



# राष्ट्रीय प्रौद्योगिकी संस्थान राउरकेला

NATIONAL INSTITUTE OF TECHNOLOGY ROURKELA

NITR/AC/EXAM./13/M/2041

09.04.2013

## PROGRAMME FOR B. TECH., DUAL DEGREE B.TECH & M.TECH, M.SC.(2 YR & 5YR), AND MA END-SEMESTER (SPRING) EXAMINATION 2012-13.

Day 1 : Date / Day of Examination : 23-APR-2013 ( Tuesday )

| FIRST SESSION ( 07.00 AM to 10.00 AM ) |              |   |
|--|--------------|---|
| Sl.No                                  | Subject Code | Subject Name  |
| 1                                      | BM314        | Biomedical Image Processing(BM)                             |
| 2                                      | BM352        | Biochemical Engineering(BT)                                 |
| 3                                      | CE312        | Design of Steel Structures                                  |
| 4                                      | CH330        | Petroleum Refinery Engineering and Petrochemicals           |
| 5                                      | CR310        | Refractories Technology                                     |
| 6                                      | CS312        | Systems Analysis and Design                                 |
| 7                                      | CY512        | Structure and Functions of Biomolecules                     |
| 8                                      | EC312        | Electromagnetic Theory(EC & EI)                             |
| 9                                      | HS500        | Research Methodology  |
| 10                                     | ID312        | Product Design - II   |
| 11                                     | LS404        | Molecular Biology and Biotechnology                         |
| 12                                     | MA102        | Mathematics - II  |
| 13                                     | MA326        | Statistical Methods(CY5-MA5-PH5)                            |
| 14                                     | MA404        | Functions of a Complex Variable                             |
| 15                                     | ME330        | Metal Cutting and Tool Design                               |
| 16                                     | MM357        | Corrosion and Degradation of Materials and Their Prevention |
| 17                                     | MN313        | Underground Mining Technology                               |
| 18                                     | PH402        | Numerical Techniques in Physics                             |

| SECOND SESSION ( 10.30 AM to 01.30 PM ) |              |  |
|---|--------------|--|
| Sl.No                                   | Subject Code | Subject Name                                   |
| 1                                       | BM202        | Basic Clinical Science(Back log only)          |
| 2                                       | BM202        | Clinical Science(BM)                           |
| 3                                       | BM232        | Biofluid Mechanics(BT)                         |
| 4                                       | BM432        | Biomechanics(BM & BT)                          |
| 5                                       | CE252        | Fluid Mechanics                                |
| 6                                       | CE421        | Ground Improvement Techniques                  |
| 7                                       | CH226        | Fuels and Combustion                           |
| 8                                       | CH426        | Coal Processing Technology                     |
| 9                                       | CR212        | Ceramic Processing                             |
| 10                                      | CR420        | Glass-Ceramic Technology                       |
| 11                                      | CS242        | Computer Organization and Architecture         |
| 12                                      | CS412        | Software Engineering                           |
| 13                                      | CY214        | Basic Organic Chemistry - I(CY5-MA5-PH5)       |
| 14                                      | CY514        | Environmental Chemistry                        |
| 15                                      | EC412        | Antenna Analysis and Synthesis(EC)             |
| 16                                      | EC430        | Industrial Electronics and Instrumentation(EI) |
| 17                                      | EE204        | Electro Magnetic Fields                        |
| 18                                      | EE404        | Renewable Energy Systems(EE & PH2)             |
| 19                                      | EE406        | High Voltage DC Transmission                   |
| 20                                      | ID222        | Geometric and Solid Modeling                   |
| 21                                      | LS511        | Genetics                                       |
| 22                                      | MA502        | Functional Analysis                            |
| 23                                      | ME230        | Primary Production Processes                   |
| 24                                      | ME440        | Industrial Management                          |
| 25                                      | MM212        | Casting and Solidification of Materials        |
| 26                                      | MM435        | Fracture Mechanics and Failure Analysis        |
| 27                                      | MN202        | Mine Surveying                                 |
| 28                                      | MN400        | Mine Planning                                  |

