Advertisement for OJEE-2015 in respect of seats which will remain unfilled in B.Tech programme after conclusion of JEE (Main) 2015 Counselling

* * * *

In pursuance of the order dt. 24.03.2015 of the Hon'ble High Court passed in W.P.(C) No. 23358/2014 , the Odisha Joint Entrance Examination - 2015 shall be held for the seats which will remain unfilled in B.Tech programme after the conclusion of the Counselling of JEE (Main) 2015 to be filled up by the Candidates in terms of their Rank in the OJEE – 2015 to be conducted as per the programme mentioned.

Sl. No.	Programme for Admission	Date
01	Submission of On-line Application along with the requisite fees	16-06-2015 to 22-06-2015
02	Downloading of Admit Card	10-07-2015
03	Date of Examination	19-07-2015
04	Tentative date for publication of result	27-07-2015
05	Downloading of Rank Card	27-07-2015
06	Counselling and Admission	7-08-2015 to 14-08-2015

For details on fees, Syllabus, and other details please visit to the Website www.odishajee.com/ www.ojee.nic.in.

Sd/-

Chairman,
OJEE-2015

1. **EXAMINATION PROCEDURE**

2. DURATION OF EXAM- 2 HOURS

3. NUMBER OF QUESTIONS- **90** Multiple Choice Questions +2 Science level (**30** each from **Physics, Chemistry, Mathematics**)
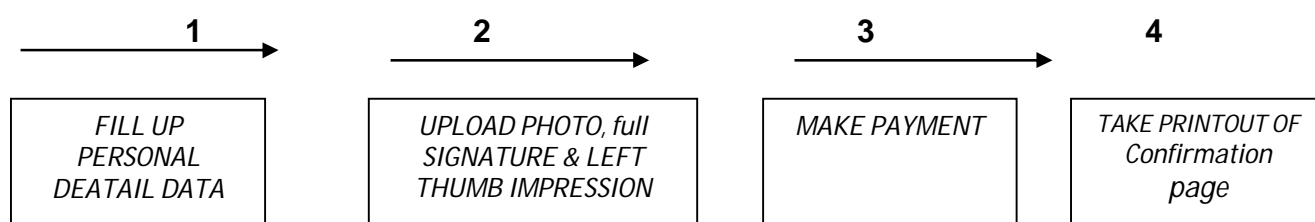
4. EXAMINATION TIME: 10 AM TO 12 AM

 4. REPORTING AT EXAMINATION CENTER – 8.30 AM

EXAMINATION FEES: Rs 1000 to be paid by challans of Canara Bank/ Bank of Baroda

2. PROCEDURE FOR ON LINE SUBMISSION OF APPLICATION FORM

PLEASE FOLLOW THE INSTRUCTIONS GIVEN BELOW BEFORE SUBMITTING THE ON-LINE APPLICATION FORM: -

   (a)   You have to follow all the instructions in filling up the form and have gone through the important notes carefully.
   (b)   You have to retain a printout of the CONFIRMATION PAGE.
   (c)   After paying the challans in the mentioned bank, confirmation page can be printed (Closing date of registration 22nd, confirmation page printing up to 24th).
   (d)   Once duly filled in application form was submitted, no further change will be entertained under any circumstances.

1	2	3	4
FILL UP PERSONAL DEATAIL DATA	UPLOAD PHOTO, full SIGNATURE & LEFT THUMB IMPRESSION	MAKE PAYMENT	TAKE PRINTOUT OF Confirmation page

3. MODE OF SUBMISSION OF APPLICATION FORM AND FEE DETAILS: -

A candidate can apply for the OJEE-15 (B TECH) through on-line process only by visiting to the website www.ojee.nic.in / www.odishajee.com.

   i)   The information desired to be filled in the online application may be kept ready.

   (a)   Choose the Bank for depositing the Fee through e-challan after completing on line application form fill up. CANARA BANK OR BANK OF BARODA. There will be two copies of the e-challan:- (1) Bank Copy, (2) Candidate copy - all printed in a single page.

   (b)   After Depositing Fee in the Bank by using e-challan, candidate has to take print out of the confirmation page.

