Continuous Learning ...

Information Brochure

KIITEE 2011

KIIT UNIVERSITY

(Declared U/S 3 of UGC Act, 1956)

Bhubaneswar, Odisha, India

ADMISSION POLICY

Admission to all the courses will be ONLY through KIITEE 2011

KIITEE - 2011 Programme

Date	Course	Subjects		No. of Questions	Time	Important Notes
24.04.11	**B.Tech. (4 years)/ B.Tech&M.Tech-Dual Degree (5 years)/ B.Tech&MBA-Dual Degree(5 years) /MBBS/BDS/ B.Sc. Nursing**	Part- I	Physics (10+2 standard)	50	10.00 a.m. to 12.00 Noon	The detail Syllabus is given in the **Appendix-I**
			Chemistry (10+2 standard)	50		
	B.Tech. (4 year)/ B.Tech&M.Tech-Dual Degree (5 years)/ B.Tech&MBA-Dual Degree(5 years)	Part - II	Mathematics (10+2 standard)	50	12.15 p.m . to 1.15 p.m	
	MBBS/BDS / B.Sc.Nursing/ B.Tech&M.Tech-Dual Degree (Biotechnology)	Part- II	Biology (10+2standard)	100	2.00 p.m. to 4.00 p.m	
	B.Tech. (LE) (3 years)		Mathematics	40	2.00 p.m. to 4.00 p.m	The detail Syllabus is given in the **Appendix-II**
			Basic Electrical Engineering	40		
			Engineering Mechanics	40		
	BBA/ BCA /Bachelor of Fashion Design / Bachelor of Film & Television Production/ BA.LLB/BBA.LLB/ B.Sc.LLB	Mathematical Ability		30	2.00 p.m. to 4.00 p.m.	
		Analytical & Logical Ability		30		
		Verbal Ability		40		
		General Knowledge		20		

KIITEE - 2011 Programme

Date	Course	Subjects	No. of Questions	Time	Important Notes
	MCA (3 years)	Mathematics (10+2 standard)	60	2.00 p.m. to 4.00 p.m.	The detail Syllabus is given in the **Appendix-III**
		Analytical & Logical Ability	30		
		Computer Awareness	30		
	M.Tech. (2 years)	Branch Specific	120	2.00 p.m. to 4.00 p.m.	The questions will be pertaining to the B.E. / B.Tech. Syllabus of concerned discipline.
	LLM	Multiple Choice & Two long type questions		2.00 p.m. to 4.00 p.m.	The questions will be pertaining to LLB Syllabus
	M.Sc. (Biotechnology) & M.Sc. (Applied Microbiology) (2 years)	Biology (10+2+3 standard)	50	2.00 p.m. to 4.00 p.m.	The detail Syllabus is given in the **Appendix-IV**
		Chemistry (10+2+3 standard)	30		
		Mathematics (10+2 standard)	20		
		Physics(10+2 standard)	20		
	Ph.D	Multiple Choice on teaching and research Aptitude & Subjective questions on concerned subjects.		2.00 p.m. to 4.00 p.m.	The questions will be pertaining to the post graduation syllabus of concerned subjects.

1.0 KIITEE – 2011

1.1 APPLICATION PROCEDURE

Application Form and Prospectus will be available online only. It will not be available in hard copy. Candidates have to apply online at http://www.kiitee.ac.in or http://www.kiit.ac.in or they can download it from the website.

The 'Online Application Form' will be accepted after the following steps are completed:-

- Browse KIIT web site **http://www.kiitee.ac.in or** http://www.kiit.ac.in
- Select 'Online Application' / 'Download' option. (If you want to download, take the print out of downloaded Application Form').
- Go through the Instructions to fill up the form**.**
- Fill up 'Online Application Form' and submit.
- Take the print out of Registration Form mentioning the Application Number.
- Paste the Photographs in the space provided for it.
- Sign on 'Signature' columns both by candidate and parent/guardian.
- **Dispatch the Form along with two passport size photographs pasted in appropriate place and 10th Pass Certificate / Mark sheet.**

Candidates should retain photocopies of 'printed application form' which may serve as reference for future correspondence.

The online application will be accepted subject to receipt of printed application, photographs, copy of 10th Pass Certificate / Mark sheet only.

For downloaded application form

The candidates have to fill up all the fields very carefully and send it with the photographs and 10th Pass Certificate / Mark sheet.

The print out of online registration form or filled in downloaded application form should be submitted in person / by post (Registered Post / Speed Post / Courier) to "**The Director, Admissions, KIIT University, Koel Campus, Bhubaneswar - 751024, Odisha, India"** so as to reach on or before dt**. 05.03.2011,** 5.00 p.m.

Information on receipt of applications at KIIT will be available in the website http://www.kiitee.ac.in & http://www.kiit.ac.in . Candidates can check status of their Application Form on the website after 20 days of its dispatch to KIIT.

1.2 ADMIT CARD

The Admit Cards will be hosted in the website from **dt.01.03.2011 to dt.31.03.2011.** In case, the Admit Card is not available in the website within **1st April,2011,** candidates should write/contact KIIT between **3rd April, 2011 to 5th April, 2011** giving details of the Post Office, date of dispatch, receipt of postal dispatch, Photocopy of the Application Form, one photograph, photocopy of 10th Pass Certificate / Mark sheet. The candidates have to download the admit card from the website and have to come with the printed copy to the examination Centre. **Admit Cards will not be dispatched in Hard Copy.**

Candidates must preserve the Admit Card till the admission process is over.

1.3 CALENDAR OF EVENTS

Apply Online From	:	10-01-2011 to 28-02-2011
Last date of receiving filled in Application form	:	05-03-2011
Last date of hosting Admit Card in the website	:	31-03-2011
Date of Entrance Examination:		24-04-2011
Declaration of Result	:	15-05-2011
COUNSELING:	:	02-06-2011 to 15-06-2011

Detailed Counseling Schedule will be declared after publication of result on 15th May 2011

2.0 ENTRANCE EXAMINATION
2.1 PROCEDURE

01. The Entrance Examination will be conducted at selected centers as per the programme. Instructions will be given to candidates along with the admit card and will be available in KIIT website.

02. The Examination Hall will be opened 30 minutes before the commencement of the Test. Candidates should take their seats immediately after opening of the Examination Hall.

03. In the first 15 minutes, the invigilators will give instruction regarding appearing the Examination, procedure of Marking the answers etc. If the Candidates do not report in time, they are likely to miss some of the important instructions to be announced in the Examination Hall.

04. No candidate, in any case, will be allowed to enter the examination centre after the commencement of the examination.