| <b>FIRST SESSION ( 07.00 AM to 10.00 AM )</b> |                     |   |
|---|---------------------|---|
| <b>Sl.No</b>                                  | <b>Subject Code</b> | <b>Subject Name</b>   |
| 1   | BM312               | Biomedical Instrumentation(BM)                                  |
| 2   | BM391               | Special Topics in Biotechnology and Medical Engineering – I(BT) |
| 3   | CE100               | Engineering Mechanics   |
| 4   | CE130               | Environment and Safety Engineering                              |
| 5   | CE322               | Geotechnical Engineering  |
| 6   | CH334               | Process Dynamics and Control                                    |
| 7   | CR322               | Glass Technology  |
| 8   | CS332               | Algorithm Analysis and Design                                   |
| 9   | CY323               | Basic Inorganic Chemistry - II                                  |
| 10  | CY522               | Chemistry of Transition and Non-transition Elements             |
| 11  | EC314               | Digital Communication(EC)                                       |
| 12  | EC334               | Instrumentation Devices(EI)                                     |
| 13  | EE322               | Control System - I  |
| 14  | HS523               | Educational Psychology  |
| 15  | HS548               | Demographic Transition and Health Policy                        |
| 16  | ID352               | Industrial Robotics   |
| 17  | LS410               | Food Science  |
| 18  | MA324               | Number Theory   |
| 19  | MA402               | Measure Theory  |
| 20  | ME350               | Heat Transfer   |
| 21  | MM324               | Steel Making  |
| 22  | MN330               | Mine Ventilation  |
| 23  | PH404               | Electrodynamics   |

| <b>SECOND SESSION ( 10.30 AM to 01.30 PM )</b> |                     |  |
|--|---------------------|--|
| <b>Sl.No</b>                                   | <b>Subject Code</b> | <b>Subject Name</b>                          |
| 1  | CE452               | Water Resources Engineering                  |
| 2  | CH428               | Disaster Management in Chemical Industries   |
| 3  | CS431               | Compiler Design                              |
| 4  | CY519               | Methods in Organic Synthesis                 |
| 5  | CY537               | Advanced Solid State Chemistry               |
| 6  | EC424               | Embedded Computing System(EC & EI)           |
| 7  | EE407               | Electric Drives                              |
| 8  | EE408               | Electromagnetic Field Theory and Application |
| 9  | MA202               | Mathematics - IV                             |
| 10   | ME414               | Mechatronics                                 |
| 11   | PH508               | Atomic and Molecular Physics                 |



| <b>FIRST SESSION ( 07.00 AM to 10.00 AM )</b> |                     |  |
|---|---------------------|--|
| <b>Sl.No</b>                                  | <b>Subject Code</b> | <b>Subject Name</b>  |
| 1   | BM322               | Biomechanics(BM)   |
| 2   | BM354               | Bioseparation(BT)  |
| 3   | CE342               | Transportation Engineering                                   |
| 4   | CH336               | Chemical Engg. Mathematics                                   |
| 5   | CR320               | Science of Sintering   |
| 6   | CS334               | Operating Systems Design                                     |
| 7   | CY313               | Natural Products   |
| 8   | CY322               | Basic Inorganic Chemistry-I                                  |
| 9   | EC322               | Embedded Systems(EC & EI)                                    |
| 10  | EE324               | Power Electronics  |
| 11  | HS533               | Developmet: Social, Antropoligical and political Perspective |
| 12  | ID344               | Design of Production Tooling                                 |
| 13  | LS403               | Immunology   |
| 14  | MA522               | Operations Research  |
| 15  | ME352               | Fluid Dynamics and Hydraulic Machines                        |
| 16  | MM352               | Material Characterization Techniques                         |
| 17  | MN304               | Computer Application in Mining                               |
| 18  | PH102               | Physics II   |
| 19  | PH406               | Condensed Matter Physics                                     |

