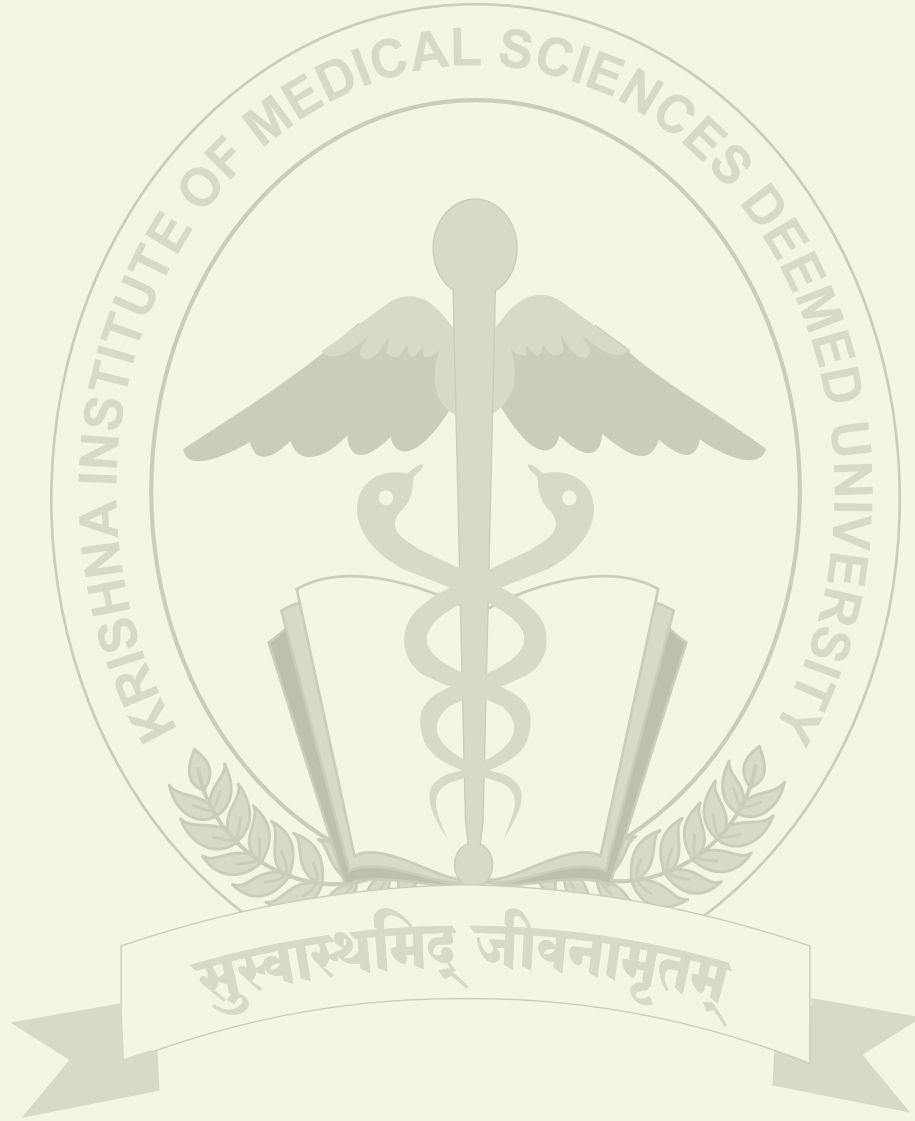# KRISHNA INSTITUTE OF MEDICAL SCIENCES DEEMED UNIVERSITY, KARAD.

Information and Application Form

KRISHNA INSTITUTE OF MEDICAL SCIENCES DEEMED UNIVERSITY, KARAD.

सुस्वास्थमिद् जीवनामृतम्

**The Krishna Institute of Medical Sciences
was declared as 'University'
under Section 3 of UGC Act
in May 2005.**

CALENDAR OF EVENTS

KAIET 2014

IMPORTANT INFORMATION FOR ENTRANCE EXAM

Students will be admitted to the following faculties of Krishna Institute Medical Sciences Deemed University on the basis of the merit obtained by them in the All Krishna All India Entrance Test (KAIET - 2014)

Faculty of Medical Sciences (MBBS)
Faculrty of Dental Sciences (B.D.S.)
Faculty of Physiotherapy (B.P.Th.)
Faculty of Nursing (B.Sc. Nursing)

Calender of Events

1.	Sale of information brochure and application Forms at Karad,	: 14/3/2014 to 8/5/2014
2.	Submission of application forms	: On or before 8/5/2014 (5.00 pm)
3.	Admit Cards should be downloaded from our website **www.kimsuniversity.in**	
4.	Day, Date & Time of Examination	: **Thursday 15/5/2014** 2.00 to 5.00 pm.
5.	Schedule of Examination :	
	● Entry in Examination Hall	: 1.30 p.m.
	● Examination Commences	: 2.00 p.m.
	● Examination Conclude	: 5.00 p.m.
6.	Declaration of Results	: 16/6/2014 on Notice Board & website
7.	Last date of Application for Verification of marks	: 20/06/2014
8.	Final Merit List	: 24/06/2014
9.	Date of counseling	: Will be notified later on our website
10.	Cut-off date of admission process	: 30/09/2014

CENTRES FOR ALL INDIA ENTRANCE TEST 2014-2015 : KAIET-2014

Krishna All India Entrance Test 2014 will be held in the following cities :

Sr. No.	City	Code No.
01	Karad	11
02	Pune	12
03	Mumbai	13
04	Nagpur	14
05	Delhi	15
06	Chandigarh	16
07	Indore	17
08	Surat	18
09	Ahmedabad	19
10	Hyderabad	20
11	Cochin	21

The place of Entrance Test at each center will be as declared on the website of KIMSU, well in advance.
Website : www.kimsuniversity.in

ADMISSION SCHEDULE

COMPETENT AUTHORITY :

Competent Authority means The Controller of Examinations (CoE), Krishna Institute of Medical Sciences Deemed University, Karad - 415110.

The Competent Authority will supervise the conduction of KAIET-2014, evaluation of answer sheets and declaration of results & merit list. Competent Authority will be the chairperson of the Appeal Committee for representations, queries & complaints of the candidates. The Competent Authority will issue necessary executive instructions for implementation of those rules and provide relevant information to be published and communicated.

1. CONDUCT OF COMMON ENTRANCE TEST :

1.1 Candidates should go through the contents of this Brochure carefully and for any clarification and genuine doubts/difficulties, approach the Competent Authority.
Further information, if any, about Entrance test, will be uploaded and notified regularly on the website : www.kimsuniversity.in

Please Note :

KAIET-2014 reserves the right to add or delete the examination centers. Due to unforeseen circumstances during the conduct of KAIET-2014 at a center and in the contingencies like incidence of mass copying, leakage of question paper, entry of unauthorized persons in the Examination Centres/halls, natural calamities etc,. rendering it impossible for the smooth conduct of KAIET-2014, the Competent Authority may cancel the examination at such or all centers. Fresh programme for conduct of KAIET-2014 at such center(s) shall be further notified on the official website of KIMDSU.

1.2 The KAIET-2014 will consist of one common question paper in the subjects of Physics, Chemistry and Biology(Botany & Zoology) consisting of 200 Multiple choice questions (MCQs) 50 in Physics, 50 in Chemistry and 100 in Biology. There is no choice among the questions. The candidate is expected to attempt all the 200 questions. Out of four circles provided for selection of answers against a question, the candidate should fill up one circle only. Each correct answer will be given one mark. There shall be no negative marking for wrong answers. Scratching, overwriting, tick marks & multiple answers will be
Considered as wrong answers and no marks will be awarded to them.