05. Sign on the Attendance Sheet at the appropriate place in the Examination Hall.

06. **All the questions will be of Objective type and answers should be marked on OMR sheet.**

07. Open/Break the Seal after getting announcement by the invigilator.

08. Answer Sheet used will be of special type which will be scanned on Optical Scanner.

09 The top portion of the Answer Sheet contains the following columns which are to be filled in neatly and accurately by the candidates with **Blue/Black Ball Point Pen only.**

Top Portion

1. Roll No.
2. Application No.
3. Version Code
4. Course

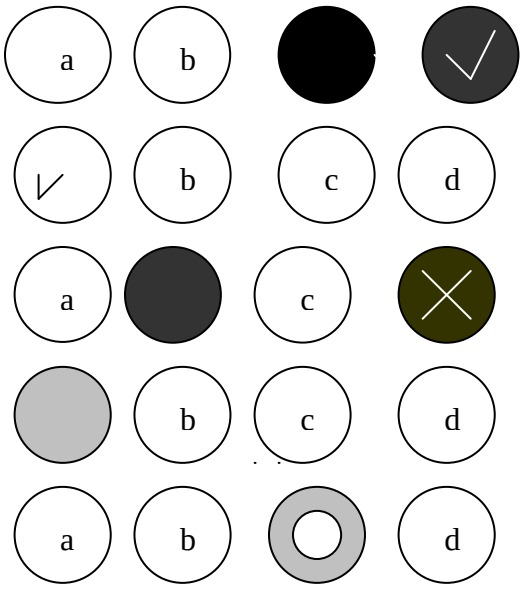
Bottom Portion

1. Name of the Candidate
2. Examination Centre Name
3. Signature of Candidate
4. Signature of the Invigilator

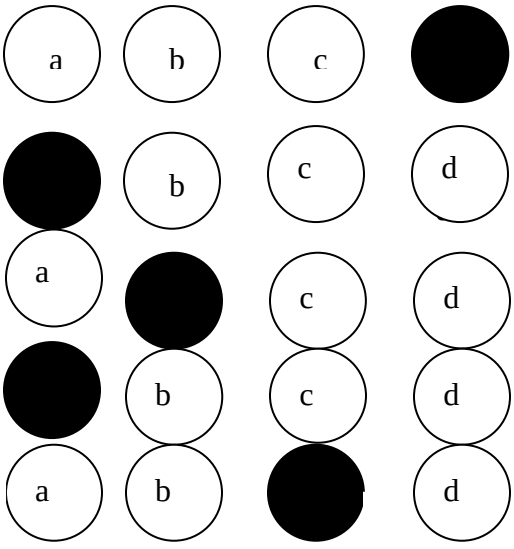
10. **Instruction for Marking the Answers**: - For each question, out of four alternatives, darken only one circle for correct answer completely with **Blue/Black Ball point pen only.** The answer once marked is not liable to be changed. Use of Pencil is strictly prohibited. **If a candidate uses pencil for darkening the circle, his/her answer sheet will be rejected.**

Example:

Wrong Method of Marking



Correct Method of Marking



11. An incompletely /lightly/faintly darkened circle is a wrong method of marking and liable to be rejected by the optical scanner.

The corrected and wrong method of darkening the circle has been illustrated in the diagram.

12. Changing an answer is not allowed**.**

13. If you do not want to answer any question, you need not darken the circle given against that question number.

14**.** Don't do any rough work on the answer sheet **Use the space provided in the Question Booklet for Rough work.**

15. If more than one circle is darkened, then it will be treated as wrong way of marking and will be treated as wrong answer.

2.2 Scoring & Negative Marking

All the questions will be of objective type scoring four marks **(+4)** for each correct response, minus one mark **(-1)** for each incorrect response & zero **(0)** for no response. So the candidates are advised not to respond to a question, if they are not sure about the answer. If a candidate will indicate more than one answer of a question, then it will be treated as incorrect and will fetch negative marks. For LLM & Ph.D there will be both multiple choice and subjective type questions.

2.3 Rules and Regulation

The invigilator will announce commencement and completion of the Examination. Candidates should leave their seat on hearing announcement of completion.

The candidate must show, on demand, the valid Admit Card for admission in to the Examination Hall. A candidate, without a valid Admit Card, will not be permitted to enter the Examination Hall under any circumstances.

A seat indicating application number will be allotted to each candidate. Candidates should find out and occupy their allotted seats only. The candidature of a candidate, found to have changed Hall or seat on his/her own, shall be cancelled and no plea would be accepted.

Candidates are not allowed to carry any Textual, Material, Calculator, Slide Rule, Log Table, Electronics Watch, Printed or Written Material, Papers, Mobile Phone, Pager or any other device except the Admit Card and 2 Blue/Black Ball Point Pens inside the Examination Hall.

No candidate, without the permission of the Centre Superintendent/ Invigilator can leave his/her seat or Examination Hall till the completion of the Examination.

Smoking in the Examination Hall is strictly prohibited.
Tea coffee, cold drinks or snacks are not allowed inside the Examination Hall.

2.4 UNFAIR MEANS

Candidates shall maintain perfect silence and attend to their Question only. Any conversation or gesticulation or disturbance in the Examination Hall shall be deemed as misbehavior. If a candidate is found using unfair means or impersonating, his/her candidature shall be cancelled and will be debarred from the Examination.

2.5. Non Attendance

For those unable to appear in Entrance Examination on scheduled date of Examination for any reason, no **re-examination** shall be held under any circumstance. The schedule will remain unchanged even if the date is declared as a public holiday.

2.6 Language of the Question Paper

Language of the questions will be in English. The questions will not be in any other language.

3. 0 Eligibility Criteria

UNDERGRADUATE COURSES

3.1For B.Tech.(4years)/B.Tech&M.Tech-Dual Degree (5years)/B.Tech&MBA-Dual Degree (5years) Course :-

Candidates applying for B.Tech. (4 years), B.Tech & M.Tech-Dual Degree (5years) & B.Tech & MBA-Dual Degree (5 years) Course should fulfill the following criteria.

I. Candidates who have passed 10+2 examination in 2009, 2010 or appearing in 10+2 examination in 2011 are only eligible to apply for B.Tech (4 years), B.Tech & M.Tech-Dual Degree (5 years), B.Tech & MBA-Dual Degree (5 years) course of the University.

II. Should have studied in regular full time formal education in their schooling / college.

III. Pass in 10 +2 or its equivalent with at least 60% marks in Physics, Chemistry and Mathematics taken together.

IV. B.Tech & M.tech. (Dual Degree) Biotechnology. Pass in 10+2 or equivalent with at least 60% marks in Physics, Chemistry and Biology/Mathematics taken together.

V. Should have born on or after 01.07.1990.

3.2 For B.Tech. -LE (3 years) :- Pass in three years diploma course in Engineering with at least 60% marks in aggregate from State Council of Technical Education of any state or equivalent. Candidates having Diploma in any discipline are eligible to be admitted to any discipline based on merit list.

Candidate should have born on or after 01.07.1987.

3.3 For MBBS/BDS

10+2 pass with Physics, Chemistry, Biology & English with at least 50% marks in Physics, Chemistry & Biology taken together for general category candidates and 40% marks in Physics, Chemistry & Biology taken together for SC/ST Candidates.

