



राष्ट्रीय प्रौद्योगिकी संस्थान रायपुर  
NATIONAL INSTITUTE OF TECHNOLOGY RAIPUR  
(An Institute of National Importance)  
GE Road, Raipur, Chhattisgarh - 492010

Phone: (0771) 2252700  
Email: [registrar@nitrr.ac.in](mailto:registrar@nitrr.ac.in)  
Website: [www.nitrr.ac.in](http://www.nitrr.ac.in)

No./NITRR/R-1/Advt./2024/947

Raipur, Date: 04/03/2024

### **Recruitment Notice**

National Institute of Technology Raipur is an Institute of National Importance under the aegis of Ministry of Education – Government of India. Applications in the prescribed format (online **prescribed form** and its hard copy) are invited from Indian Nationals for recruitment to the following Non-Faculty positions in the Institute:

<b>Regular Appointment:</b>					
<b>S. No.</b>	<b>Name of the post</b>	<b>Department</b>	<b>Pay Level</b>	<b>Number of Vacancies</b>	
				<b>Vacancies</b>	<b>Total</b>
1	Technical Assistant	Architecture	Pay Level-6 (PB-2, GP Rs. 4200/-)	UR-1	2
		Biomedical Engineering	Pay Level-6 (PB-2, GP Rs. 4200/-)	EWS-1	

Please read further detailed information from the Institute website [www.nitrr.ac.in](http://www.nitrr.ac.in). Opening date of online application is on 06/03/2024. Last date for online application is on 22/04/2024 (5 PM) and the last date for receipt of hard-copy application with supporting documents at the Institute is on or before 30/04/2024. Candidates are requested to regularly visit the Institute website i.e., [www.nitrr.ac.in](http://www.nitrr.ac.in) for updated information regarding the recruitment.

–Sd–  
Registrar (I/c)

Copy to:

1. The Director, NIT Raipur for kind information.



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## भर्ती सूचना

राष्ट्रीय प्रौद्योगिकी संस्थान रायपुर, (छ.ग.) शिक्षा मंत्रालय, भारत सरकार का राष्ट्रीय महत्व का संस्थान है। संस्थान में निम्नलिखित गैर शैक्षणिक पदों की भर्ती हेतु भारतीय नागरिकों से निर्धारित प्रारूप (ऑनलाइन निर्धारित फार्म और उसकी हार्ड कापी) में आवेदन पत्र आमंत्रित किये जाते हैं :

नियमित नियुक्तियों:					
क्र. सं.	पदों के नाम	विभाग	वेतन लेवल	पद संख्या	
				पद	Total
1	तकनीकी सहायक	वास्तुकला	वेतन लेवल-6 (PB-2, GP Rs. 4200/-)	अना.-1	2
		जैव-चिकित्सा प्रौद्योगिकी	वेतन लेवल-6 (PB-2, GP Rs. 4200/-)	ईडब्ल्यूएस -1	

कृपया विस्तृत जानकारी के लिए संस्थान की वेबसाइट [www.nitrr.ac.in](http://www.nitrr.ac.in) का अवलोकन करें। ऑनलाइन आवेदन शुरू होने की तारीख 06/03/2024 है। ऑनलाइन आवेदन करने की अंतिम तिथि 22/04/2024 (शाम 5 बजे) और संस्थान में आवेदन पत्र एवं संबंधित दस्तावेज जमा करने की अंतिम तिथि 30/04/2024 है। उम्मीदवारों से अनुरोध है कि भर्ती संबंधी जानकारी हेतु संस्थान की वेबसाइट [www.nitrr.ac.in](http://www.nitrr.ac.in) का अवलोकन नियमित रूप से करते रहें।

कुलसचिव (प्रभारी)

प्रतिलिपि :-

- निदेशक महोदय, रा. प्र. सं रायपुर

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[www.jkchrome.com](http://www.jkchrome.com)

**ELIGIBILITY CRITERIA**

Details of eligibility conditions for the advertised posts are given hereunder.