Duration of examination will be of 3 hours. The medium of examination shall be English only.
No candidate will be allowed to appear for KAIET-2014 unless he/she holds Admit Card issued by the Competent Authority.

ADMISSION SCHEDULE

2. AVAILABILITY OF FORMS

1. Online Application Form available on our website www.kimsuniversity.in can be submitted within the stipulated time as per the following instructions:

Relevant and complete information and data entry is to be made in the **online application format** by the candidate to download the application form.

Hard copy of the downloaded application form along with the Demand Draft of Rs 1,500/- in favor of Krishna Institute of Medical Sciences University, payable at Karad should be submitted within the stipulated time to:

> **The competent Authority**,
> Krishna Institue of Medical Sciences University,
> Near Dhebewadi Road,
> Tal:karad 415110, Dist ;Satara, Maharashtra State.

The downloaded application form must have the recent color photograph of the candidate, signature of the candidate, left thumb impression, signature of candidate's parent/guardian Incomplete forms will not be accepted.

Online submitted forms will be accepted only after receiving the hard copy of the application form and the Demand Draft of Rs 1,500/-

Candidates who have applied online will know the status of application by student login.

2. Application form will also be available at the Krishna Institute of Medical Sciences University office, Karad,(9.00 am to 5.00 pm) on payment of Rs 500/- and by post with an additional payment of Rs 100/-, by DD in favor of Krishna Institute of Medical Sciences University, payable at Karad. The filled form should reach the university on or before the scheduled data along with a DD of Rs 1000/-.

A. The application form must be filled by the candidate in his/her own handwriting using black Ballpoint pen. Paste a recent colour photograph in box provided in the application form. It is expected that the candidate will have same appearance at the time of examination as in the photograph. Photographs pasted on the application form and on Receipt Cum Identity should be the same. A hazy photograph or any other discrepancy may lead to rejection of application form without any notice at any stage of admission process.

B. Application Form submitted by Post must be accompanied by a self-addressed and stamped envelope along with Receipt-cum-Identity card for acknowledgment.

C. Incomplete application forms will be rejected.

D. The authorised official at the centre accepting the Application Form shall issue Receipt Cum Identity Card attesting the photograph of the candidate with his signature and stamp.

ADMISSION SCHEDULE

3. ADMIT CARD

The admit card will indicate Roll no and Examination centre allotted to candidate with its address
.
Admit Card should be downloaded from our university website www.kimsuniversity.in.

In case a candidate does not **obtain** the Admit Card (Hall Ticket) before the stipulated date, he/she should contact University office immediately. Arrangements will be made for the issue of duplicate Admit cards at the 'Help Desk' established at respective examination centres. In such a situation, candidate should bring two identical copies of his / her photographs which are affixed to application form along with his / her proof of submission / posting of online printed application form or school/college identity card or photocopy of the submitted application form. **In case no proof is submitted duplicate Admit card will not be issued.**

4. ELIGIBILITY

A candidate will be eligible for admission in Health Science Courses i.e. MBBS, BDS, BPTh, B.Sc. Nursing, for the academic year 2014-15 on fulfillment of the following conditions:

1. The candidates shall be an Indian National/NRI/ Foreign Nationals. The candidate is required to produce proof in support of his/her Nationality from a District Magistrate, Additional Magistrate or Metropolitan Magistrate.

2. The candidate shall complete the age of 17 years on or before 31st December, of the year of admission to the MBBS course to be eligible to appear for KAIET-2014. The Secondary School Certificate (i.e. SSC) or equivalent examination certificate or the certificates of age and nationality endorsing the date of birth will constitute the valid proof.

3. The candidate must be medically fit and must submit a certificate of medical fitness as per proforma

4. A candidate must have passed the qualifying examination i.e. Higher Secondary Certificate (HSC) or equivalent examination (with English, Physics, Chemistry, Biology as subjects).

5. Candidates belonging to backward class must produce copy of the **Caste and Caste Validity Certificate**. It should however be noted that there is no reservation for students belonging to backward Class. This certificate is required in support of relaxation of eligibility criteria i.e. If such a candidate gets admission on the basis of inter-se-merit of KAIET - 2014 but has scored less than 50% marks in Qualifying examinations.

5. Eligibility criteria of qualifying Examination for various courses

A.   **For M.B.B.S. and BDS :** A candidate to open category must have passed in the subject of Physics, Chemistry, Biology & English individually and must have obtained a minimum of 50% marks, taken together in physics, Chemistry and Biology at the qualifying examination. In respect of candidates belonging to Scheduled casts, Scheduled tribes or Other Backward Classes, the marks obtained in Physics, Chemistry and Biology taken together in qualifying examination be 40% instead of 50% as above.

B.   **BSC (Nursing) :** A candidate belonging to open category must have obtained not less than 50 % marks in Physics, Chemistry,   Biology and English taken together at HSC (or equivalent) examination. A candidate belonging to backward class must have obtained not less than 40 % marks in Physics, Chemistry,   Biology and English taken together at HSC (or equivalent) exam.

C. **For B.PTh :** Clause 1 & 2 is not applicable. Passing grade at HSC / 12th standard or equivalent examination is however necessary.

D. The candidates who are appearing for qualifying examination i.e. HSC (or equivalent exam.), in February / March 2014 are eligible to appear for KAIET 2014, however, they must fulfill the eligibility condition at the time of admission.

E. The above eligibility criteria is also applicable to NRI and Foreign Nationals, however they shall submit **equivalence certificate** obtained from appropriate Authorities.

6.1 CET Marks Eligibility for Admission to MBBS & BDS Courses :

A candidate belonging to open category must secure not less than 50 % marks in Physics, Chemistry & Biology (PCB) taken together at KAIET 2014. A candidate belonging to backward class must secure not less than 40% marks in Physics, Chemistry & Biology (PCB) taken together in the KAIET - 2014.

6.2 CET Marks Eligibility for Admission to B.PTh & BSc (Nursing) :

A candidate will be selected on the basis of merit in KAIET 2014 to these courses.

7. Eligibility conditions may vary in accordance with Judicial Pronouncements and orders issued by appropriate Authorities from time to time.

8. MERIT LIST :

a. BASIS OF MERIT RANKING

Marks obtained by the candidate at the KAIET 2014 will form the basis of selection.

b. TIE - BREAKERS

In case of equal marks at the KAIET - 2014, the following procedure will be adopted for deciding inter - se merit.

First level : A candidate with higher marks in Biology at the KAIET - 2014 exam shall be preferred, if the tie still persists then :

Second level : A candidate with higher marks in Chemistry at the KAIET - 2014 exam shall be preferred, if the tie still persists then :

Third level : A candidate with higher Percentage of aggregate marks at the SSC (or equivalent) exam shall be preferred, if the tie still persists then:

Fourth Level : A older candidate shall be preferred over a younger candidate.

c. RESULTS AND MERIT NUMBER :

Results and Merit number will be declared on 16/6/2014 and 24/6/2014 respectively, on the website of the university www.kimsuniversity.in

COUNSELING DATES WILL BE NOTIFIED ALONG WITH THE MERIT LIST ON OUR WEBSITE.

ADMISSION SCHEDULE

9. REVALUATION OF HSC / EQUIVALENT MARKS :

If the marks of the candidate of HSC or equivalent examination have been revised after revaluation, the eligibility of the candidate may altered. The candidate will be permitted to avail the benefit of revised marks subject to his / her representation to the Competent Authority and production of necessary proof to the satisfaction of the Competent Authority The candidates must note that the Competent Authority will not be responsible for late declaration of result of such revaluations or late submissions of proof due to any reason whatsoever and request to consider/reconsider the claim of the candidate arising out of such revaluation shall not be entertained.