Age: Lower age should be 17 years as on 01.07.11 & upper age limit should be maximum 25 years as on 01.07.11. The upper age limit may be relaxed by five years for SC/ST candidates.

3.4 For B.Sc.Nursing (4 years): Pass in 10+2 or equivalent examination with physic, chemistry & Biology and English (PCBE) with at least 45% marks in aggregate.
Age**:** Lower age should be 17 years as on 01.07.11 & upper age limit should be maximum 35 years as on 01.07.11

3.5 For B.A. LL.B/BBA LL.B/B.Sc LL.B (5 years)- 10+2 pass or equivalent in any stream with at least 50% marks.
For B.Sc. LL.B candidates should have passed 10+2 or equivalent in the science stream with at least 50% marks
Age:Not completed 21 years of age as on 01.07.11

3.6 For BBA / BCA (3 years) : Pass in 10+2 in any stream with at least 50% marks and having Mathematics / Business Mathematics / Economics / Statistics as one of the subjects in 10+2 level.
Should have born on or after 01.07.1990.

3.7 For Bachelor of Fashion Design (4 years) : Pass in 10+2 or equivalent examination from a recognized Central / State Board with 50% marks in aggregate Should have born on or after 01.07.1990

3.8 For Bachelor of Film&Television Production (3 years) : Pass in 10+2 or equivalent examination from a recognized Central / State Board with 50% marks in aggregate Should have born on or after 01.07.1990

3.9 A candidate who has passed IB Diploma from International Baccalaureate Organization, Geneva, Switzerland are eligible to take admission in all the courses where 10+2 is the eligibility qualification. Other criteria of the eligibility remain as applicable.

POST GRADUATE COURSES

3.10 For MCA (3 years) :- Any Graduate with minimum 50% marks in graduation or equivalent having mathematics either in 10+2 or graduation level-as one of the subject.
Candidate should have been born on or after 01.07.1987.

3.11 For M.Tech. (2 years):- B.E. or B.Tech. or equivalent Degree (e.g. AMIE, GRADE-IETE etc) in respective branches of Engineering and Technology with a First Class or equivalent CGPA or First Class MCA / First Class M.Sc. in (Comp/IT/ETC)

GATE qualified candidates shall be accorded preference in the process of selection. GATE qualified candidates having Score 400 or above need not sit in the entrance Examination.

Course wise Eligibility Criteria (M.Tech.):-

Electrical: – Power Electronics & Drives / Power Energy System :- First class B.E./ B.Tech. or equivalent in Electrical, Electronics, Electrical & Electronics, Electronics & Tele-Comm., Electronics & Instrumentation.

Computer Science & Engineering:- First Class B.E./ B.Tech. or equivalent in Computer Science, Information Technology, Electrical, Electronics, Electrical & Electronics, Electronics & Tele-Comm., Electronics & Instrumentation or First Class in MCA or First Class in M.Sc. Comp.Sc./ Information Technology.

Computer Science & Information Security: - First Class B.E./ B.Tech. or equivalent in Computer Science, Information Technology, or First Class in MCA or First Class in M.Sc. Comp.Sc./ Information Technology.

Electronics & Tele-Communication Engg. :-First Class B.E./ B.Tech., or equivalent in Electronics & Tele-Comm., Electronics & Instrumentation, Electrical, Electronics, Electronics & Electrical or First Class in M.Sc. (Electronics).

Mechanical - Manufacturing Process & Systems / Thermal Engineering:-First Class B.E. / B. Tech. or equivalent in Mechanical / Production Engineering.

Civil - Construction Engineering & Management / Structural Engineering : First Class B.E./B.Tech. or equivalent in Civil Engineering.

3.12 M.Sc. (Biotechnology/Applied Microbiology) (2 years):- Bachelor's degree in any branch of Science/ Agriculture/ Pharmacy/ Veterinary / Engineering / Technology / Medicine (MBBS/BDS) with at least 55% marks.
Candidate should have been born on or after 01.07.1987.

3.13 For LL.M-Candidate should have passed B.A.LLB/BBA LLB/B.Sc.LLB/B.L, degree or an equivalent degree from recognized university and must have secured at least 50% of marks in aggregate.

RESEARCH PROGRAMME

3.14 For Ph.D. - Candidates having M.Tech/ME/MCA/MBA or equivalent Degree with minimum 60% marks or an equivalent CGPA or M.Sc./MA/M.Com/LL.M or an equivalent degree with minimum of 55% marks or an equivalent CGPA.

For all the courses, candidates appearing in the qualifying examination can also apply. But, they have to produce the pass certificate of the qualifying examination on the day of counseling failing which their rank/position secured in the entrance Examination will stand cancelled automatically and they will have no claim for the admissions as per the rank.

4.0 EVALUATION AND DECLARATION OF RESULTS

Results of KIITEE-2011 will be declared on **15.05.2011**. On the basis of marks secured by the candidate in Entrance Examination, separate Merit lists will be prepared for B.Tech./ B.Tech.(LE), MBBS/BDS,/BSc.Nursing/BBA/BCA,/B.A LL.B/B.A. LL.B/B.Sc.LL.B, Bachelor of Fashion Design, Bachelor of Film & Television Production, Biotechnology- Dual Degree (B.Tech / M.Tech), M.Tech, LL.M, MCA, M.Sc (Biotechnology / Applied Microbiology), Ph.D. Programme. A cut-off qualifying mark will be fixed by the University, at the time of declaration of Entrance Result. Result will be published through Net. The candidates can see their result by giving their application number/roll number. Rank Card indicating the Rank in Entrance Examination, shall be sent to the qualified candidates. Candidates can download the rank card from the website.

As per the availability of seats in different courses, cut-off Rank for counseling will be notified. Candidates, having rank above cut-off rank, shall be called for counseling.

In case of two or more candidates obtaining equal marks, inter-se merit of such candidates shall be determined as follows:-

B.Tech/B.Tech & M.Tech (Dual Degree) & B.Tech & MBA (Dual Degree):- On the basis of marks obtained in Mathematics, then in Physics and then by age (preference to older candidates).

B.Tech. (LE)- On the basis of marks obtained in Mathematics then in Basic Electrical Engineering and and then by age. (Preference to the older candidate).

MBBS/BDS & B.Sc. Nursing:- On the basis of marks obtained in Biology, then in Chemistry and then by age (Preference to older candidates).

BBA / BCA/Bachelor in Fashion Design/Bachelor in Film & Television Production /BA.LLB/BBA LLB/B.Sc.LLB On the basis of Marks obtained in Mathematical Ability, then in Analytical Ability. Then in English and then by age. (Preference to the older candidate)

Biotechnology- Dual Degree (B.Tech/M.Tech) (5 years): On the basis of marks obtained in Biology, then in Chemistry and then by age (preference to older candidates).

