal IR Remote sensing examples

f. Passive Microwave Sensors, Active Microwave Sensors, Side looking RADAR, SAR Interferometry

2. **Principles of Geographic Information Systems (GIS) (Marks:15)**

a. Basic Concepts about spatial information, Philosophy and definition of GIS, features, pictures, variables: points, lines, areas, Position on the earth; Basics of map.

b. Fundamentals of Data Storage, Information Organization and Data Structure; Basic File Structures; Tabular Databases; Advantages of Databases, Types of Databases- hierarchical systems, network systems, relational systems and Object-oriented database systems (OODS), Data Models-Entity Relationship model, Relational Model, Data Structures; Raster Structures, Vector Structures.

c. GIS Data Requirement, sources and collection, Methods of data capture-scanning. digitization and associated errors, Conversion from Other Digital Sources, Attribute data input and management, Edge matching, creating digital data remote sensing; generating data from existing data; Metadata; Different Kinds of geospatial data, Detecting and Evaluating Errors, Data Quality Measurement and Assessment, digital output options. Vector & Raster data query.

d. Raster data and structure, Local operations, Neighbourhood operations, Zonal operations, Distance measure operations, Spatial auto correlations, DEM

generation, Spatial Modelling, combining data; terrain mapping relationships; and spatial interpolation. finding and quantifying

   e. Vector database, Topological Relationships; Creation of Topology and Error Correction; Accuracy and Precision; The Importance of Error, Accuracy, and Precision, types of error, sources of error, data quality, Spatial interpolation, Overlay Operations and Buffering, Neighbourhood functions, Distance Measurement, Map Manipulation.

3. **Global Navigation Satellite System (GNSS) (Marks:05)**
   Introduction of Global Positioning System, Satellite constellation, GPS signals and data, Geo-positioning- Basic Concepts. NAVSTAR, GLONASS

4. **General Aptitude Test(Marks:10)**