Name of Post	Technical Assistant
Method of Recruitment	Direct Recruitment
Age Limit	UR & EWS – 30 years
Educational and other qualifications	<p><b><u>Essential</u></b></p> <p><b><u>For Technical Assistant (Architecture) {Vacancy: UR-01}</u></b>            First Class or equivalent Grade in B.E./B.Tech. in Civil Engineering from a recognized University/Institute.            Or            First Class Diploma in Civil Engineering with at least 60% marks or equivalent grade in 10<sup>th</sup> std</p> <p><b><u>For Technical Assistant (Bio-Medical) {Vacancy: EWS-01}</u></b>            First Class or equivalent Grade in B.E./ B.Tech. in the subject of Biomedical Engineering/ Electronics/ Electronics and Communication/ Instrumentation/ Mechanical/ Metallurgy/ Bioelectronics and related field from a recognized University/ Institute.            Or            First Class Diploma in Engineering in Biomedical Engineering/ Electronics/Electronics and Communication/ Instrumentation/ Mechanical/ Metallurgy/ Bioelectronics/ Medical Lab Technology and related field with at least 60% marks or equivalent grade in 10<sup>th</sup> std            Or            First Class Bachelor's Degree in Science in Biomedical/ Electronics/ Electronics and Communication/ Instrumentation/ Material Science/ Bioelectronics and related field from a recognized University or Institute            Or            Master's Degree in Science in Biomedical/ Electronics/ Electronics and Communication/ Instrumentation/ Mechatronics/ Material Science /Bioelectronics and related field from a recognized University or Institute with at least 50% marks or equivalent grade</p>

## GENERAL CONDITIONS

### 1. Steps to submit the application –

- a) The candidates are required to first fill an ONLINE application on Recruitment Portal available on the Institute website viz. <https://nitrr.ac.in/advertisement.php> and pay the application fee online.
- b) Then submit the hard copy of the **prescribed form** generated online with all necessary self-attested documents in an envelope. Envelope must be duly super-scribed with –  
“Application for the post of Technical Assistant – Architecture/Bio Medical” (*write department name as applicable*)  
Candidate must write ‘self-attested’ along with signature and submission date on all the pages of the application form and requisite documents.
- c) The envelope with all the contents must be sent through post to “The Registrar, NIT Raipur, GE Road, Raipur, 492010, Chhattisgarh”.

Note –

- Opening date of online application – 06/03/2024
- Closing date & time of online application – 22/04/2024, 5 PM
- Deadline for submitting hard copy application with supporting documents – 30/04/2024

### 2. Application Fee

- a) The Application Fee shall be as under –

Particulars Application	Fee Payable
UR/OBC-NCL	Rs. 1000/- per post & per department
SC/ST/PwD/EWS	Rs. 500/- per post & per department

- b) Application Fee once received by the Institute will not be returned under any circumstances.

3. Candidates applying for more than one post are required to submit separate application form and fee. The applicant must ensure that he/she fulfills the eligibility conditions for the post on or before the closing date. Application submitted for a particular post/department is not transferable to any other post.
4. A one-time relaxation in the upper age limit upto 56 years [maximum upper age limit for any position as per Recruitment Rules (2019) for non-teaching posts in NITs] as per MHRD’s letter No. F35-5/2018-TS.III, dated 20/02/2019 to the employees of the Institute who were on ad-hoc/ temporary/ contractual/ outsource basis as on date of MHRD’s OM i.e. 20/02/2019 and are continuing on the day of advertisement subject to the condition that they fulfil all other conditions mentioned in the Recruitment Rules for the applied post, as per the Ministry of HRD letter No. F35-5/2018-TS.III, dated 20/02/2019. The age relaxation will be equal to the length of service that the above-stated employees have put in NIT, Raipur without considering the break and will be over and above maximum age prescribed for the post, after considering the statutory age relaxations.
5. The applicant will be responsible for the authenticity of submitted information, other documents and photograph. Submission of any false and/or suppression / concealment of facts shall lead to rejection/cancellation of selection/recruitment.
6. The Institute reserves the right to utilize the services of candidates in any department/section of the Institute, at any point of time.
7. The age limit and qualifications/experience etc. for all the posts shall be determined as on the last date of submission of online applications forms i.e., 22/04/2024. However, age relaxation will be considered in case of SC/ST/OBC (Non-Creamy Layer)/PWD and Ex-servicemen as applicable in Central Government.