| <b>SECOND SESSION ( 10.30 AM to 01.30 PM )</b> |                     |  |
|--|---------------------|--|
| <b>Sl.No</b>                                   | <b>Subject Code</b> | <b>Subject Name</b>                                    |
| 1  | BM244               | Cell and Molecular Biology(BM)                         |
| 2  | BM254               | Cell and Molecular Biology(Back log only)              |
| 3  | BM444               | Structural Biology(BT)                                 |
| 4  | CE202               | Surveying  |
| 5  | CE412               | Pre-stressed Concrete                                  |
| 6  | CH220               | Chemical Engg. Thermodynamics                          |
| 7  | CH422               | Simulation Modeling & Optimisation of Chemical Process |
| 8  | CR230               | Science of Ceramic Materials                           |
| 9  | CR424               | Composite Materials                                    |
| 10   | CS222               | Database Management Systems                            |
| 11   | CY234               | Basic Physical Chemistry - II                          |
| 12   | CY526               | Bio-inorganic Chemistry                                |
| 13   | CY558               | Organometallic Chemistry                               |
| 14   | EC443               | Digital Image Processing(EC & EI)                      |
| 15   | EE202               | Electrical Engineering(EC-EI-ME)                       |
| 16   | EE240               | Measurement and Instrumentation                        |
| 17   | EE438               | Industrial Automation and Control                      |
| 18   | EE454               | Digital Communication                                  |
| 19   | HS544               | Environment and Development                            |
| 20   | ID232               | Art and Aesthetic Design                               |
| 21   | MA224               | Linear Programming and Theory of Games                 |
| 22   | MA510               | Calculus of Several Variables                          |
| 23   | MM220               | Unit Process of Extraction                             |
| 24   | MM468               | Joining of Metals                                      |
| 25   | MN204               | Mining Machinery                                       |
| 26   | MN435               | Eco-friendly Mining                                    |
| 27   | PH564               | Magnetism-Principle and Applications                   |

**Day 4 : Date / Day of Examination : 26-APR-2013 ( Friday )**

| <b>FIRST SESSION ( 07.00 AM to 10.00 AM )</b> |                     |  |
|---|---------------------|--|
| <b>Sl.No</b>                                  | <b>Subject Code</b> | <b>Subject Name</b>  |
| 1   | BM316               | Biosensors and Biotransducers( <b>BM &amp; BT</b> )        |
| 2   | CE314               | Structural Dynamics  |
| 3   | CE318               | Finite Element Method                                      |
| 4   | CH312               | Transport Phenomena  |
| 5   | CR336               | Cement Technology  |
| 6   | CR346               | Nanoceramics   |
| 7   | CS336               | Digital Signal Processing                                  |
| 8   | EC100               | Basic Electronics Engineering                              |
| 9   | EC332               | Electronic Instrumentation( <b>EC &amp; EI</b> )           |
| 10  | EE100               | Basic Electrical Engineering                               |
| 11  | EE356               | Digital Signal Processing                                  |
| 12  | HS542               | Poverty, Inequality and Human Development                  |
| 13  | ME354               | Refrigeration and Air-Conditioning                         |
| 14  | MM314               | Heat Treatment of Metallic Materials( <b>MM &amp; ID</b> ) |
| 15  | MN322               | Geomechanics   |
| 16  | PH302               | Properties of Matter( <b>CY5-MA5-PH5</b> )                 |
| 17  | PH408               | Quantum Mechanics - II                                     |