10. ADMISSION PROCEDURE
The admission to the course shall be carried out as per the following procedure.

    a.   **Intake Capacity : 150**
        (Increased in intake is subject to approval of MCI and Govt. of India.)
    b.   **Distribution of Seats :**
        The distribution of Seats will be as follows :
        General Category   : 85%
        NRI/PIO/FN Category   : 15%

(N.R.I.-Non-Resident Indian, PIO-Persons of Indian Origin FN-Foreign National)
Reservations will be as per directives of the Government of India issued through the UGC and applicable to Universities declared under section 3 of the UGC Act, 1956.

c. Procedure and Definitions :
General Category : Admissions to this category shall be made on the basis of the inter se merit of the candidates qualified at KAIET-2014.

D. NRI/PIO/FN Category :

A person belonging to this category is not required to appear at the KAIET-2014. How ever, he/she shall submit a separate application, in the specifically prescribed form, available in the office of University and on the university website. A committee for the purpose, shall admit candidates on the basis of inter se merit of the applicants, (decided on the basis of the academic record of the candidate, the standing of the Institutions from which the candidate has obtained the entry qualifications etc.)

In case the seats, earmarked for NRIs/FNs are not filled in by candidates of any of these sub categories: the management shall fill in these vacant seats from the candidates, who have cleared the KAIET-2014, according to their merit in the KAIET-2014. The fees charged to these candidates will be 1.5 times of the General Category fees. The candidates appearing for the entrance test KAIET-2014 and wanting to be considered against such possible vacancies, should submit a separate application in the prescribed form for consideration. The form is available in the University Office and on the University website.

Important :
Under the NRI,PIO and FN. categories, only those who have studied and passed the qualifying examination from schools or colleges located in foreign countries (all countries other than India) shall be considered. This will include the students studying in schools and colleges situated in the foreign countries, even if the concerned school / college is affiliated to any Board of Secondary Education or a university in India. However, wards of NRIs or PIOs, FNs who are studying for the qualifying examination in schools located in India, are excluded.

ADMISSION SCHEDULE

11. ANNUAL FEE STRUCTURE :

Course	General Category	NRI / PIO/ Foreign students
M.B.B.S.	₹ 7,38,000	$ 20,500
B.D.S.	₹ 3,00,000	$ 7,260
B.P.Th.	₹ 50,000	----
B.Sc. Nursing	₹ 60,000	----

In additional to the above mentioned fees, on admission,the candidate shall be required to pay Eligibility and the caution fees as may be prescribed by the Krishna Institute of Medical Sciences Deemed University,Karad.

12. CANCELLATION AND REFUND OF FEES -

Candidate who has confirmed his/her admission may withdraw it by submitting an application to the Competent Authority of KAIET 2014. In such a case, the following rules for refund of Tution Fee will be applicable and will be binding on the candidate.

Period of Cancellation	Permissible Refund
A. On or before the first day of college	The entire annual Tuition Fee after deduction of Rs. 1000/- as processing fee.
b. From second day of college till the last date of admission	If the seat consequently falling vacant has been filled by the another candidate by the last date of admission, then annual Tuition Fee after deducting proportionate deduction of monthly fee plus Rs. 1000/- as processing fee. ii. If the vacant seat created by cancellation of admission is not filled by 30th September, 2014, no Tuition Fee shall be refunded.
C. On or after last date of admission	**No Cancellation of Admission.** If the candidate fails and/or neglects and / or is unable to continue the said course, the guardian shall be bound and liable to pay full Tuition Fees and other fees for the Entire course in a single installment.

13. VERIFICATION OF MARKS :

The answer sheets of KAIET -2014 examination will be assessed by scanning with the help of computer, if the candidate wishes to verify the answer sheet a written representation in prescribed Proforma should be submitted to the Competent Authority within 4 days of declaration of results along with DD Rs. 1000/- drawn on Bank in favour of KIMSU payable at Karad,

ADMISSION SCHEDULE

14. DISQUALIFICATION FROM ADMISSION PROCESS :

Any candidate himself or his authorized proxy if found obstructing the admission process or trying to influence in any manner or creating nuisance the candidate shall be liable for disqualification from the admission process. The decision taken by the University shall be final and binding.

15. CONDUCT AND DISCIPLINE :

1. The student while studying in the Health Science Courses, if found indulging in antinational activities, unlawful activities or ragging in any form, contrary to the provisions of Acts and Law enforced by University, will be liable to the expelled from the University.

2. Detection of failure of the candidate in making full and correct statements in the application form and/or suppression of any information is liable for disqualification of the candidate, even at later date. Such a candidate will be debarred form the entire selection process and pursuing the course of studies.

3. It is the responsibility of every candidate to submit proper documents. Any candidate found to indulge in malpractice including impersonation, cheating, filing false documents. etc. is liable for cancellation of admission, forfeiture of the fees and deposits.

4. All candidates selected for admission shall be subject to the disciplinary rules of the University. The candidates have to give an undertaking for completion of the course and have to get Eligibility Certificates from the University. Students shall submit the Eligibility form at the time of joining the course. Relevant information is to be filled in the Eligibility form and necessary documents as mentioned in the form along with Xerox copies shall be attached. Original documents will be duly returned to the candidate after completion of the admission procedure.

Disputes :

In the event of any dispute as to interpretation and implementation of any of the clauses in the this instruction sheet the COE KIMS Deemed University shall be final authority & the same will be binding on all concerned.

Court Jurisdiction :

Any legal dispute will be subject to jurisdiction of Competent Court in Karad, District - Satara and the Hon'ble High Court of Judicature at Mumbai as the case may be, with advance legal notice of one month to KIMSDU.

Disclaimer :

Krishna Institute of Medical Sciences Deemed University has not authorized any individual as agent or agency to deal with the admission in their constituent colleges or elsewhere.
The University will not be responsible for any activities of such individual agents/ agencies. It should also be noted that the contents of the Prospectus are subject to changes as the University may deem fit. **Changes, if any, shall be notified on the web site of the University.**

ADMISSION SCHEDULE

Ragging :

Ragging within or outside the Educational Institutions is strictly prohibited. Ragging is a criminal offence under the Maharashtra Anti ragging Act. To ensure strict compliance of the orders of the Hon'ble Supreme Court of India, for implementing the recommendations of the Raghvan Committee's report, on Prevention of Ragging in Educational Institute, the KIMSDU has framed rules and regulations. Students involved in ragging will be subjected to disciplinary action.

Ragging in any form is a punishable offence. Committing this act of indiscipline, the concerned student shall be given liberty to explain and if his explanation is not found satisfactory, the authority would expel such students from the Institution. In such events the rusticated student is liable to pay the total course fees.

List of Documents Required While Reporting for Counselling -

At the time of counseling, you are required to produce the following documents in original, failure to do so will result in instantaneous cancellation of your claim for admission. You are also required to submit two photocopies of each of these documents.

1.   For a Proof of date of birth : SSC Certificate or School/College Leaving Certificate.

2.   Statement of marks of X std examination.

3.   Statement of marks of XII std examination.

4.   Leaving/Transfer Certificate

5.   Migration Certificate

6.   Conduct and Character Certificate from a responsible person.

7.   Gap Certificate (wherever applicable)

8.   Certificate of Medical Fitness.

9.   An affidavit in the format As per Annexure, signed by you and countersigned by your parent/guardian in the presence of Notary Public on a stamp paper.

10.   Caste validity Certificate (if applicable wherever is)

11.   Nationality Certificate

12.   Six recent passport size photographs with your names written on backside.

13.   The amount of fees and Hostel fees (in case you are admitted to Hostel)

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SYLLABUS OF KAIET-14

CORE SYLLABUS FOR KAIET -

PHYSICS

Physical World and Measurement

● Physics : Scope and excitement; nature of physical laws; Physics, technology and society.
● Need for measurement: Units of measurement; systems of units; SI units, fundamental and derived units. Length, mass and time measurements; accuracy and precision of measuring instruments; errors in measurement; significant figures.
● Dimensions of physical quantities, dimensional analysis and its applications.