## 8. Concessions, Relaxations & Reservations

- a) Upper age limit is relaxable by 5 years for SC/ST candidates and 3 years for Other Backward Classes (OBC) – Non-Creamy layer (NCL) candidates. This is applicable for posts which are earmarked for such categories in the recruitment advertisement.
  - b) Reservation of posts for SC, ST and OBC (Non-Creamy Layer) & Economically Weaker Sections (EWS) will be as per Govt. Guidelines. For EWS category applicants, appointment shall be provisional and subject to the Income and Asset Certificate to be verified through proper channels and if the verification reveals that the claim to belong to EWS is fake / false, the services of the concerned applicant(s) will be terminated forthwith without assigning any further reasons. **EWS certificate must be issued on or after 01/04/2023.**
  - c) Reservation & Relaxation for Persons with Benchmark Disabilities as per Govt. rules shall be applicable. The Upper age limit for Persons with Benchmark Disabilities (PwBD) candidates is relaxable by 10 years (15 years for SCs/ STs & 13 years for OBC [NCL]).
  - d) Upper age limit is relaxable for Ex-Servicemen as per extant applicable rules issued by the Competent Authority subject to production of proper documents in support thereof.
  - e) Upper age limit is relaxable for Departmental Candidates up to five years in accordance with the instructions or orders issued by the Central Government.
  - f) All the certificates of caste/disability must be in Govt of India format.
9. Any application without required certificates/testimonials is liable to be rejected summarily. Any application without valid SC/ST/OBC (Non-Creamy Layer)/EWS/PWD/Ex-Serviceman certificate is liable to be considered in UR category only (if any).
  10. Mere fulfillment of the required qualifications and experience, etc. does not entitle a candidate to be called for written test(s)/ skill test(s) (wherever applicable).
  11. All the online/offline applications shall be accepted provisionally. The candidates are advised to go through the requirements of educational qualification, age etc. and satisfy themselves that they are eligible as per advertisement published/uploaded on the Institute's website before applying. Otherwise their candidature will be cancelled at any stage if any information or claim is not found substantiated including when the scrutiny/verification of documents is undertaken by the Institute.
  12. The Institute may decide to fix the higher criteria (which may include higher qualifications, higher percentage of marks in educational qualifications, experience and other such parameter(s)) for screening and short listing the applications of applicants to be called for written test(s)/ skill test(s) (wherever applicable).
  13. The Institute reserves the right to increase or decrease the number of advertised posts at the time of selection. The Institute also reserves the right not to fill any or all the posts advertised and to reject any or all the applications without assigning any reason.
  14. Candidates already in service may also apply online and send their application through proper channel. An advance copy may be sent directly, if necessary, along with the requisite documents. However, in such cases the candidates (if shortlisted) must produce the NOC at the time of document verification, as may be notified by the Institute. All Certificates, Degrees, NOC and other documents must be produced in originals at any time, as may be notified by the Institute.
  15. No correspondence/queries will be entertained from candidates regarding conduct and result of written test(s)/ skill test(s).