| <b>SECOND SESSION ( 10.30 AM to 01.30 PM )</b> |                     |  |
|--|---------------------|--|
| <b>Sl.No</b>                                   | <b>Subject Code</b> | <b>Subject Name</b>                              |
| 1  | BM254               | Bioprocess Calculation( <b>BT</b> )              |
| 2  | CE212               | Structural Analysis                              |
| 3  | CH212               | Fluid Dynamics                                   |
| 4  | CR244               | Introduction to Engineering Materials            |
| 5  | CR248               | Fuels, Furnace and Stoichiometry                 |
| 6  | CR426               | Tribology of Materials                           |
| 7  | CR446               | Thin Film and Coating                            |
| 8  | CS335               | Computer Graphics and Multimedia                 |
| 9  | CS444               | Cluster and Grid Computing                       |
| 10   | EC204               | Semiconductor Devices                            |
| 11   | EC436               | Biomedical Instrumentation( <b>EI</b> )          |
| 12   | EC444               | Soft Computing( <b>EC</b> )                      |
| 13   | EE242               | Digital Electronics and Microprocessor           |
| 14   | LS411               | Biophysics                                       |
| 15   | LS505               | Food Processing Technology                       |
| 16   | LS530               | Aquatic Biology and Marine Biotechnology         |
| 17   | LS531               | Epigenetics                                      |
| 18   | LS532               | Molecular Medicine                               |
| 19   | LS536               | RNAi, Stem cells & Oncogenomics                  |
| 20   | LS581               | Cancer biology                                   |
| 21   | ME210               | Design of Machine Elements( <b>ME &amp; ID</b> ) |
| 22   | ME434               | Computer Graphics for CAD/CAM                    |
| 23   | MM227               | Fuel Technology                                  |
| 24   | MM446               | Composite Materials                              |
| 25   | MN421               | Rock Slope Technology                            |
| 26   | MN442               | Mine Fires and spontaneous heating               |
| 27   | PH202               | Electricity and Magnetism( <b>CY5-MA5-PH5</b> )  |
| 28   | PH512               | Advanced Statistical Mechanics                   |
| 29   | PH554               | Physics of Thin Film Technology                  |
| 30   | PH556               | X-rays and Nano Science                          |



**Day 5 : Date / Day of Examination : 29-APR-2013 ( Monday )**

| <b>FIRST SESSION ( 07.00 AM to 10.00 AM )</b> |                     |   |
|---|---------------------|---|
| <b>Sl.No</b>                                  | <b>Subject Code</b> | <b>Subject Name</b>   |
| 1   | BM390               | Special Topics in Biotechnology and Medical Engineering (Biotechnology in Human Health) |
| 2   | EC200               | Fundamentals of Communication Systems   |
| 3   | EC320               | Embedded Systems  |
| 4   | EC440               | Soft Computing Techniques   |
| 5   | HS311               | Communicative English.  |
| 6   | HS321               | Organizational Behaviour.   |
| 7   | HS327               | Cognitive Science   |
| 8   | HS328               | Sports Psychology   |
| 9   | HS418               | Language and Writing  |
| 10  | HS532               | Planning and Policy:Issues in India   |
| 11  | ID350               | Robotics and Automation   |
| 12  | MA312               | Real Analysis   |
| 13  | MA423               | Discrete Mathematics  |
| 14  | MA425               | Elementary Stochastic Processes with Applications                                       |
| 15  | ME300               | Finite Element Analysis   |
| 16  | ME430               | Industrial Management   |
| 17  | ME436               | Entrepreneurship  |
| 18  | ME450               | Computational Fluid Dynamics and Heat Transfer  |
| 19  | MM448               | Advanced Engineering Materials  |
| 20  | PH341               | Treatise of Einstein Work and Beyond  |
| 21  | PH352               | X-Ray Techniques For Structure Evaluation   |