Kinematics

● Frame of reference, Motion in a straight line; Position-time graph, speed and velocity. Uniform and non-uniform motion, average speed and instantaneous velocity. Uniformly accelerated motion, velocity-time and position-time graphs, for uniformly accelerated motion (graphical treatment).
● Elementary concepts of differentiation and integration for describing motion. Scalar and vector quantities: Position and displacement vectors, general vectors, general vectors and notation, equality of vectors, multiplication of vectors by a real number; addition and subtraction of vectors. Relative velocity.
● Unit vectors. Resolution of a vector in a plane-rectangular components.
● Scalar and Vector products of Vectors. Motion in a plane. Cases of uniform velocity and uniform acceleration-projectile motion. Uniform circular motion.

Laws of Motion

● Intuitive concept of force. Inertia, Newton's first law of motion; momentum and Newton's second law of motion; impulse; Newton's third law of motion. Law of conservation of linear momentum and its applications.
● Equilibrium of concurrent forces. Static and Kinetic friction, laws of friction, rolling friction, lubrication.
● Dynamics of uniform circular motion. Centripetal force, examples of circular motion (vehicle on level circular road, vehicle on banked road).

Work, Energy and Power

● Work done by a constant force and variable force; kinetic energy, work-energy theorem, power.
● Notion of potential energy, potential energy of a spring, conservative forces; conservation of mechanical energy (kinetic and potential energies); non-conservative forces; motion in a vertical circle, elastic and inelastic collisions in one and two dimensions.

Motion of System of Particles and Rigid Body

● Centre of mass of a two-particle system, momentum conservation and centre of mass motion. Centre of mass of a rigid body; centre of mass of uniform rod.
⊗ Moment of a force,-torque, angular momentum, conservation of angular momentum with some examples.
● Equilibrium of rigid bodies, rigid body rotation and equation of rotational motion, comparison of linear and rotational motions; moment of inertia, radius of gyration. Values of M.I. for simple geometrical objects (no derivation). Statement of parallel and perpendicular axes theorems and their applications.

SYLLABUS OF KAIET-14

Gravitation

● Kepler's laws of planetary motion. The universal law of gravitation. Acceleration due to gravity and its variation with altitude and depth.
● Gravitational potential energy; gravitational potential. Escape velocity, orbital velocity of a satellite. Geostationary satellites. UNIT VII: Properties of Bulk Matter
● Elastic behavior, Stress-strain relationship. Hooke's law, Young's modulus, bulk modulus, shear, modulus of rigidity, poisson's ratio; elastic energy.
● Viscosity, Stokes' law, terminal velocity, Reynold's number, streamline and turbulent flow. Critical velocity, Bernoulli's theorem and its applications.
● Surface energy and surface tension, angle of contact, excess of pressure, application of surface tension ideas to drops, bubbles and capillary rise.
● Heat, temperature, thermal expansion; thermal expansion of solids, liquids, and gases. Anomalous expansion. Specific heat capacity: Cp, Cv- calorimetry; change of state latent heat.
● Heat transfer- conduction and thermal conductivity, convection and radiation. Qualitative ideas of Black Body Radiation, Wein's displacement law, and Green House effect.
● Newton's law of cooling and Stefan's law.

Properties of Bulk Matter

● Elastic behavior, Stress-strain relationship. Hooke's law, Young's modulus, bulk modulus, shear, modulus of rigidity, poisson's ratio; elastic energy.
● Viscosity, Stokes' law, terminal velocity, Reynold's number, streamline and turbulent flow. Critical velocity, Bernoulli's theorem and its applications.
● Surface energy and surface tension, angle of contact, excess of pressure, application of surface tension ideas to drops, bubbles and capillary rise.
● Heat, temperature, thermal expansion; thermal expansion of solids, liquids, and gases. Anomalous expansion. Specific heat capacity: Cp, Cv- calorimetry; change of state latent heat.
● Heat transfer- conduction and thermal conductivity, convection and radiation. Qualitative ideas of Black Body Radiation, Wein's displacement law, and GreenHouse effect.
● Newton's law of cooling and Stefan's law

Thermodynamics

● Thermal equilibrium and definition of temperature (zeroth law of Thermodynamics). Heat, work and internal energy. First law of thermodynamics. Isothermal and adiabatic processes.
● Second law of the thermodynamics: Reversible and irreversible processes. Heat engines and refrigerators.

Behaviour of Perfect Gas and Kinetic Theory

● Equation of state of a perfect gas, work done on compressing a gas.
● Kinetic theory of gases: Assumptions, concept of pressure. Kinetic energy and temperature; degrees of freedom, law of equipartition of energy (statement only) and application to specific heat capacities of gases; concept of mean free path.

SYLLABUS OF KAIET-14

Oscillations and Waves

● Periodic motion-period, frequency, displacement as a function of time. Periodic functions. Simple harmonic motion(SHM) and its equation; phase; oscillations of a spring-restoring force and force constant; energy in SHM Kinetic and potential energies; simple pendulum-derivation of expression for its time period; free, forced and damped oscillations (qualitative ideas only), resonance.
● Wave motion. Longitudinal and transverse waves, speed of wave motion. Displacement relation for a progressive wave.
● Principle of superposition of waves, reflection of waves, standing waves in strings and organ pipes, fundamental mode and harmonics. Beats. Doppler effect. Resonance, Sonometer, Melde's experiment, Study of vibrations of air columns, Resonance tube.

Surface Tension

● Surface tension on the baasis of molecular theory, Surface energy, Surface tension and surface energy, Effect of impurity and temperature on surface tension, Angle of contact, Shape of liquid drop, Capillary and capillary action.

Electrostatics

● Electric charges and their conservation. Coulomb's law-force between two point charges, forces between multiple charges; superposition principle and continuous charge distribution.
● Electric field, electric field due to a point charge, electric field lines; electric dipole, electric field due to a dipole; torque on a dipole in a uniform electric field.
● Electric flux, statement of Gauss's theorem and its applications to find field due to infinitely long straight wire, uniformly charged infinite plane sheet and uniformly charged thin spherical shell (field inside and outside)
● Electric potential, potential difference, electric potential due to a point charge, a dipole and system of charges: equipotential surfaces, electrical potential energy of a system of two point charges and of electric diploes in an electrostatic field.
● Conductors and insulators, free charges and bound charges inside a conductor. Dielectrics and electric polarization, capacitors and capacitance, combination of capacitors in series and in parallel, capacitance of a parallel plate capacitor with and without dielectric medium between the plates, energy stored in a capacitor, Van de Graaff generator.

Current Electricity

● Electric current, flow of electric charges in a metallic conductor, drift velocity and mobility, and their relation with electric current; Ohm's law, electrical resistance, V-I characteristics (liner and non-linear), electrical energy and power, electrical resistivity and conductivity.
● Carbon resistors, colour code for carbon resistors; series and parallel combinations of resistors; temperature dependence of resistance.
● Internal resistance of a cell, potential difference and emf of a cell, combination of cells in series and in parallel.
● Kirchhoff's laws and simple applications. Wheatstone bridge, metre bridge.
● Potentiometer-principle and applications to measure potential difference, and for comparing emf of two cells; measurement of internal resistance of a cell.

Magnetic Effects of Current and Magnetism

● Concept of magnetic field, Oersted's experiment. Biot-Savart law and its application to current carrying circular loop.

● Ampere's law and its applications to infinitely long straight wire, straight and toroidal solenoids. Force on a moving charge in uniform magnetic and electric fields. Cyclotron.