4. INSTRUCTIONS FOR COMPLETING OJEE-2015 APPLICATION FORM

Before filling up the application form the candidate should have scanned images of his/her **photograph, full signature and left thumb impression**. These scanned images are to be uploaded during the submission of application form.

The photograph should be colour. It should be without cap or goggles. Spectacles are allowed. Polaroid photos are not acceptable. Candidates with unclear photograph are liable to be rejected. Candidates may keep 6-8 identical photographs in reserve for use at the time of entrance examination, Counselling and Admission.

Method of Submission of Application Form:

➢ The candidate has to visit website www.ojee.nic.in. / www.odishajee.com

(a) Fill in the on-line application form (4.1 – 4.22) and note down the registration number after submission.

After submission of the required data asked during online form fill-up, the candidate has to click, submit button. At the bottom of the next page, two buttons "Next" and "Back" are given. After opening "Next", information submitted can be checked and if information is correct, go for "Final Submit" otherwise go for "Back".

(b) The application fee can be remitted in the following way:

e-Challan mode for payment is possible in Bank of Baroda /Canara Bank. After on line application form filled up, e- challan form option will be visible. Candidate should print the challan of his/her preferred bank. Then move to any branch of that bank and pay the fee.

(c) After successful submission of fee, the candidate can take print out of **Confirmation Page**.

➢ **Please note that the applicant's name, parents name(s), and date of birth should exactly be the same as mentioned in the High School or his/her first Board/ Pre-University examination certificate. Any deviations, whenever discovered, may lead to cancellation of the applicant's candidature.**

➢ **The candidate's application form must be complete in all aspects while submitting the on-line application form. Incomplete application will summarily be rejected without any notice.**

➢ **Options filled by the candidate in the application form cannot be changed at a later stage under any circumstances.**

4.1 **Name of the Applicant**
Candidate should enter his/her name, as given in High School Certificate of Board/University.

4.2   Mother's Name

The candidate should enter his/her mother's name. It should be same as that mentioned in High School Certificate of Board/University of the candidate.

4.3   Father's Name

The candidate should enter his/her father's name as given in High School Certificate of Board/University and has to produce the documentary proof at the time of document verification.

4.4   Applying for the Course:

   B Tech

4.5   Qualifying examination passed or appeared

The candidate should enter the appropriate qualifying examination, +2 Science. He / she passed or is appearing in 2015.

4.6 Percentage of Marks in Qualifying Examination

   45 % for general and 40% for SC/ST candidates.

1. Physics 2. Mathematics 3. Any subject (Chemistry, Biology, Bio technology, Vocational technical subjects, Geology, Electronics, Statistics etc.)

OR

2. 45 % for General and 40 % for SC/ST in 5 subjects as declared by CBSE Jee Main.

4.7 Domicile

The category to which the candidate belongs. (S-Odisha State, ZZ-Outside State, OL- [Oriyas (Odias) belonging to outlying Oriya (Odia) speaking tracts], NRI-Non-Resident Indians).

Candidate should fill his/her category as per Clause No. 2.

4.8 Category:

Category	Code
General	GE
Scheduled Caste	SC
Scheduled Tribe	ST

4.9 Sub Category:

Sub Reservation	Code
Ex-Servicemen	ES
Children of Green Card Holder	GC
Physically Challenged	PC

Candidates belonging to **S-Category** (eligible to claim reservation) and seeking admission under reservation in any of the above sub reservation categories are required to enter the exact sub reservation category. **(Multiple**

choices may be given if he/she belongs to more than one sub reservation category).

4.10 Nationality

The candidate has to enter the nationality he/she belongs to

4.11 Mother Tongue

4.12 Date of Birth

The candidate should enter the exact date, month and year of birth as per English calendar and as recorded in the School/Board/Pre-University examination Certificate in format dd/mm/yyyy.

4.13 Gender

The candidate has to enter the appropriate field he/she belongs to.

4.14 Parent's total Annual Income

The candidate should enter the appropriate range of income. The parental income should include all sources of income of the parents.

4.15 Choice of Examination Centers

As mentioned in web site.