MCA:- On the basis of the marks obtained in Computer Awareness, then Mathematics and then by age (Preference to older candidates)

M.Tech:- Preference to Older Candidates

M.Sc.(Applied Microbiology/Biotechnology) :- On the basis of marks obtained in Biology, then Chemistry, then Mathematics and then by age. (Preference to Older Candidates)

LLM:- Preference to Older Candidates

5.0 COUNSELING, SEAT ALLOCATION, DOCUMENT VERIFICATION AND ADMISSION

Counseling and seat allocation will be purely on merit basis i.e. based on the performance in the Entrance Examination.
Counseling Schedule will be published in the KIIT Website on the day of declaration of result itself. Candidates have to attend the counseling as per the schedule.
Counseling will be stopped as soon as all the seats reserved for the KIITEE-2011 are filled up.

Verification of documents would be done at the time of counseling / admission. So as to verify records on identification, age, qualifying examination and category of candidates. On failing to establish correctness in any of the documents, the candidates will not be considered for admission.

Candidates, called for Counseling must bring Original Documents (listed below) and token Fees to the Counseling Centre.

1. Admit Card
2. Rank Card
3. 10^{th} Pass Certificate
4. 12^{th} Marksheet and Pass Certificate
5. Graduation Marksheet and Pass Certificate only for MCA ,M.Sc.(Biotechnology/ Applied Microbiology)
6. Diploma Pass Certificate and three years Mark Sheet (for Lateral Entry Candidates)
7. B.Tech./B.E./ MCA/ M.Sc. or Equivalent Degree Certificate (For M.Tech. Candidates)
8. LL.B. certificate for LL.M candidates
9. Any post graduation certificate or equivalent for Ph.D. candidates

10. Relevant Certificate issued by the Competent Authority, clearly indicating the Reservation Criteria claimed by the candidate.

    Physically handicapped candidates need not bring medical certificates. The decision of Medical Board constituted by KIIT University will be final.

11. GATE Score Card (for M.Tech. GATE Qualified only)

12. School/College Leaving Certificate

13. Conduct Certificate

14. Demand Draft of Rs.55, 000/- which includes the counseling registration fees of Rs.5000 in favor of **KIIT, payable at Bhubaneswar**. Cash payment will not be accepted.

Scheduled Caste / Scheduled Tribe: Candidates applying for SC/ST reserved category shall furnish SC/ST Certificate from the Tahasildar of the place of birth at the time of Counseling.

Physically Handicapped: Candidates will be considered eligible for admission under PH Category, who are having 40% disabilities in consonance with Section-39 of the Persons with Disabilities (Equal Participation) Act,1995. As the institution is not having adequate facilities, the candidates having locomotory disabilities are only eligible to apply KIITEE- 2011.

Categories of Candidates

General	: -	GE
Scheduled Caste	: -	SC
Scheduled Tribe	: -	ST
Physically Handicapped	: -	PH

6.0. RESERVATION OF SEATS

The KIITEE-2011 Quota Seats are distributed among different categories of candidates as follows. Separate Merit list will be prepared for each Category.

Reservation Category	% of seats
Scheduled Caste (SC)	15%
Scheduled Tribe (ST)	7.5%
Physically Handicapped (PH)	3%

Odisha State Candidates: The candidates claiming reservation in this category should satisfy any one of the following criteria.

1. The candidate must have passed / appeared 10+2 examination from any of the recognized institution in the State.
   Or
2. Parents of the candidate must be permanent resident of Odisha. To claim benefit under this category, a candidate shall furnish at the time of counseling a permanent residence certificate from a Revenue Officer not below the rank of Tahasildar of the area where his/her parents have permanent residence.

15% & 7.5% seats of KIITEE-2011 quota seats will be reserved for Schedule Caste & Scheduled Tribe (by birth) respectively. (Not by adoption or marriage).

3% seats of KIITEE-2011 will be reserved for PH candidates. (Only locomotory disabilities). A Medical Board has been constituted under the Chairmanship of Principal, Kalinga Institute of Medical Sciences (KIMS) with Senior Professors of KIMS and Director (Admissions) of KIIT University or her representative (s). The Board should certify that they are eligible to be categorized as Physically Handicapped Candidates and capable of undergoing the particular course at KIIT University as per the facilities available. The decision of the Board will be Final. Therefore, they need not submit any Medical Certificate to the effect that they are Physically Handicapped.

25% seats of each Category will be reserved for the Odisha State Candidates (OS).

30% seats of each category including Odisha State Category will be reserved for the women candidates.(Only applicable for B.Tech/B.Tech & M.Tech(Dual Degree)/B.Tech & MBA (Dual Degree).

All the unfilled reserved seats will be converted to General Category.

7.0 Legal Jurisdiction

All disputes pertaining to the conduct of KIITEE-2011 shall fall within the jurisdiction of Bhubaneswar only. If any person or officer engages himself/herself in act(s) that would result in the leakage of the question paper(s) or attempt to use or help in the use of unfair means in this Examination, he/she shall be liable to prosecution under the Indian Penal Code.

(APPENDIX-I)

SYLLABUS FOR B.TECH. (4 YEARS)/B.TECH& M.TECH-DUAL DEGREE(5 YEARS)/B.TECH.& MBA-DUAL DEGREE(5 YEARS) /MBBS/BDS/B.Sc.NURSING

PHYSICS

Unit 1: Units and Measurement

Units for measurement, system of units-S.I., fundamental and derived units. Dimensions and their applications.

Unit 2: Description of Motion in One Dimension

Motion in a straight line, uniform and non-uniform motion, their graphical representation. Uniformly accelerated motion, and its application.

Unit 3: Description of Motion in Two and Three Dimensions

Scalars and vectors, vector addition, a real number, zero vector and its properties. Resolution of vectors. Scalar and vector products, uniform circular motion and its applications projectile motion.

Unit 4: Laws of Motion

Force and inertia-Newton's Laws of Motion. Conservation of linear momentum and its applications, rocket propulsion, friction-laws of friction.

Unit 5: Work, Energy and Power

Concept of work, energy and power. Energy-Kinetic and potential. Conservation of energy and its applications, Elastic collisions in one and two dimensions. Different forms of energy.

Unit 6: Rotational Motion and Moment of Inertia

Centre of mass of a two-particle system. Centre of mass of a rigid body, general motion of a rigid body, nature of rotational

motion, torque, angular momentum, its conservation and applications.

Moment of inertia, parallel and perpendicular axes theorem, expression of moment of inertia for ring, disc and sphere.

Unit 7:- Gravitation

Acceleration due to gravity, one and two-dimensional motion under gravity. Universal law of gravitation, variation in the acceleration due to gravity of the earth. Planetary motion, Kepler's laws, artificial satellite-geostationary satellite, gravitational potential energy near the surface of earth, gravitational potential and escape velocity.

Unit 8: Solids and Fluids

Inter-atomic and Inter-molecular forces, states of matter.

(A) Solids: Elastic properties, Hook's law, Young's modulus, bulk modulus, modulus of rigidity.

(B) Liquids : Cohesion and adhesion. Surface energy and surface tension. Flow of fluids, Bernoulli's theorem and its applications. Viscosity, Stoke's Law, terminal velocity.