● Force on a current-carrying conductor in a uniform magnetic field. Force between two parallel current-carrying conductorsdefinition of ampere. Torque experienced by a current loop in a magnetic field; moving coil galvanometer-its current sensitivity and conversion to ammeter and voltmeter.

● Current loop as a magnetic dipole and its magnetic dipole moment. Magnetic dipole moment of a revolving electron. Magnetic field intensity due to a magnetic dipole (bar magnet) along its axis and perpendicular to its axis. Torque on a magnetic dipole (bar magnet) in a uniform magnetic field; bar magnet as an equivalent solenoid, magnetic field lines; Earth's magnetic field and magnetic elements.

● Para-, dia-and ferro-magnetic substances, with examples.

● Electromagnetic and factors affecting their strengths. Permanent magnets.

Electromagnetic Induction and Alternating Currents

● Electromagnetic induction; Faraday's law, induced emf and current; Lenz's Law, Eddy currents. Self and mutual inductance.

● Alternating currents, peak and rms value of alternating current/ voltage; reactance and impedance; LC oscillations (qualitative treatment only), LCR series circuit, resonance; power in AC circuits, wattles current. AC generator and transformer.

Electromagnetic Waves

● Need for displacement current.

● Electromagnetic waves and their characteristics (qualitative ideas only). Transverse nature of electromagnetic waves.

● Electromagnetic spectrum (radio waves, microwaves, infrared, visible, ultraviolet, x-rays, gamma rays) including elementary facts about their uses.

Optics

● Reflection of light, spherical mirrors, mirror formula. Refraction of light, total internal reflection and its applications optical fibres, refraction at spherical surfaces, lenses, thin lens formula, lens-maker's formula. Magnification, power of a lens, combination of thin lenses in contact combination of a lens and a mirror. Refraction and dispersion of light through a prism.

● Scattering of light- blue colour of the sky and reddish appearance of the sun at sunrise and sunset.

● Optical instruments: Human eye, image formation and accommodation, correction of eye defects (myopia and hypermetropia) using lenses.

● Microscopes and astronomical telescopes (reflecting and refracting) and their magnifying powers.

● Wave optics: Wavefront and Huygens' principle, reflection and refraction of plane wave at a plane surface using wavefronts.

● Proof of laws of reflection and refraction using Huygens' principle.☐ Interference, Young's double hole experiment and expression for fringe width, coherent sources and sustained interference of light.

● Diffraction due to a single slit, width of central maximum.

● Resolving power of microscopes and astronomical telescopes. Polarisation, plane polarized light; Brewster's law, uses of plane polarized light and Polaroids.

Dual Nature of Matter and Radiation

● Photoelectric effect, Hertz and Lenard's observations; Einstein's photoelectric equation- particle nature of light.

● Matter waves- wave nature of particles, de Broglie relation. Davisson-Germer experiment (experimental details should be omitted; only conclusion should be explained).

Atoms and Nuclei

● Alpha- particle scattering experiments; Rutherford's model of atom; Bohr model, energy levels, hydrogen spectrum.
Composition and size of nucleus, atomic masses, isotopes, isobars; isotones.

● Radioactivity- alpha, beta and gamma particles/ rays and their properties decay law. Mass-energy relation, mass defect; binding energy per nucleon and its variation with mass number, nuclear fission and fusion.

Electronic Devices

● Energy bands in solids (qualitative ideas only), conductors, insulators and semiconductors; semiconductor diode-   I-V characteristics in forward and reverse bias, diode as a rectifier; I-V characteristics of LED, photodiode, solar cell, and Zener diode; Zener diode as a voltage regulator. Junction transistor, transistor action, characteristics of a transistor; transistor as an amplifier (common emitter configuration) and oscillator. Logic gates (OR, AND, NOT, NAND and NOR). Transistor as a switch.

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CHEMISTRY

Some Basic Concepts of Chemistry

● General Introduction: Important and scope of chemistry.
● Laws of chemical combination, Dalton's atomic theory: concept of elements, atoms and molecules.
● Atomic and molecular masses. Mole concept and molar mass; percentage composition and empirical and molecular formula; chemical reactions, stoichiometry and calculations based on stoichiometry.

Structure of Atom

● Atomic number, isotopes and isobars. Concept of shells and subshells, dual nature of matter and light, de Broglie's relationship, Heisenberg uncertainty principle, concept of orbital, quantum numbers, shapes of s,p and d orbitals, rules for filling electrons in orbitals- Aufbau principle, Pauli exclusion principles and Hund's rule, electronic configuration of atoms, stability of half filled and completely filled orbitals.

Classification of Elements and Periodicity in Properties

● Modern periodic law and long form of periodic table, periodic trends in properties of elements- atomic radii, ionic radii, ionization enthalpy, electron gain enthalpy, electronegativity, valence.

Chemical Bonding and Molecular Structure

● Valence electrons, ionic bond, covalent bond, bond parameters, Lewis structure, polar character of covalent bond, valence bond theory, resonance, geometry of molecules, VSEPR theory, concept of hybridization involving s, p and d orbitals and shapes of some simple molecules, molecular orbital theory of homonuclear diatomic molecules (qualitative idea only). Hydrogen bond.

States of Matter: Gases and Liquids

● Three states of matter, intermolecular interactions, types of bonding, melting and boiling points, role of gas laws of elucidating the concept of the molecule, Boyle's law, Charle's law, Gay Lussac's law, Avogadro's law, ideal behaviour of gases, empirical derivation of gas equation. Avogadro number, ideal gas equation. Kinetic energy and molecular speeds (elementary idea), deviation from ideal behaviour, liquefaction of gases, critical temperature.
●Liquid State- Vapour pressure, viscosity and surface tension (qualitative idea only, no mathematical derivations).

Thermodynamics

● First law of thermodynamics-internal energy and enthalpy, heat capacity and specific heat, measurement of U and H, Hess's law of constant heat summation, enthalpy of : bond dissociation, combustion, formation, atomization, sublimation, phase transition, ionization, solution and dilution.
●Introduction of entropy as state function, Second law of thermodynamics, Gibbs energy change for spontaneous and nonspontaneous process, criteria for equilibrium and spontaneity.
☺ Third law of thermodynamics- Brief introduction.

SYLLABUS OF KAIET-14

Equilibrium

● Equilibrium in physical and chemical processes, dynamic nature of equilibrium, law of chemical equilibrium, equilibrium constant, factors affecting equilibrium-Le Chatelier's principle; ionic equilibrium- ionization of acids and bases, strong and weak electrolytes, degree of ionization, ionization of polybasic acids, acid strength, concept of pH., Hydrolysis of salts (elementary idea)., buffer solutions, Henderson equation, solubility product, common ion effect (with illustrative examples).UNIT VIII: Redox Reactions
●Concept of oxidation and oxidation and reduction, redox reactions oxidation number, balancing redox reactions in terms of loss and gain of electron and change in oxidation numbers.

Hydrogen

● Occurrence, isotopes, preparation, properties and uses of hydrogen; hydrides-ionic, covalent and interstitial; physical and chemical properties of water, heavy water; hydrogen peroxide-preparation, reactions, uses and structure;

s-Block Elements (Alkali and Alkaline earth metals)

● Group I and group 2 elements:
● General introduction, electronic configuration, occurrence, anomalous properties of the first element of each group, diagonal relationship, trends in the variation of properties (such as ionization enthalpy, atomic and ionic radii), trends in chemical reactivity with oxygen, water, hydrogen and halogens; uses.
● Preparation and Properties of Some important Compounds:
● Sodium carbonate, sodium chloride, sodium hydroxide and sodium hydrogencarbonate, biological importance of sodium and potassium.
● Industrial use of lime and limestone, biological importance of Mg and Ca.