16. The Institute reserves the right to rectify any discrepancy in the pay, Pay Level, etc. if found later on.
17. In case of any inadvertent mistake in the process of selection which may be detected at any stage even after the issue of appointment letter, the Institute reserves the right to modify/withdraw/ cancel any communication made to the candidate.
18. The appointment of selected candidates is subject to being found medically fit and sound in health for the services in the institute which shall be examined through a medical examination by the medical board/senior medical officer/medical officer of the institute as the case may be. The medical examination may be undertaken before joining the post.
19. Updates/ information/ corrigendum/ addendum will be published on the institute's website only. The institute will not be responsible in any manner if a candidate fails to visit/access the website in time. Candidates are requested to regularly visit the Institute website i.e., <https://nitrr.ac.in/advertisement.php> for updated information regarding the recruitment.
20. Canvassing in any manner would entail disqualification of the candidature.
21. In case of any dispute/ambiguity that may occur in the process of selection, the decision of the Institute shall be final. No correspondence will be entertained from the candidates.
22. Any dispute regarding recruitment will fall under the jurisdiction of District Court, Raipur.
23. This recruitment and the resultant appointments, if any, will be subject to the outcome of litigation pending in the Hon'ble High Court of Chhattisgarh.
24. The Institute reserves the right to cancel this advertisement at any stage without assigning any reason whatsoever.
25. Candidates who were deemed provisionally eligible for the posts of Technical Assistant (Architecture & Bio-Medical) advertised earlier vide Recruitment Notice No./NITRR/R-1/Advt./2023/161 dated 13.07.2023, will retain their provisional eligibility status in the current recruitment advertisement. Such candidates are not required to re-apply or pay any additional application fees and will continue to be governed by the criteria stipulated in previously cancelled recruitment advertisement. However, all such candidates are advised to regularly check the institute's website for the notifications/communications to candidates pertaining to the current advertisement.
26. Any revision in Recruitment Rules issued till the date of written test(s)/ skill proficiency test/ interview for the said post or other relevant notifications, if any, issued by MoE shall also be applicable.

**-Sd-**  
**Registrar (I/c)**

Copy to:

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**SELECTION PROCEDURE & EXAMINATION PATTERN**  
**For post – Technical Assistant (Architecture & Bio-Medical)**

Mode of Selection –  
MCQ type test

Scheme of Exam (Common for all posts/departments/specializations) –

- Total Questions – 100 (MCQ Type)
- Maximum Marks – 100
- Question Paper will have two parts viz. Part – A (20 Marks) & Part – B (80 Marks)
  - Part – A will be common for all posts and will comprise of General Knowledge and Current Affairs, General English, General Aptitude & Reasoning, Mathematics and Science, Computer Application and Other Subjects.
  - Part – B will be specific for the post based on Department/Specialization.
- Each question will have one Correct Answer
- + 1 (One) for Each Correct Answer
- – 0.25 for Each Incorrect Answer
- No Marks for Unanswered Questions
- Multiple selections/cutting in Answers will be treated as unanswered and no marks will be awarded.
- Duration of test – 3 hours

Merit List –

Merit List will be prepared based on Total Score obtained in the MCQ test only. However, cutoff marks for UR & EWS categories will be 35%. Reserved category applicants who have applied against UR category positions will get no relaxation in cutoff marks.

Tie Breaking Rule –

In case of equal marks obtained in the MCQ test, in order of priority for the same post is given below –

- Higher score in Part – B will get preference.
- In case above point is same for candidates, then the candidate having higher age will get preference in merit.



## Post – Technical Assistant (Architecture)

### SYLLABUS

#### **PART – A (20 MARKS)**

**General Knowledge and Current Affairs** A standard pattern similar to one used by Staff Selection Commission for Combined higher secondary level examination or banking clerical examination can be conducted. Current Affairs questions can also be included in this.

**General English:** Error recognition, Fill in the blanks with appropriate terms, Vocabulary, Grammar with special reference to Sentence Structure, Synonyms, Antonyms etc

**General Aptitude & Reasoning:** Questions on reasoning and problem solving, analysis, judgment, decision making, visual memory, relationship concepts, verbal and figure classification, arithmetical number series, non-verbal series etc.

**Mathematics:** Class 10th Syllabus of NCERT.

**Science, Computer application and Other Subjects:** Knowledge level to test supervisory skills will also be included. Class 10th Syllabus of NCERT.