4.16 E-mail

The candidate must give his/her active e-mail address where all the correspondence can be done.

**5.19 Phone Number including STD/ISD Code**

4.17 Mobile phone Number (Without 0 & +91)

The candidate should mention his/her mobile number in the space provided, on which he/she can be contacted or a message can be sent to him/her.

4.18 Address for communication

4.19 Photograph

Candidates are advised to take 8-10 passport size photographs with white background. Passport size photographs are to be used for fixing the photograph at the space provided on Computer Generated Confirmation Page. It is expected that the candidate will have the same appearance at the time of examination and counselling as in the UPLOADED photograph. The photographs must be taken on or after

Surya Rout
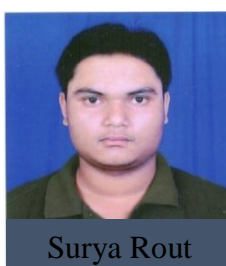
01.1.2015 indicating clearly the name of candidate as shown below. Photograph should not have cap or goggles.

Spectacles are allowed if being used regularly. POLAROID and COMPUTER generated photos are not acceptable. Applications not complying with these instructions or with unclear photographs are liable to be rejected. Candidates may please note that if it is found that photograph uploaded is fabricated i.e. de-shaped or seems to be hand-made or computer made, the form of the candidate will be rejected and the same would be considered as using unfair means practices and the candidate would accordingly be dealt with the rules of unfair means.

4.20 **Full Signature (Black / Blue ballpoint pen only):** Scanned signature has to be up loaded.

4.21 **Left Hand Thumb Impression:** Put your thumb impression on paper and scan it to upload.

To be uploaded during the submission of online application form

File Dimension	Format	File Size
Photograph of Candidate 3.5cm x 4.5cm	JPEG format	5KB to 99KB
Signature of Candidate 3.5cm x 1.5cm	JPEG format	5KB to 50KB
Thumb impression of Candidate 3.5cm x 1.5cm	JPEG format	5KB to 50KB

4.22 **Declaration by the Candidate:**

The candidate must submit a declaration to the effect that the filled-in entries in the online application process.

ADMIT CARD

Admit cards will be uploaded at OJEE website (www.ojee.nic.in / www.odishajee.com) as notified.

For any other detail , please refer our Information Brochure 2015 uploaded in our mentioned web site.

SYLLABUS: [ENGINEERING / TECHNOLOGY]