Unit 9: Oscillations

Periodic motion, simple harmonic motion and its equation of motion, energy in S.H.M., Oscillations of a spring and simple pendulum.

Unit 10: Waves

Wave motion, speed of a wave, longitudinal and transverse waves, superposition of waves, progressive and standing waves, free and forced Oscillations, resonance, vibration of strings and air-columns, beats, Doppler effects.

Unit 11: Heat and Thermodynamics

Thermal expansion of solids, liquids and gases and their specific heats, Relationship between

Cp and Cv for gases, first law of thermodynamics, thermodynamic processes. Second law of thermodynamics, Carnot cycle efficiency of heat engines.

Unit 12: Transference of Heat

Modes of transference of heat. Thermal conductivity. Black body radiations, Kirchoff's Law, Wien's law, Stefan's law of radiation and Newton's law of cooling.

Unit 13: Electrostatics

Electric charge-its unit and conservation, Coulomb's law, dielectric constant, electric field, lines of force, field due to dipole and its behaviour in a uniform electric field, electric flux, Gauss's theorem and its applications. Electric potential, potential due to a point charge. Conductors and insulators, distribution of charge on conductors. Capacitance, parallel plate capacitor, combination of capacitors, energy of capacitor.

Unit 14: Current Electricity

Electric current and its unit, sources of energy, cells-primary and secondary, grouping of cells resistance of different materials, temperature dependence, specific resistivity, Ohm's law,Kirchoff's law, series and parallel circuits. Wheatstone Bridge with their applications and potentiometer with their applications.

Unit 15 : Thermal and Chemical Effects of Currents

Heating effects of current, electric power, simple concept of thermo-electricity-Seeback effect and thermocouple, Chemical effect of current-Faraday's laws of electrolysis.

Unit 16: Magnetic Effects of Currents

Oersted's experiment, Bio-Savert's law, magnetic filed due to straight wire, circular loop and solenoid, force on a moving charge in a uniform magnetic field (Lorentz force), force and torques on currents in a magnetic field, force between two current carrying wires, moving coil galvanometer and conversion to ammeter and voltmeter.

Unit 17: Magnetostatics

Bar magnet, magnetic field, lines of force, torque on a bar magnet in a magnetic field, earth's magnetic field, para, dia and ferro magnetism, magnetic induction, magnetic susceptibility.

Unit 18: Electromagnetic Induction and Alternating Currents

Induced e.m.f., Faraday's Law,Lenz's Law, Self and Mutual Inductance, alternating currents, impedance and reactance, power in a.c. Circuits with L.C. And R Series Combination, resonant circuits. Transformer and A.C. generator.

Unit 19: Ray Optics

Reflection and refraction of light at plane and curved surfaces, total internal reflection, optical fibre; deviation and dispersion of light by a prism; Lens formula, magnification and resolving power, microscope and telescope.

Unit 20: Wave Optics

Wave nature of light; Interference- Young's double slit experiment. Diffraction-diffraction due to a single slit. Elementary idea of polarization.

Unit 21: Electromagnetic Waves

Electromagnetic waves and their characteristics, Electromagnetic wave spectrum from gamma to radio waves-propagation of EM waves in atmosphere.

Unit 22: Electron and Photons

Charge on an electron, e/m for an electron, photoelectric effect and Einstein's equation of photoelectric effect.

Unit 23: Atoms, Molecules and Nuclei

Alpha particles scattering experiment, Atomic masses, size of the nucleus; radioactivity; Alpha, beta and gamma particles/rays and their properties, radioactive decay law, half life and mean life of radio-active nuclei, binding energy, mass energy relationship, nuclear fission and nuclear fusion.

Unit 24: Solids and Semi-Conductors Devices

Energy bands in solids, conductors, insulators and semi-conductors, pn junction, diodes, diode as rectifier, transistor action, transistor as an amplifier.

CHEMISTRY

Unit 1: Some Basic Concepts:

Measurement in chemistry (Precision, significant figures, S.I. units, Dimensional analysis). Laws of chemical combination. Atomic Mass, Molecular Mass, mole concept, Molar Mass, determination of Molecular formula. Chemical equation, stoichiometry of Chemical reactions.

Unit 2 : States of Matter

Gaseous state, measurable properties of gases, Boyle's Law, Charle's Law and absolute scale of temperature, Avogadro's hypothesis, ideal gas equation, Dalton's law of partial pressures.

Kinetic molecular theory of gases (the microscopic model of gas), deviation form ideal behaviour.

The solid state (classification of solids, X-ray studies of crystal lattices and unit cells, packing of constituent particles in crystals). Imperfection in solids, electrical, magnetic and dielectic properties of solids. Liquid state (Properties of liquids, Vapour pressure, Surface tension, Viscosity).

Unit 3: Atomic Structure

Constituents of the atom (discovery of electron, rutherford model of the atom).

Electronics structure of atoms-nature of light and electromagnetic waves, atomic spectra, bohr's model of hydrogen, shortcomings of the bohr model.

Dual nature of matter and radiation. de-Broglie relation. The uncertainty principle, Quantum Mechanical Model of the atom, Orbitals and Quantum numbers. Shapes of orbitals. Aufbau principle, Pauli Exclusion principle, Hund's Rule, Electronics Configuration of atoms.

Unit 4: Solutions

Types of solutions, Units of concentration, Vapour-pressure of solutions and Raoult's law. Colligative properties. Determination of molecular mass. Non-ideal solutions and abnormal molecular masses. Volumetric analysis-concentration unit.

Unit 5: Chemical Energetics and Thermodynamics

Energy changes during a chemical reaction, Internal energy and Enthalpy, Internal energy and Enthalpy changes, Origin of Enthalpy change in a reaction, Hess's Law of constant heat summation, numericals based on these concepts. Enthalpies of reactions (Enthalpy of neutralization, Enthalpy of combustion, Enthalpy of fusion and vaporization).

Sources of energy(conservation of energy sources and identification of alternative sources, pollution associated with consumption of fuels. The sun as the primary source).

First law of thermodynamics; Relation between Internal energy and Enthalpy, application of first law of thermodynamics.
Second law of thermodynamics: Entropy, Gibbs energy, Spontaneity of a chemical reaction, Gibbs energy change and chemical equilibrium, Gibbs energy available for useful work.

Unit 6: Chemical Equilibrium

Equilibria involving physical changes (solid-liquid, liquid-gas equilibrium involving dissolution of solids in liquids, gases in liquids, general characteristics of equilibrium involving physical processes)

Equilibria involving chemical systems (the law of chemical equilibrium, the magnitude of the equilibrium constant, numerical problems).

Effect of changing conditions of systems at equilibrium (change of concentration, change of temperature, effect of catalyst-Le Chateliar's principle).

Equilibria involving ions- ionization of electrolytes, weak and strong electrolytes, acid-base equilibrium, various concepts of acids and

bases, ionization of water, pH scale, solubility product, numericals based on these concepts.