#### **PART – B (80 MARKS)**

##### **Engineering Mechanics:**

The mechanical properties of engineering materials - elastic constants - Types of forces on structural members, different types of stresses and strains - the deformation of elastic bodies under simple stresses, the use and principles of composite sections; The effects of transverse forces such as shear force and bending moment in beams; determination of SF and BM in simple beams under different loading systems; Geometrical properties such as centroid and moment of inertia of sections. Determination of different types of stresses induced in beams.

##### **Construction Materials and Construction Practice:**

Different construction materials and their properties - different types of cement - grades of cements - tests on cement and other construction materials. Types of modern building materials such as ceramic products – glass - metals and plastics. Preparation of mortar and cement concrete. Types of foundations. Classification of stone masonry - brick masonry. Types of doors – windows - lintels - stairs. Types of floors - roofs. Different methods of pointing, plastering and termite proofing. Scaffolding - shoring - underpinning - form work. Procedure of colour washing - white washing - painting - varnishing.

##### **Soil Mechanics and Foundation Engineering:**

Development of Soil Mechanics - Soil formation - three Phase System - Index and Engineering properties. Permeability - Darcy's law. Shear strength of soil - Mohr's stress circle - Mohr-Coulomb failure theory - Shear strength test - Unconfined compression test - Optimum moisture content - Proctor's Compaction test. Soil exploration - Direct, Semi-direct and Indirect methods - Spacing and depth of test borings - Sub-Soil Sampling - Disturbed and Undisturbed samples - Seepage analysis - Head, Gradient and Potential - Hydraulic gradient - Seepage pressure. Methods of determining bearing capacity - Types of failure in soil;

Rankine's analysis - Terzaghi's analysis - Effect of water table. Settlement of foundation - Plate load test.

**Surveying:**

Types of Theodolites - Transit and non-transit Theodolite, Vernier and Micrometer Theodolites, Measurement of vertical angle and deflection angle – Bearing of a line – Theodolite traversing. Stadia and Tangential tacheometry –Fixed hair method of tacheometry – Measurement of distance and elevation.

**Transportation Engineering:**

Development of Roads in India - Modes of transportation - Nagpur Plan, Classifications of Highways, Types of Pavement - Flexible and Rigid Pavements - Parking - Methods of parking - Road junctions (Grade intersections and Grade separators) - Traffic signals - Types of road signs. Classifications of roads - Earthen road, Gravel road, Water Bound Macadam roads, Types of Bituminous roads - Surface dressing, Methods of construction of cement concrete roads, Rail Gauges, Requirements of an ideal rail, Types of sleepers, Rail joints, Junction and Terminal stations, Methods of interlocking - Tappets and locks system.

**Fluid Mechanics/Hydraulics Engineering:**

Pressure of liquid at a point - Static pressure, Atmospheric pressure, Gauge pressure, Vacuum pressure and Absolute pressure – Measurement of pressure - Simple mercury barometer - Pressure measuring devices and problems - Piezometer tube - Simple U-tube manometer - Differential manometer – Micrometer. Hydrostatic pressure - Pressure on plane surfaces - Horizontal, vertical and inclined Surfaces-Total Pressure-Centre of pressure - Depth of centre of pressure. Various types of flows including Laminar and turbulent flow -Steady and unsteady flow – Uniform and Non-uniform flow - Bernoulli's theorem – Venturimeter – Orificemeter. Large orifice – Discharge formula –Types of mouthpieces - Losses of head in pipes - Types of notches and problems –Classification of weirs - Discharge over a rectangular weir and trapezoidal weir, End contractions of a weir. Rectangular and Trapezoidal channels – Discharge – Chezy's formula, Bazin's formula and Manning's formula - Methods of measurement of velocity. Flow through pipes.