Some p-Block Elements

● General Introduction to p-Block Elements.
●Group 13 elements: General introduction, electronic configuration, occurrence, variation of properties, oxidation states, trends in chemical reactivity, anomalous properties of first element of the group; Boron, some important compounds: borax, boric acids, boron hydrides. Aluminium: uses, reactions with acids and alkalies.
●General 14 elements: General introduction, electronic configuration, occurrence, variation of properties, oxidation states, trends in chemical reactivity, anomalous behaviour of first element. Carbon, allotropic forms, physical and chemical properties: uses of some important compounds: oxides.
● Important compounds of silicon and a few uses: silicon tetrachloride, silicones, silicates and zeolites, their uses.

Organic Chemistry- Some Basic Principles and Techniques

● General introduction, methods of purification qualitative and quantitative analysis, classification and IUPAC nomenclature of organic compounds.
● Electronic displacements in a covalent bond: inductive effect, electromeric effect, resonance and hyper conjugation.
● Homolytic and heterolytic fission of a covalent bond: free radials, carbocations, carbanions; electrophiles and nucleophiles, types of organic reactions.

Hydrocarbons

● Alkanes- Nomenclature, isomerism, conformations (ethane only), physical properties, chemical reactions including free radical mechanism of halogenation, combustion and pyrolysis.

● Alkanes-Nomenclature, structure of double bond (ethene), geometrical isomerism, physical properties, methods of preparation: chemical reactions: addition of hydrogen, halogen, water, hydrogen halides (Markovnikov's addition and peroxide effect), ozonolysis, oxidation, mechanism of electrophilic addition.

● Alkynes-Nomenclature, structure of triple bond (ethyne), physical properties, methods of preparation, chemical reactions: acidic character of alkynes, addition reaction of- hydrogen, halogens, hydrogen halides and water.

● Aromatic hydrocarbons- Introduction, IUPAC nomenclature; Benzene; resonance, aromaticity; chemical properties: mechanism of electrophilic substitution- Nitration sulphonation, halogenation, Friedel Craft's alkylation and acylation; directive influence of functional group in mono-substituted benzene; carcinogenicity and toxicity.

Environmental Chemistry

● Environmental pollution : Air, water and soil pollution, chemical reactions in atmosphere, smogs, major atmospheric pollutants; acid rain ozone and its reactions, effects of depletion of ozone layer, greenhouse effect and global warmingpollution due to industrial wastes; green chemistry as an alternative tool for reducing Pollution, strategy for control of environmental pollution.

Solid State

● Classification of solids based on different binding forces; molecular, ionic covalent and metallic solids, amorphous and crystalline solids (elementary idea), unit cell in two dimensional and three dimensional lattices, calculation of density of unit cell, packing in solids, packing efficiency, voids, number of atoms per unit cell in a cubic unit cell, point defects, electrical and magnetic properties, Band theory of metals, conductors, semiconductors and insulators.

Solutions

● Types of solutions, expression of concentration of solutions of solids in liquids, solubility of gases in liquids, solid solutions, colligative properties- relative lowering of vapour pressure, Raoult's law, elevation of boiling point, depression of freezing point, osmotic pressure, determination of molecular masses using colligative properties abnormal molecular mass. Van Hoff factor.

Electrochemistry

● Redox reactions, conductance in electrolytic solutions, specific and molar conductivity variation of conductivity with concentration, kohlrausch's Law, electrolysis and Laws of electrolysis (elementary idea), dry cell- electrolytic cells and Galvanic cells; lead accumulator, EMF of a cell, standard electrode potential, Relation between Gibbs energy change and EMF of a cell, fuel cells; corrosion.

Nuclear Chemistry

● Introduction, Characteristics of Sub atomic particles, Nuclear Stability, Radio activity, Artifical radioactivity and artifical transmutation, Nuclear reactions, Radio isotops and their Uses.

Chemical Kinetics

● Rate of a reaction (average and instantaneous), factors affecting rates of reaction; concentration, temperature, catalyst; order and molecularity of a reaction; rate law and specific rate constant, integrated rate equations and half life (only for zero and first order reactions); concept of collision theory (elementary idea, no mathematical treatment). Activation energy, Arrhenious equation.

Surface Chemistry

● Adsorption-physisorption and chemisorption; factors affecting adsorption of gases on solids, catalysis homogeneous and heterogeneous, activity and selectivity: enzyme catalysis; colloidal state: distinction between true solutions, colloids and suspensions; lyophillic, lyophobic multimolecular and macromolecular colloids; properties of colloids; Tyndall effect, Brownian movement, electrophoresis, coagulation; emulsions-types of emulsions.

General Principles and Processes of Isolation of Elements

● Principles and methods of extraction- concentration, oxidation, reduction electrolytic method and refining; occurrence and principles of extraction of aluminium, copper, zinc and iron. UNIT VII: p- Block Elements
● Group 15 elements: General introduction, electronic configuration, occurrence, oxidation states, trends in physical and chemical properties; preparation and properties of ammonia and nitric acid, oxides of nitrogen (structure only); Phosphorous- allotropic forms; compounds of phosphorous: preparation and properties of phosphine, halides (PCI_3, PCI_5) and oxoacids (elementary idea only).
● Group 16 elements: General introduction, electronic configuration, oxidation states, occurrence, trends in physical and chemical properties; dioxygen: preparation, properties and uses; classification of oxides; ozone. Sulphur allotropic forms; compounds of sulphur: preparation, preparation, properties and uses of sulphur dioxide; sulphuric acid: industrial process of manufacture, properties and uses, oxoacids of sulphur (structures only).
● Group 17 elements: General introduction, electronic configuration, oxidation states, occurrence, trends in physical and chemical properties; compounds of halogens: preparation, properties and uses of chlorine and hydrochloric acid, interhalogen compounds oxoacids of halogens (structures only).
● Group 18 elements: General introduction, electronic configuration, occurrence, trends in physical and chemical properties, uses.

d and f Block Elements

● General introduction, electronic configuration, characteristics of transition metals, general trends in properties of the first row transition metals- metallic character, ionization enthalpy, oxidation states, ionic radii, colour, catalytic property, magnetic properties, interstitial compounds, alloy formation. Preparation and properties of $K_2Cr_2O_7$ and $KMnO_4$.
● Lanthanoids- electronic configuration, oxidation states, chemical reactivity, and lanthanoid contraction and its consequences.
● Actinoids: Electronic configuration, oxidation states and comparison with lanthanoids.

Coordination Compounds

● Coordination compounds: Introduction, ligands, coordination number, colour, magnetic properties and shapes, IUPAC nomenclature of mononuclear coordination compounds, isomerism (structural and stereo) bonding, Werner's theory VBT,CFT; importance of coordination compounds (in qualitative analysis, biological systems).

Haloalkanes and Haloarenes

● Haloalkanes: Nomenclature, nature of C X bond, physical and chemical properties, mechanism of substitution reactions. Optical rotation.
● Haloarenes: Nature of C-X bond, substitution reactions (directive influence of halogen for monosubstituted compounds only).
● Uses and environment effects of dichloromethane, trichloromethane, tetrachloromethane, iodoform, freons, DDT.

Alcohols, Phenols and Ethers

● Alcohols: Nomenclature, methods of preparation, physical and chemical properties (of primary alcohols only); identification of primary, secondary and tertiary alcohols; mechanism of dehydration, uses with special reference to methanol and ethanol.
● Phenols: Nomenclature, methods of preparation, physical and chemical properties, acidic nature of phenol, electrophillic substitution reactions, uses of phenols.
⊗ Ethers: Nomenclature, methods of preparation, physical and chemical properties uses.