Unit 7: Redox Reactions and Electrochemistry

Oxidation and reduction as an electron transfer concept. Redox reactions in aqueous solutions-electrochemical cells. e.m.f. of a galvanic cell. Dependence of e.m.f. on concentration and temperature (NERNST). equation and numerical problems based on it .Electrolysis, Oxidation number (rules for assigning oxidation number, redox reactions in terms of oxidation number, nomenclature). Balancing of oxidation-reduction equations.

Electrolytic conduction. Molar conductivity, Kohlrausch's Law and its applications, Voltaic cell, Electrode potential and Electromotive force, Gibb's energy change and cell potential. Electrode potential and products of electrolysis, Fuel cells, corrosion and its prevention.

Unit 8: Rates of Chemical Reactions and Chemical Kinetics

Rate of reaction, Instantaneous rate of reaction and order of reaction. Factors affecting rates of reactions- factors affecting rate of collisions encountered between the reactant molecules, effect of temperature on the reaction rate, concept of activation energy catalyst. Effect of light of rates of reactions. Elementary reactions as steps to more complex reactions. How fast are chemical reactions?

Rate law expression. Order of a reaction (with suitable examples).Units of rates and specific rate constant. Order of reaction and effect of concentration (study will be confined to first order only). Temperature dependence of rate constant – Fast reactions (only elementary idea). Mechanism of reaction (only elementary idea). Photochemical reactions.

Unit 9: Surface Chemistry

Surface : Adsorption – physical and chemical adsorption, adsorption isotherms.

Colloids-Preparation and general properties, Emulsions, Micelles.

Catalysis : Homogeneous and heterogeneous, structure of catalyst, Enzymes, Zeolites.

Unit 10: Chemical Families Periodic Properties

Modern periodic law, Types of elements – Representatives elements (s & p block, Transition elements – d-block elements, inner transition elements-f-block elements. Periodic trends in properties-ionization enthalpy, electron gain enthalpy, atomic radii, valence, periodicity in properties of compounds).

Unit 11: Chemical Bonding and Molecular Structure

Chemical bonds and Lewis structure, shapes of molecules (VSEPR theory), Quantum theory of the covalent bond, hydrogen and some other simple molecules, carbon compounds, hybridization, Boron and Beryllium compounds.

Coordinate covalent bond, ionic bond as an extreme case of polar covalent bond, ionic character of molecules and polar molecules. Bonding in solid state ionic, molecular and covalent solids, metals. Hydrogen bond, Resonance.
Molecules : Molecular orbital. Theory-bond order and magnetic properties of H_2,O_2,N_2,F_2 on the basis of MOT. Hybridisation involving s, p and d orbitals (including shapes of simple organic molecules), Dipole moment and structure of molecules.

Unit 12: Chemistry of Non-Metals - 1

Hydrogen (unique position in periodic table, occurrence, isotopes, properties, reactions and uses), Hydrides-molecular, soline and interstitial

Oxygen (occurrence, preparation, properties and reactions, uses),simple oxides; ozone

Water and hydrogen peroxide, structure of water molecule and its aggregates, physical and chemical properties of water, hard and soft water, water softening, hydrogen peroxide-preparation, properties, structure and uses.

Nitrogen- Preparation, properties, uses, compounds of Nitrogen-Ammonia, Oxides of

Nitrogen, Nitric Acid-preparation, properties and uses.

Unit 13: Chemistry of Non-metals-II

Boron-occurrence, isolation, physical and chemical properties, borax and boric acid, uses of boron and its compounds.

Carbon, inorganic compounds of carbon-oxides, halides, carbides, elemental carbon.

Silicon- occurrence, preparation and properties, oxides and oxyacids of phosphorus, chemical fertilizers.

Sulphur – occurrence and extraction, properties and reactions, oxides, Sulphuric acid – preparation, properties and uses, sodium thiosulphate.

Halogens- occurrence, preparation, properties, hydrogen halides, uses of halogens.

Noble gases- discovery, occurrence and isolation, physical properties, chemistry of noble gases and their uses.

Unit 14: Chemistry of Lighter Metals

Sodium and Potassium- occurrence and extraction, properties and uses. Important compounds-NaCl, Na_2CO_3,$NaHCO_3$, NaOH, KCI,KOH.

Magnesium and calcium-occurrence and extraction, properties and uses. Important compounds $Mgcl_2$, $MgSO_4$, CaO, $Ca(OH)_2$,$CaCO_3$, $CaSO_4$, Plaster of paris, Bleaching Powder.

Aluminium –occurrence, extraction properties and uses, compounds-$AlCI_3$, alums.

Cement.

Biological role of Sodium, Potassium, Magnesium and Calcium.

Unit 15:- Heavy Metals

Iron – Occurrence and extraction, compounds of iron, oxides, halides, sulphides, sulphate, alloy and steel.

Copper and Silver- occurrence and extraction, properties and uses, compounds-sulphides, halides and sulphates, photography.

Zinc and Mercury- occurrence and extraction, properties and uses, compounds-oxides, halides; sulphides and sulphates.
Tin and Lead- occurrence and extraction, properties and uses, compounds-oxides, sulphides, halides.

Unit 16: Chemistry of Representative Elements

Periodic properties- Trends in groups and periods (a) Oxides-nature (b) Halides-melting points (c) Carbonates and sulphates-solubility.

The chemistry of s and p block elements, electronics configuration, general characteristic properties and oxidation states of the following:-

Group 1 elements - Alkali metals
Group 2 elements - Alkaline earth metals
Group 13 elements - Boron family
Group 14 elements - Carbon family
Group 15 elements - Nitrogen family
Group 16 elements - Oxygen family
Group 17 elements - Halogen family
Group 18 elements - Noble gases & Hydrogen

Unit 17: Transition Metals Including Lanthanides

Electronic configuration : General characteristic properties, oxidation states of transition metals. First row transition metals and general properties of their compounds-oxides, halides and sulphides.
General properties of a second and third row transition elements (Groupwise discussion).

Preparation and reactions, properties and uses of Potassium dichromate Potassium permanganate.

Inner Transition Elements: General discussion with special reference to oxidation states and lanthanide contraction.

Unit 18: Coordination Chemistry and Organo Metallics

Coordination compounds, Nomenclature: Isomerism in coordination compounds; Bonding in coordination compounds, Werner's coordination theory. Applications of coordination compounds.

Unit 19: Nuclear Chemistry

Nature of radiation from radioactive substances. Nuclear reactions; Radio-active disintegration series; Artificial transmutation of elements; Nuclear fission and Nuclear fusion: Isotopes and their applications: Radio carbon-dating.

Unit 20: Purification and Characterisation of Organic Compounds

Purification (crystallization, sublimation, distillation, differential extraction, chromatography).

Qualitative analysis, detection of nitrogen, sulphur, phosphorus and halogens.