**Environmental Engineering:**

Water supply - Public water supply system and demand - types of demand - per capita demand - prediction of population. Intakes - types of intakes-description of intakes-infiltration galleries and infiltration wells in river beds - necessity of pumps - types of pumps - pipes for conveyance of water. Water treatment - sedimentation – types of sedimentation - coagulation - coagulants and their choice - types of sedimentation tanks – filtration - R.O process. Distribution system - gravity, pumping and combined system. Sanitary Engineering - estimation of storm water – minimum size and shape of sewer - materials used for sewer - joints - laying and testing - manhole - lamp hole - catch basin - street inlet - grease and oil trap -flushing tanks – drainage arrangements in buildings - sanitary fittings - sewage pumps. Sewage treatment - primary and secondary treatments - screens - skimming tanks - grit chambers - sedimentation tanks – filters - types and description of filters - activated sludge process - septic tanks - construction and working of septic tanks. methods of solid waste disposal - incineration, dumping, sanitary landfill, composting - energy from waste.

# Post – Technical Assistant (Bio Medical Engineering)

## SYLLABUS

### **PART – A (20 MARKS)**

**General Knowledge and Current Affairs** A standard pattern similar to one used by Staff Selection Commission for Combined higher secondary level examination or banking clerical examination can be conducted. Current Affairs questions can also be included in this.

**General English:** Error recognition, Fill in the blanks with appropriate terms, Vocabulary, Grammar with special reference to Sentence Structure, Synonyms, Antonyms etc

**General Aptitude & Reasoning:** Questions on reasoning and problem solving, analysis, judgment, decision making, visual memory, relationship concepts, verbal and figure classification, arithmetical number series, non-verbal series etc.

**Mathematics:** Class 10th Syllabus of NCERT.

**Science, Computer application and Other Subjects:** Knowledge level to test supervisory skills will also be included. Class 10th Syllabus of NCERT.

### **PART – B (80 MARKS)**

**Electronics (20 Marks):** Semiconductor devices (diode, transistor, FET) -basic principle, working and configurations. Operational amplifier and its applications. Signals and Systems – Types of signals and systems, Fourier transform, Laplace transform, Z-transform, DFT and DTFT. Digital Electronics – Logic Gates, Multiplexer, Demultiplexer, flipflops. Microprocessor – 8085 (Architecture, pin diagram and instruction set, basic programming), Microcontroller – 8051 (Architecture and pins).

**Sensors (20 Marks)-** resistive, capacitive, inductive, piezoelectric, Hall effect, electro chemical, optical; Sensor signal conditioning circuits. Origin of bio potentials and their measurement techniques - ECG, EEG, EMG, ERG, EOG, GSR, PCG, Principles of measuring blood pressure, body temperature, volume and flow in arteries, veins and tissues, respiratory measurements and cardiac output measurement. Operating principle of medical equipment-sphygmomanometer, ventilator, cardiac pacemaker, defibrillator, pulse oximeter, hemodialyzer Electrical Isolation (optical and electrical).

**Cell and Organ systems (15 Marks)** Basics of cell, types of tissues and organ systems; Homeostasis; Basics of organ systems - musculoskeletal, respiratory, circulatory, excretory, endocrine, nervous, gastro-intestinal system.

**Kinematics of muscles and joints (15 Marks)-** free-body diagrams and equilibrium, forces and stresses in joints, biomechanical analysis of joints; Hard Tissues - Definition of Stress and Strain, Deformation Mechanics, structure and mechanical properties of bone - cortical and cancellous bones; Soft Tissues - Structure, functions, material properties, visco elastic properties, Maxwell & Voight models; Biofluid mechanics - Flow properties of blood in the intact human cardiovascular system.

**Basic properties of biomaterials (10 Marks) -** Metallic, Ceramic, Polymeric and Composite; Fundamental characteristics of implants - biocompatibility, bioactivity, biodegradability; Basics of tissue engineering. Biomaterial characterization techniques - Rheology, Atomic Force Microscopy, Electron Microscopy, Transmission Electron Microscopy Fourier Transform Infrared Spectroscopy.