PHYSICS (30 Questions) Measurements and Motion: Fundamental and derived physical quantities, Concept of Mass, Length and Time, Measurement of different quantities in SI Units. Errors in measurement, Combination of errors, Dimension of physical quantities, Dimension analysis of physical quantities- Conversion of physical quantities from one system of units to another. Concepts of vectors and scalars, Components of vectors, Unit vectors, Addition, Subtraction and Multiplication (vector & scalar) of vectors. Lami's Theorem. Equations of linear motion for uniformly accelerated bodies (by calculus method). Newton's laws of motion, Conservation of energy and momentum, Collision in one dimension, Work, Power, Energy, Sliding and rolling friction. Circular Motion- radial and tangential acceleration, Centripetal force, banking of tracks, Kepler's laws of Planetary Motion (Statements only). Newton's law of Gravitation. Earth satellites- Orbital and Escape velocities. Moment of Inertia-definition and expression of Moment of Inertia for rod, ring and circular disc (about an axis passing through the center and perpendicular to the plane of the body). Angular momentum and Conservation of angular momentum, Projectile motion. Heat & Thermodynamics: Concept of Temperature, Scales of Temperature (Celsius, Fahrenheit, Kelvin), Definition of mechanical equivalent of heat (J), Thermal energy, Heat Capacity, Specific heat of solids and liquids, Latent heat, Heat transfer-Thermal conductivity of solids, Steady state, Kirchhoff's laws of heat radiation, Stefan's law of heat radiation, Newton's Law of cooling. Kinetic Theory of gases- Pressure of an ideal gas, Kinetic interpretation of temperature, Degrees of freedom, Law of equipartition of energy. First Law of Thermodynamics, Specific heats of a gaseous system, Relation between Cp and Cv, Work done during Isothermal and Adiabatic processes, Carnot's conceptual heat engine and its efficiency, Second law of thermodynamics, Absolute Scale of Temperature. Characteristics of Materials: Elastic and Plastic behaviors of solids, Elastic limit, Young's modulus, Shear and Bulk modulus, Poisson's ratio. Liquids: Surface Tension and Surface Energy, Excess pressure across a spherical liquid surface, Expression for capillary rise. Streamlined and turbulent flow, Bernoulli's equation and its application, Viscosity- coefficient of viscosity, Stokes law. Electricity & Magnetism : Electric field intensity and Potential at a point in an electric field, Relation between them, Capacitance- dielectric constant and its effect on capacitance. Series and parallel grouping of capacitances, Energy stored in a charged capacitor, Ohm's law, Variation of resistance of metallic conductors with temperature, Kirchhoff's laws and its application to a balanced Wheatstone bridge. Combination of Cells and resistors- series and parallel. Heating effect of electric current and Joule's law, Electric power and electric energy. Magnetic Permeability and Susceptibility of materials, Properties of dia, para and Ferro magnetic materials. Biot–Savart's law- Magnetic Field due to a circular coil at its center. Moving coil galvanometer (dead beat only). Force on a moving charge in a uniform magnetic field. Faraday's laws of electromagnetic induction, Lenz's law, emf induced in a rotating coil in a magnetic field. Alternating current- Self and Mutual induction, Phase relation between Voltage and Current in pure resistive, capacitive and inductive circuits. Principle of transformer, elementary idea on electromagnetic waves. Wave motion: Simple harmonic motion, wave propagation, characteristics of wave motion, longitudinal and transverse waves, superposition of waves: - Stationary waves, Beats. Open and closed organ pipes, velocity of sound in air- effect of pressure, temperature and humidity on it. Doppler

Effect, laws of transverse vibration of string (Statement only). Optics: Reflection and refraction at curved surfaces. Spherical mirror and thin lens formula and refraction through prism. Total internal reflection, Dispersion, Huygens principle (statement only), Young's double slit experiment. Electronic Devices: Thermionic emission, Statement of Richardson's equation and Child's Law, Vacuum triodeconstruction and characteristics, relationship between valve constants, Descriptive idea of energy bands:- conductors, insulators and semiconductors, Intrinsic and extrinsic semiconductors, p-type and n-type semiconductors. PN junction, PNP and NPN transistor, PN Junction as a rectifier. Relativity and Nuclear Physics: Postulates of special theory of relativity, variation of mass with velocity (Statement only), and mass energy equivalence relation (Statement only).Atomic nucleus, nuclear forces, nuclear mass, binding energy, mass defect, artificial radio activity, radio isotopes and their uses. Nuclear fission, energy released during nuclear fission, chain reaction, controlled chain reaction, nuclear fusion, energy generation in the Sun, and radiation hazards