Quantitative analysis- estimation of carbon, hydrogen, nitrogen, halogens, sulphur, phosphorus (basic principles only)

Determination of molecular mass-Silver salt method, cholroplatinate salt method

Calculation of empirical formula and molecular formula.

Numerical problems in organic quantitative analysis, modern methods of structure elucidation.

Unit 21: Some Basic Principles

Classification of Organic Compounds.

Tetravalency of Carbon, Homologous series. Functional groups- - C=C-,-C C-,and groups containing halogen, oxygen, nitrogen and sulphur. General introduction to naming organic compounds-Common names and IUPAC nomenclature of alphatic, aromatic and Cyclic Compounds. Illustration with examples of Compounds having not more than three same of different functional groups/ atoms. Isomerism-Structural and stereoisomerism (geometrical and optical). Chirality-Isomerism in Compounds having one and two chiral Centres. Enantiomers, diastereoisomers, recemic forms, recemisation & resolution.
Covalent bond fission-Homolytic and Heterolytic: free radicals carbocations and carbanions. Stability of Carbocations and free-radicals. Electrophiles and Nucleophiles.

Electron displacement in a covalent bond-inductive effect, electromeric effect, resonance Common types of organic reactions-Substitution, addition, elimination and rearrangement reactions. Illustration with examples.

Unit 22: Hydrocarbons

Classification. Sources of hydrocarbons:
Alkanes- General methods of preparation (from unsaturated hydrocarbons, alkylhalides, aldehydes, ketones and carburoxylic acids). Physical properties and reactions (Substitution), Oxidation and miscellaneous). Conformations of alkanes(ethane, popane butane) and cyclohexane, sawhorse and Newman projections)-mechanism of halogaration of alkanes.

Alkanes and Alkynes- General methods of preparation physical peorperties, Chemical reactions-Mechanism of electrophilic addition reactions in alkenes-Markowni Koff's Rule, peroxide effect. Acidic character of alkynes. Polymerisation of alkenes.

Aromatic hydrocarbons- Benzene and its homologues, Isomerism, Chemical reactions of benzene. Structure of benzene, resonance. Directive influence of substituents.

Petroleum – Hydro Carbons from Petroleum, Cracking and reforming, quality of gasoline-Octane number, gasoline additives.

Unit 23: Organic Compound Containing Halogens

(Haloakanes and Haloarenes)

Methods of preparation, physical properties and reactions. Preparation, properties and uses of Chloroform and lodoform.

Unit 24 : Organic Compounds Containing Oxygen

General methods of preparation, correlation of physical properties with their structures, chemical properties and uses of Alchols, polyhydric alcohols, Ethers, aldehydes, ketones, carboxylic acids and their derivatives, Phenol, Benzaldehyde and Benzoic acid -their important methods of preparation and reactions. Acidity of carboxylic acids and phenol effect of substituents on the acidity of carboxylic acids.

Unit 25: Organic Compounds Containing Nitrogen

(Cyanides, isocyanides, nitrocompounds and amines)

Nomenclature and classification of amines, cyanides, isocyanides, nitrocompounds and their methods of preparation; correlation of their physical properties with structure, chemical reactions and uses- Basicity of amines.

Unit 26: Synthetic and Natural Polymers

Classification on Polymers, natural and synthetic polymers (with stress on their general methods of preparation) and important uses of the following.

Teflon, PVC, Polystyrene, Nylon-66, terylene, Bakelite)

Unit 27: Bio Molecules and Biological Processes

The Cell and Energy Cycle
Carbohydrates: Monosaccharides, Disaccharides, Polysaccharides

Amino acids and Peptides- Structure and classification.
Proteins and Enzymes-Structure of Proteins,
Role of enzymes.

Nucleic Acids-DNA and RNA

Biological functions of Nucleic acids-Protein synthesis and replication.

Lipids – Structure, membranes and their functions.

Unit 28: Chemistry In Action

Dyes, Chemicals in medicines (antipyretic, analgesic, antibiotics & tranquilisers),
Rocket propellants.
(Structural formulae non-evaluative)

Unit 29: Environmental Chemistry

Environmental pollutants; soil, water and air pollution; major atmospheric pollutants; acid rain, Ozone and its reactions causing ozone layer depletion, effects of the depletion of ozone layer, industrial air pollution.

MATHEMATICS
(Only for BTech, /B.Tech&M.Tech-Dual Degree(5years)/B.Tech&MBA-Dual Degree(5years)

Unit 1:- Sets, Relations and Functions

Sets and their Representations, Union, intersection and complements of sets, and their algebraic properties, Relations, equivalence relations, mappings, one-one, into and onto mappings, composition of mappings.

Unit 2: Complex Numbers

Complex numbers in the form a+ib and their representation in a plane. Argand diagram. Algebra of complex numbers, Modulus and Argument (or amplitude) of a complex number, square root of a complex number. Cube roots of unity, triangle inequality.

Unit 3: Matrices and Determinants

Determinants and matrices of order two and three, properties of determinants, Evaluation of determinants. Area of triangles using determinants; Addition and multiplication of matrices, adjoint and inverse of matrix. Test of consistency and solution of simultaneous linear equations using determinants and matrices.

Unit 4: Quadratic Equations

Quadratic equations in real and complex number system and their solutions. Relation

between roots and co-efficients, nature of roots, formation of quadratic equations with given roots; Symmetric functions of roots, equations reducible to quadratic equations-application to practical problems.

Unit 5 : Permutations and Combinations

Fundamental principle of counting; Permutation as an arrangement and combination as selection, Meaning of P (n,r) and C (n,r). Simple applications.

Unit 6: Mathematical Induction and Its Application

Unit 7: Binomial Theorem and Its Applications

Binomial Theorem for a positive integral index; general term and middle term; Binomial Theorem for any index. Properties of Binomial Co-efficients. Simple applications for approximations.

Unit 8: Sequences and Series

Arithmetic, Geometric and Harmonic progressions. Insertion of Arithmetic Geometric and Harmonic means between two given numbers. Relation Between A.M., G.M. and H.M. Special series: Sn, Sn^2, Sn^3. Arithmetico-Geometric Series, Exponential and Logarithmic series.

Unit 9: Differential Calculus

Polynomials, rational, trigonometric, logarithmic and exponential functions, Inverse functions. Graphs of simple functions. Limits, Continuity; differentiation of the sum, difference, product and quotient of two functions: differentiation of trigonometric, inverse trigonometric, logarithmic, exponential, composite and implicit functions; derivatives of order upto two. Applications of derivatives: Rate of change of quantities, monotonic-increasing and decreasing functions, Maxima and minima of functions of one variable, tangents and normals, Rolle's and Lagrange's Mean Value Theorems.

Unit 10:- Integral Calculus

Integral as an anti-derivative. Fundamental integrals involving algebraic, trigonometric, exponential and logarithmic functions. Integration by substitution, by parts and partial fractions. Integration using trigonometric identities. Integral as limit of a sum. Properties of definite integrals. Evaluation of definite integrals; Determining areas of the regions bounded by simple curves.