| <b>SECOND SESSION ( 10.30 AM to 01.30 PM )</b> |                     |   |
|--|---------------------|---|
| <b>Sl.No</b>                                   | <b>Subject Code</b> | <b>Subject Name</b>                                     |
| 1  | BM429               | Materials in Medical Science                            |
| 2  | CE214               | Theory of Elasticity                                    |
| 3  | CE302               | Disaster Management                                     |
| 4  | CH228               | Treatment of Industrial Effluents                       |
| 5  | CH338               | Industrial Instrumentation and Process Control          |
| 6  | CH418               | Recent Separation Technologies                          |
| 7  | CR249               | Materials Science and Engineering                       |
| 8  | CR339               | Ceramics in Electronic Applications                     |
| 9  | CS327               | Relational Database Management Systems                  |
| 10   | CS333               | Operating Systems                                       |
| 11   | CS343               | Digital Logic Design                                    |
| 12   | CY232               | Chemical Kinetics                                       |
| 13   | CY325               | Introduction to Supramolecular Chemistry                |
| 14   | CY413               | Spectroscopic Methods of Analysis                       |
| 15   | CY431               | Chemistry of Nanomaterials                              |
| 16   | EE208               | Advanced Electrical Engineering                         |
| 17   | EE308               | Utilization of Electrical Energy                        |
| 18   | HS534               | Natural Resource Management and Sustainable Development |
| 19   | HS538               | Urban Governance and Development                        |
| 20   | MM358               | Experimental Techniques in Materials Engineering        |
| 21   | MN336               | Solid Fuels and Clean Coal Technology                   |
| 22   | MN438               | Solid Waste Management                                  |
| 23   | PH321               | Physics of Semiconducting Materials                     |

| FIRST SESSION ( 07.00 AM to 10.00 AM ) |              |   |
|--|--------------|---|
| Sl.No                                  | Subject Code | Subject Name                              |
| 1                                      | CS102        | Data Structures and Algorithm             |
| 2                                      | CY527        | Supramolecular Chemistry                  |
| 3                                      | CY535        | Electrochemistry                          |
| 4                                      | CY536        | Colloids and Surface Chemistry            |
| 5                                      | LS427        | Advanced Techniques                       |
| 6                                      | PH204        | Introduction to Mechanics(Backlog only)   |
| 7                                      | MM318        | Principles and Practice of Heat Treatment |
| 8                                      | SM512        | Technology and Innovation Management      |

| SECOND SESSION ( 10.30 AM to 01.30 PM ) |              |   |
|---|--------------|---|
| Sl.No                                   | Subject Code | Subject Name  |
| 1                                       | CY532        | Chemical Kinetics and Photochemistry                                  |
| 2                                       | EC202        | Digital Electronics(EC-EI, PH5 4 <sup>th</sup> & 6 <sup>th</sup> Sem) |
| 3                                       | EC439        | Advanced Process Control(EI)  |
| 4                                       | EC446        | Adaptive Signal Processing(EC)  |
| 5                                       | EE312        | Switch Gear and Protective Devices                                    |
| 6                                       | MA524        | Statistical Methods(MA2 2 <sup>nd</sup> )                             |
| 7                                       | MA554        | Graph Theory(MA5 8 <sup>th</sup> & MA2 4 <sup>th</sup> Sem)           |
| 8                                       | ME351        | Fluid Mechanics   |
| 9                                       | MN205        | Mineral Exploration   |
| 10                                      | MN332        | Remote Sensing and Its Application                                    |
| 11                                      | SM502        | Human Resource Management   |
| 12                                      | SM602        | Business Ethics and Corporate Governance                              |

  
 Asst. Registrar(Academic)

**Copy to:**

1. All Notice Boards (Institute/Halls of Residence).
2. All Deans/ Chief Warden
3. Registrar.
4. Professor In-charge Examinations
5. All Wardens of Halls
6. All HODs are requested to send the question papers in sealed packets ( packets supplied by Academic Office) containing required number of question papers Hall wise ( actual student strength in the hall + 03 extra) as per the Hall arrangement list latest by **15.04.2013**. The concerned faculty members are requested to clearly state their **mobile number** and the list of requisite tables, codes, charts etc,(verified by HOD) to be supplied to the student by the academic office during the examination. M.Tech examination arrangement may be done in the department. However, the programme & sitting arrangement may be sent to AR (Acad)/PIC Examinations by **19.04.2013**.
7. Security Officer.
8. In-charge (Technical Service).
9. Group e-mail to all students and Faculties