CHEMISTRY (30 Questions) General behaviour of matter: Solid State: Characteristics, Classification, Solubility, Melting points, Crystal structure of simple ionic compounds. Radius ratio and coordination number: density calculation, lattice points and voids. Liquid State : Characteristics, Boiling and Freezing points, Viscosity, Surface tension, Osmosis, Raoult's law, Lowering of vapour pressure, Depression of freezing points, Elevation of boiling points, Anomalous molecular masses; Association and dissociation. Solutions: Types of solutions, concentration and different ways of expressing concentration (percentage, ppm, strength, normality, molarity, molality and formality); Interrelations Gaseous State: Gas laws, Kinetic model of gases, ideal gas equation, Van der waals' equation, compressibility factor, Average, root mean square and most probable velocities. Atoms and molecules : Symbols, Valency, Atomic mass, Molecular mass, Avogadro's law, Mole concept, Determination of equivalent mass of zinc and copper, Atomic mass by Dulong Petit's method and Molecular mass by Victor Mayor's method. Stoichiometry and calculations based on stoichiometry. Structure of atoms and molecules : Fundamentals particles and their properties, Rutherford and Bohr models of atom, Hydrogen spectrum, Energy levels, Shells and Sub-shells, s, p and d orbitals, Quantum numbers, Pauli's exclusion principle, Aufbauprinciple, Hund's rule, Electronic configuration of atoms, Extra stability of half-filled and filled subshells. Chemical bonds: Ionic, Covalent, Coordinate and Hydrogen bond, Hybridization- sp, sp2, sp3, dsp2, dsp3, d2 sp3 shapes of molecules, VSEPR theory, Molecular Orbital Theory of simple diatomic molecules. Periodic classification: Periodic table and periodic laws, s, p, d and f block elements, Periodicity in properties such as atomic and ionic radii, ionization enthalpy, electron gain enthalpy, and electronegativity and oxidation states. Chemical energetics, equilibrium and kinetics: Energetics: Internal energy, Enthalpy, Heats of reactions, Bond energy, Hess's law, Idea on enthalpy, entropy and free energy, spontaneity and conditions of equilibrium. Equilibria: Reversible reaction, Law of mass action, Equilibrium constant Kp, Kc, Kx and their relation. Its application to ammonia synthesis and dissociation of HI, Decomposition and thermal dissociation. Theory of acids and bases, Dissociation of weak acids and bases, Ostwald's dilution law, Ionic product of water, Common ion effect, Solubility product and their applications, pH, - 39 - Hydrolysis of salts, Buffer solutions. Kinetics: Rate of reaction, Factors affecting the rate, Rate constant, Order and Molecularity of a reaction, Simple zero and First order reaction, Half-life period, Arrhenius equation and

Activation Energy, Collision theory (qualitative idea only) Types of chemical reaction: Neutralization and oxidation– Reduction reaction, Equivalent mass, Oxidation number, Balancing chemical reactions, by Ion electron method, Reactions involving $KMnO_4$, $K_2Cr_2O_7$, $Na_2S_2O_3$, oxalate etc. Non-metals: Group study, Preparation, Properties and uses of elements of compounds of hydrogen (ortho and para hydrogen, isotopes of hydrogen, D_2O and H_2O_2). Allotropes of carbon, Nitrogen family (NH_3 and HNO_3). Oxygen and Sulphur family (O_2, H_2S, SO_2, H_2SO_4 and its manufacturer by contact process), Halogens, Hydrogen halides and Interhalogen compounds, Zero group elements (properties & uses). Electrochemistry : Electrolysis, Electrical Conductivity (Specific, Equivalent and molar), Faraday's laws, Kohlvauseh law, Galvanic cell, Cell reaction, Nernst equation, Standard electrode potential, Electro chemical series e.m.f. of simple cells. Fuel cells. Nuclear chemistry: Radio activity, Rate of disintegration, Group displacement law, Half-life and average life period, Stability of nuclear (N/P ratio) Carbon dating, Nuclear Fission and Fusion. Induced radioactivity by protons, neutrons and alpha particles. Metals and metallurgy: Occurrence of metal, Minerals and ores, flux, slag calcination, roasting, smelting (by reduction of oxides) and refining. General trends in the characteristics, principles of extraction of Na, Mg, Ca, Al, Cu and Fe and their oxides, hydroxides, chlorides, nitrates and sulfates. Organic chemistry: Introductory: Functional Groups and organic radicals, Nomenclature by IUPAC system (substitutive method), Isomerism (Structural and stereoisomerism – optical and geometrical) EZ & RS nomenclature, Electron mobility – Inductive effect, Resonance, Electrometric effect and Hyper conjugation; their applications. Types of organic reactions – addition, substitution, elimination reactions. Idea of electrophiles and nucleophiles; Reaction intermediates – idea of carbocation, carbanion & free radicals; their stabilities. Aliphatic compounds: Methods of preparation and properties of alkanes, alkenes, alkynes (acidity of terminal alkynes), haloalkanes, alcohols, aldehydes, ketones, carboxylic acids, acid derivatives (acid chlorides, esters and amides), nitroalkanes and amines. Aromatic compounds: Aromaticity (Huckel's rule), Aromatic hydrocarbon (Preparation and reactions – Substitution, addition, ozonolysis) Phenols (Preparation and reactions): Aldehydes (Preparations and reactions); Acids (Preparation and reactions). Amines (Preparation and reactions); Diazonium salts (synthetic application). Biochemistry: Biological importance of organic compounds such as carbohydrates, amino acids, proteins, lipids and nucleic acids (only by metabolic process). Chemistry in the service of mankind: General idea on fertilizers, pesticides, polymers (nylon, terylene, neoprene, buna-S, PVC, Teflon & Bakelite). Medicine-analgesic, antipyretic, antibiotic and antiseptic (structure and preparation not required). Environmental chemistry: Source, effect and control measures of air and water pollution.