Aldehydes, Ketones and Carboxylic Acids

● Aldehydes and Ketones: Nomenclature, nature of carbonyl group, methods of preparation, physical and chemical properties; and mechanism of nucleophilic addition, reactivity of alpha hydrogen in aldehydes; uses.
● Carboxylic Acids: Nomenclature, acidic nature, methods of preparation, physical and chemical properties; uses. UNIT XIII: Organic Compounds Containing Nitrogen
● Amines: Nomenclature, classification, structure, methods of preparation, physical and chemical properties, uses, identification of primary secondary and tertiary amines.
● Cyanides and Isocyanides- will be mentioned at relevant places.
● Diazonium salts: Preparation, chemical reactions and importance in synthetic organic chemistry.

Biomolecules

● Carbohydrates- Classification (aldoses and ketoses), monosaccharide (glucose and fructose), D.L. configuration, oligosaccharides (sucrose, lactose, maltose), polysaccharides (starch, cellulose, glycogen): importance.
● Proteins- Elementary idea of   amino acids, peptide bond, polypeptides, proteins, primary structure, secondary structure, tertiary structure and quaternary structure (qualitative idea only), denaturation of proteins; enzymes.
● Hormones- Elementary idea (excluding structure).
● Vitamins- Classification and function.
● Nucleic Acids: DNA and RNA

Polymers
● Classification - Natural and synthetic, methods of polymerization (addition and condensation), copolymerization. Some important polymers: natural and synthetic like polyesters, bakelite; rubber, Biodegradable and non-biodegradable polymers.

Chemistry in Everyday Life
● Chemicals in medicines- analgesics, tranquilizers, antiseptics, disinfectants, antimicrobials, antifertility drugs, antibiotics, antacids, antihistamines.
● Chemicals in food- preservatives, artificial sweetening agents, elementary idea of antioxidants.
● Cleansing agents- soaps and detergents, cleansing action.

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SYLLABUS OF KAIET-14

BIOLOGY

Diversity in Living World

● What is living? ; Biodiversity; Need for classification; Three domains of life; Taxonomy & Systematics; Concept of species and taxonomical hierarchy; Binomial nomenclature; Tools for study of Taxonomy Museums, Zoos, Herbaria, Botanical gardens.
● Five kingdom classification; salient features and classification of Monera; Protista and Fungi into major groups; Lichens; Viruses and Viroids.
● Salient features and classification of plants into major groups-Algae, Bryophytes, Pteridophytes, Gymnosperms and Angiosperms (three to five salient and distinguishing features and at least two examples of each category); Angiosperms- classification up to class, characteristic features and examples).
● Salient features and classification of animals-nonchordate up to phyla level and chordate up to classes level (three to five salient features and at least two examples).

Structural Organisation in Animals and Plants

● Morphology and modifications; Tissues; Anatomy and functions of different parts of flowering plants: Root, stem, leaf, inflorescence- cymose and recemose, flower, fruit and seed (To be dealt along with the relevant practical of the Practical Syllabus).

● Animal tissues; Morphology, anatomy and functions of different systems (digestive, circulatory, respiratory, nervous and reproductive) of an insect (cockroach). (Brief account only)

Cell Structure and Function

● Cell theory and cell as the basic unit of life; Structure of prokaryotic and eukaryotic cell; Plant cell and animal cell; Cell envelope, cell membrane, cell wall; Cell organelles-structure and function; Endomembrane system-endoplasmic reticulum, Golgi bodies, lysosomes, vacuoles; mitochondria, ribosomes, plastids, micro bodies; Cytoskeleton, cilia, flagella, centrioles (ultra structure and function); Nucleus-nuclear membrane, chromatin, nucleolus.
● Chemical constituents of living cells: Biomolecules-structure and function of proteins, carbodydrates, lipids, nucleic acids; Enzymes-types, properties, enzyme action.
● B Cell division: Cell cycle, mitosis, meiosis and their significance.

Plant Physiology

● Transport in plants: Movement of water, gases and nutrients; Cell to cell transport-Diffusion, facilitated diffusion, active transport; Plant water relations Imbibition, water potential, osmosis, plasmolysis; Long distance transport of water -
Absorption, apoplast, symplast, transpiration pull, root pressure and guttation; Transpiration-Opening and closing of stomata; Uptake and translocation of mineral nutrients-Transport of food, phloem transport, Mass flow hypothesis; Diffusion of gases (brief mention).
● Mineral nutrition: Essential minerals, macro and micronutrients and their role; Deficiency symptoms; Mineral toxicity; Elementary idea of Hydroponics as a method to study mineral nutrition; Nitrogen metabolism-Nitrogen cycle, biological nitrogen fixation.

☹ Photosynthesis: Photosynthesis as a means of Autotrophic nutrition; Site of photosynthesis take place; pigments involved in Photosynthesis (Elementary idea); Photochemical and biosynthetic phases of photosynthesis; Cyclic and non cyclic and photophosphorylation; Chemiosmotic hypothesis; Photorespiration C3 and C4 pathways; Factors affecting photosynthesis.

● Respiration: Exchange gases; Cellular respiration-glycolysis, fermentation (anaerobic), TCA cycle and electron transport system (aerobic); Energy relations-Number of ATP molecules generated; Amphibolic pathways; Respiratory quotient.

● Plant growth and development: Seed germination; Phases of Plant growth and plant growth rate; Conditions of growth; Differentiation, dedifferentiation and redifferentiation; Sequence of developmental process in a plant cell; Growth regulatorsauxin,gibberellin, cytokinin, ethylene, ABA; Seed dormancy; Vernalisation; Photoperiodism.

Human Physiology

● Digestion and absorption; Alimentary canal and digestive glands; Role of digestive enzymes and gastrointestinal hormones; Peristalsis, digestion, absorption and assimilation of proteins, carbohydrates and fats; Caloric value of proteins, carbohydrates and fats; Egestion; Nutritional and digestive disorders PEM, indigestion, constipation, vomiting, jaundice, diarrhea.

● Breathing and Respiration: Respiratory organs in animals (recall only); Respiratory system in humans; Mechanism of breathing and its regulation in humans-Exchange of gases, transport of gases and regulation of respiration Respiratory volumes; Disorders related to respiration-Asthma, Emphysema, Occupational respiratory disorders.

☹ Body fluids and circulation: Composition of blood, blood groups, coagulation of blood; Composition of lymph and its function; Human circulatory system-Structure of human heart and blood vessels; Cardiac cycle, cardiac output, ECG, Double circulation; Regulation of cardiac activity; Disorders of circulatory system-Hypertension, Coronary artery disease, Angina pectoris, Heart failure.

● Excretory products and their elimination: Modes of excretion-Ammonotelism, ureotelism, uricotelism; Human excretory systemstructure and fuction; Urine formation, Osmoregulation; Regulation of kidney function-Renin-angiotensin, Atrial Natriuretic Factor, ADH and Diabetes insipidus; Role of other organs in excretion; Disorders; Uraemia, Renal failure, Renal calculi, Nephritis; Dialysis and artificial kidney.

● Locomotion and Movement: Types of movement- ciliary, fiagellar, muscular; Skeletal muscle- contractile proteins and muscle contraction; Skeletal system and its functions (To be dealt with the relevant practical of Practical syllabus); Joints; Disorders of muscular and skeletal system-Myasthenia gravis, Tetany, Muscular dystrophy, Arthritis, Osteoporosis, Gout.

● Neural control and coordination: Neuron and nerves; Nervous system in humans- central nervous system, peripheral nervous system and visceral nervous system; Generation and conduction of nerve impulse; Reflex action; Sense organs; Elementary structure and function of eye and ear.