MATHEMATICS (30 Questions) Logic: Statement, Negation, Implication, Converse, Contrapositive, Conjunction, Disjunction, Truth Table. Different methods of proof, Principle of Mathematical induction. Algebra of sets : Set operation, Union, Intersection, Difference, Symmetric difference, Complement, Venn diagram, Cartesian product of sets, Relation and functions, Equivalence relation, Kinds of functions and their domain and range, Composite function, Inverse of a function. Number system : Real numbers (algebraic and order properties, rational and irrational numbers), Absolute value, Triangle inequality, $AM \geq GM$, Inequalities(simple cases), Complex numbers, Algebra of complex numbers, Conjugate and

square root of a complex number, Cube roots of unity, De Moivre's theorem with simple application. Permutations and Combinations -simple applications, Binomial theorem for positive integral index, Identities involving binomial co-efficient. Determinants and matrices : Determinants of third order, Minors and cofactors, Properties of determinants, Matrices up to third order, Types of matrices, algebra of matrix, adjoint and inverse of matrix, Application of determinants and matrices to the solution of linear equations (in three unknowns). Trigonometry: Compound angles, Multiple and Submultiple angles, Solution of trigonometric equations, Properties of triangles, Inverse circular function, Sum and product of sine and cosine functions. Co-ordinate geometry of two dimensions: Straight lines, Pairs of straight lines, Circles, Equations of tangents and normal to a circle, Equations of parabola, Ellipse and hyperbola in simple forms, their tangents and normal. Condition of tangency. Rectangular and Conjugate hyperbolas. Coordinate geometry of three dimensions: Distance and Division formulae, Direction cosines and direction ratios, Projection, Angle between two planes, Angle between a line and a plane. Distance of a point from a line and a plane. Equation of a sphere – general equation, Equation of sphere when end points of diameter are given. Quadratic polynomials : Roots of quadratic polynomial, Factorization of quadratic polynomials, Maximum and minimum values of quadratic polynomials for all real values of the variable, sign of the quadratic polynomial for all real values of the variable, Solution of quadratic inequations. Sequence and Series: Definition, Infinite geometric series, Arithmetico-geometric series, Exponential and Logarithmic series. Vectors: Fundamentals, Dot and cross product of two vectors, Scalar triple product and vector triple product, Simple application of different products. Differential calculus: Concept of limit, Continuity of functions, Derivative of standard Algebraic and Transcendental functions, Derivative of composite functions, functions in parametric form, Implicit differentiation, Successive differentiation (simple cases), Leibnitz theorem, Partial differentiation, Application of Euler's theorem, Derivative as a rate measure, Increasing and decreasing functions, Maxima and Minima, Indeterminate forms, Geometrical application of derivatives such as finding tangents and normal to plane curves. Integral calculus: Standard methods of integration (substitution, by parts, by partial fraction, etc), Integration of rational, irrational functions and trigonometric functions. Definite integrals and properties of definite integrals, Areas under plane curves. Differential equations : Definition, order, degree of a differential equation, General and particular solution of a differential equation, Formation of a differential equation, Solution of a differential equations by method of separation of variables, Homogeneous differential equations of first order and first degree, Linear differential equations of the form $dy/dx + p(x)y = q(x)$, Solutions of differential equations of the form $d^2y/dx^2 = f(x)$ Probability and statistics: Average (mean, median and mode). Dispersion (standard deviation and variance), Definition of probability, mutually exclusive events, Independent events, Compound events, Conditional probability, Addition theorem. Number system: Decimal, binary, octal, hexadecimal numbers and their conversion.