● Chemical coordination and regulation: Endocrine glands and hormones; Human endocrine system-Hypothalamus, Pituitary, Pineal, Thyroid, Parathyroid, Adrenal, Pancreas, Gonads; Mechanism of hormone action (Elementary Idea); Role of hormones as messengers and regulators, Hypo-and hyperactivity and related disorders (Common disorders e.g. Dwarfism, Acromegaly, Cretinism, goiter, exopthalmic goiter, diabetes, Addison's disease).

(Imp: Diseases and disorders mentioned above to be dealt in brief.)

Reproduction

●Reproduction in organisms: Reproduction, a characteristic feature of all organisms for continuation of species; Modes of reproduction Asexual and sexual; Asexual reproduction; Modes-Binary fission, sporulation, budding, gemmule, fragmentation; vegetative propagation in plants.

● Sexual reproduction in flowering plants: Flower structure; Development of male and female gametophytes; Pollination-types, gencies and examples; Outbreeding devices; Pollen-Pistil interaction; Double fertilization; Post fertilization eventsDevelopment of endosperm and embryo, Development of seed and formation of fruit; Special modes-apomixis, parthenocarpy, polyembryony; Significance of seed and fruit formation.

●Human Reproduction: Male and female reproductive systems; Microscopic anatomy of testis and ovary; Gametogenesisspermatogenesis & oogenesis; Menstrual cycle; Fertilisation, embryo development upto blastocyst formation, implantation; Pregnancy and placenta formation (Elementary idea); Parturition (Elementary idea); Lactation (Elementary idea).

●Reproductive health: Need for reproductive health and prevention of sexually transmitted diseases (STD); Birth control-Need and Methods, Contraception and Medical Termination of Pregnancy (MTP); Amniocentesis; Infertility and assisted reproductive technologies IVF, ZIFT, GIFT (Elementary idea for general awareness).

Genetics and Evolution

●Heredity and variation: Mendelian Inheritance; Deviations from Mendelism-Incomplete dominance, Co-dominance, Multiple alleles and Inheritance of blood groups, Pleiotropy; Elementary idea of polygenic inheritance; Chromosome theory of inheritance; Chromosomes and genes; Sex determination-In humans, birds, honey bee; Linkage and crossing over; Sex linked inheritance-Haemophilia, Colour blindness; Mendelian disorders in humans-Thalassemia; Chromosomal disorders in humans; Down's syndrome, Turner's and Klinefelter's syndromes.

● Molecular basis of Inheritance: Search for genetic material and DNA as genetic material; Structure of DNA and RNA; DNA packaging; DNA replication; Central dogma; Transcription, genetic code, translation; Gene expression and regulation-Lac Operon; Genome and human genome project; DNA finger printing.

●Evolution: Origin of life; Biological evolution and evidences for biological evolution from Paleontology, comparative anatomy, embryology and molecular evidence); Darwin's contribution, Modern Synthetic theory of Evolution; Mechanism of evolution-Variation (Mutation and Recombination) and Natural Selection with examples, types of natural selection; Gene flow and genetic drift; Hardy-Weinberg's principle; Adaptive Radiation; Human evolution.

Biology and Human Welfare

● Health and Disease; Pathogens; parasites causing human diseases (Malaria, Filariasis, Ascariasis. Typhoid, Pneumonia, common cold, amoebiasis, ring worm); Basic concepts of immunology-vaccines; Cancer, HIV and AIDS; Adolescence, drug and alcohol abuse.

● Improvement in food production; Plant breeding, tissue culture, single cell protein, Biofortification; Apiculture and Animal husbandry.

● Microbes in human welfare: In household food processing, industrial production, sewage treatment, energy generation and as biocontrol agents and biofertilizers.

SYLLABUS OF KAIET-14

Biotechnology and Its Applications

• Principles and process of Biotechnology: Genetic engineering (Recombinant DNA technology).

• Application of Biotechnology in health and agriculture: Human insulin and vaccine production, gene therapy; Genetically modified organisms-Bt crops; Transgenic Animals; Biosafety issues-Biopiracy and patents.

Ecology and environment

• Organisms and environment: Habitat and niche; Population and ecological adaptations; Population interactions-mutualism, competition, predation, parasitism; Population attributes-growth, birth rate and death rate, age distribution.

• Ecosystem: Patterns, components; productivity and decomposition; Energy flow; Pyramids of number, biomass, energy; Nutrient cycling (carbon and phosphorous); Ecological succession; Ecological Services-Carbon fixation, pollination, oxygen release.

• Biodiversity and its conservation: Concept of Biodiversity; Patterns of Biodiversity; Importance of Biodiversity; Loss of Biodiversity; Biodiversity conservation; Hotspots, endangered organisms, extinction, Red Data Book, biosphere reserves, National parks and sanctuaries.

☻ Environmental issues: Air pollution and its control; Water pollution and its control; Agrochemicals and their effects; Solid waste management; Radioactive waste management; Greenhouse effect and global warning; Ozone depletion; Deforestation; Any three case studies as success stories addressing environmental issues.

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SPECIMEN ANSWER SHEET OF KAIET-14

KRISHNA INSTITUTE OF MEDICAL SCIENCES DEEMED UNIVERSITY, KARAD.
KRISHNA ALL INDIA ENTRANCE TEST - 2014

ANSWER SHEET FOR KAIET - 2014
(USE BLACK BALL POINT PEN ONLY)

Name of the Candidate :
(Leave one box empty
In between two names)

KAIET ROLL Number (In Numerals) :

KAIET ROLL Number (In Words) :

Test Booklet Version :   Centre Code :

Test Booklet Serial No. (In Numerals) :

Test Booklet Serial No. (In Words) :

INSTRUCTIONS FOR MARKING ON SIDE - 2

1) Use Black Ball point pen to darken the appropriate circle completely.
2) The Mark should be dark and completely filled.
3) Darken ONLY ONE CIRCLE for answering each question.
4) Answer once shaded is final. No Change is permitted.
5) Please do not make ay stray marks on the answer sheet.
6) Mark the Answer only in the appropriate space against the Number corresponding do the question you are answering.
7) Rough work must not be done on the answer sheet. Use space on Questio paper provided for rough work.
8) Mark your answer like this :

(A) ● (C) (D)	(A) (X) (C) (D)	(A) ☑ (C) (D)	(A) (B) (C) (D)	(A) ● (C) (D)
Wrong method	Wrong method	Wrong method	Wrong method	Correct method

EXAMPLES - HOW TO FILL AND MARK ON SIDE - 2

If your KAIET Roll No. is 015088
fill in as shown below :

If your Test Booklet Version is AA
fill in as shown below :

If your Test Booklet
Serial No. 1044 fill in as
shown below

KAIET ROLL (SEAT) NO.

0	1	5	0	8	8

TEST BOOKLET CODE

● ○ ○ ○   A A
AA BB CC DD

TEST BOOKLET SERIAL NO.

1	0	4	4

Instructions for Candidate

Important instructions for Invigilator

Before signing, check following;

1. Your Roll No.
2. Your Test Booklet No.
3. Your Test Booklet Version

SIGNATURE OF THE CANDIDATE WITH DATE

Before signing please make sure that the candidate has filled his KAIET Roll No.,Test Booklet Version & Test Booklet Serial No. On the SIDE - 1 & 2

SIGNATURE OF THE INVIGILATOR : _____
WITH DATE

NAME OF THE INVIGILATOR : _____

SPECIMEN ANSWER SHEET OF KAIET-14

SIDE - II

KRISHNA INSTITUTE OF MEDICAL SCIENCES UNIVERSITY, KARAD.

ANSWER SHEET NO.

KAIET ROLL (SEAT) No.

TEST BOOKLET CODE

◯ AA ◯ BB ◯ CC ◯ DD

TEST BOOKLET SERIAL NO.

KRISHNA INSTITUTE OF MEDICAL SCIENCES DEEMED UNIVERSITY