Unit 11:- Differential Equations

Ordinary differential equations, their order and degree. Formation of differential equations. Solution of differential equations by the method of separation of variables. Solution of homogeneous and linear differential equations, and those of the type

$$\frac{d^2y}{dx^2} = f(x)$$

Unit 12:- Two Dimensional Geometry

Recall of Cartesian system of rectangular co-ordinates in a plane, distance formula, area of a triangle, condition of the collinearity of three points and section formula, centroid and in-centre of a triangle, locus and its equation, translation of axes, slope of a line, parallel and perpendicular lines, intercepts of a line on the coordinate axes.

The straight line and pair of straight lines

Various forms of equations of a line, intersection of line, angles between two lines, conditions for concurrence of three lines, distance of a point from a line Equations of internal and external bisectors of angles between two lines, coordinates of centroid, orthocenter and circumcentre of a triangle, equation of family of lines passing through the point of intersection of two lines, homogeneous equation of second degree in x and y, angle between pair of lines through the origin, combined equation of the bisectors of the angles between a pair of lines, condition for the general second degree equation to a represent a pair of lines, point of intersection and angle between two lines.

Circles and Family of Circles

Standard form of equation of a circle, general form of the equation of a circle, its radius and centre, equation of a circle in the parametric form, equation of a circle when the end points of a diameter are given, points of intersection of a line and a circle with the centre at the origin and conditions for a line to be tangent to the circle, length of the tangent, equation of the tangent, equation of a family of circles through the intersection of two circles, condition for two intersecting circles to be orthogonal.

Conic Sections

Sections of cones, equations of conic sections (parabola, ellipse and hyperbola) in standard forms, condition for
y = mx+c to be a tangent and point (s) of tangency.

Unit 13: Three Dimensional Geometry

Coordinates of a point in space, distance between two points; Section formula, direction ratios and direction cosines, angle between two intersecting lines. Skew lines, the shortest distance between them and its equation. Equations of a line and a plane in different forms; intersection of a line and a plane, coplanar lines, equation of a sphere, its centre and radius. Diameter form of the equation of a sphere.

Unit 14: Vector Algebra

Vectors and Scalars, addition of vectors, components of a vector in two dimensions and three dimensional space, scalar and vector products, scalar and vector triple product. Application of vectors to plane geometry.

Unit 15: Measures of Central Tendency and Dispersion

Calculation of Mean, median and mode of grouped and ungrouped data. Calculation of standard deviation, variance and mean deviation for grouped and ungrouped data.

Unit 16: Probability

Probability of an event, addition and multiplication theorems of probability and their application; Conditional probability; Bayes' Theorem, probability distribution of a random variate; Binomial and Poisson distributions and their properties.

Unit 17: Trigonometry

Trigonometrical identities and equations. Inverse trigonometric functions and their properties. Properties of triangles, including centroid, incentre, circum-centre and orthocenter, solution of triangles. Heights and Distances.

Unit 18: Statics

Introduction, basis concepts and basic laws of mechanics, force, resultant of forces acting at a point, parallelogram law of forces, resolved parts of a force, Equilibrium of a particle under three concurrent forces, triangle law of forces and its converse, Lami's theorem and its converse, Two parallel forces, like and unlike parallel forces, couple and its moment.

Unit 19: Dynamics

Speed and velocity, average speed, instantaneous speed, acceleration and retardation, resultant of two velocities. Motion of a particle along a line, moving with constant acceleration. Motion under gravity. Laws of motion, Projectile motion

BIOLOGY (BOTANY AND ZOOLOGY)
(ONLY FOR MBBS/BDS/ B.Sc NURSING/BIOTECHNOLOGY- DUAL DEGREE (B.TECH / M.TECH.)

Unit: 1 Diversity in Living World

Biology – its meaning and relevance to mankind

What is living; Taxonomic categories and aids (Botanical gardens, herbaria, museums, zoological parks); Systematics and Binomial system of nomenclature.

Introductory classification of living organisms (Two-kingdom system, Five-kingdom system); Major groups of each kingdom alongwith their salient features (Monera, including Archaebacteria

and Cyanobacteria, Protista, Fungi, Plantae, Animalia); Viruses; Lichens

Plant kingdom – Salient features of major groups (Algae to Angiosperms);

Animal kingdom – Salient features of Nonchordates up to phylum, and Chordates up to class level.

Unit: 2 Cells: The Unit of Life; Structure and Function

Cell wall; Cell membrane; Endomembrane system (ER, Golgi apparatus/Dictyosome, Lysosomes, Vacuoles); Mitochondria; Plastids; Ribosomes; Cytoskeleton; Cilia and Flagella; Centrosome and Centriole; Nucleus; Microbodies.

Structural differences between prokaryotic and eukaryotic, and between plant and animal cells. Cell cycle (various phases); Mitosis; Meiosis.

Biomolecules – Structure and function of Carbohydrates, Proteins, Lipids, and Nucleic acids.

Enzymes – Chemical nature, types, properties and mechanism of action.

Unit: 3 Genetics and Evolution

Mendelian inheritance; Chromosome theory of inheritance; Gene interaction; Incomplete dominance; Co-dominance;Complementary genes; Multiple alleles;

Linkage and Crossing over; Inheritance patterns of hemophilia and blood groups in humans.

DNA –its organization and replication; Transcription and Translation; Gene expression and regulation; DNA fingerprinting.

Theories and evidences of evolution, including modern Darwinism.

Unit: 4 Structure and Function – Plants

Morphology of a flowering plant; Tissues and tissue systems in plants;

Anatomy and function of root, stem (including modifications), leaf, inflorescence, flower (including position and arrangement of different whorls, placentation), fruit and seed; Types of fruit; Secondary growth;

Absorption and movement of water (including diffusion, osmosis and water relations of cell) and of nutrients; Translocation of food; Transpiration and gaseous exchange; Mechanism of stomatal movement.

Mineral nutrition – Macro- and micro-nutrients in plants including deficiency disorders; Biological nitrogen fixation mechanism.

Photosynthesis – Light reaction, cyclic and non-cyclic photophosphorylation; Various pathways of carbon dioxide fixation; Photorespiration; Limiting factors .

Respiration – Anaerobic, Fermentation, Aerobic; Glycolysis, TCA cycle; Electron transport system; Energy relations.

Unit: 5 Structure and Function – Animals

Tissues;

Elementary knowledge of morphology, anatomy and functions of different systems of earthworm, cockroach and frog.

Human Physiology – Digestive system - organs, digestion and absorption; Respiratory system – organs, breathing and exchange and transport of gases. Body fluids and circulation – Blood, lymph, double circulation, regulation of cardiac activity; Hypertension, Coronary artery diseases.

Excretion system – Urine formation, regulation of kidney function

Locomotion and movement – Skeletal system, joints, muscles, types of movement.
Control and co-ordination – Central and peripheral nervous systems, structure and function of neuron, reflex action and sensory reception; Role of various types of endocrine glands; Mechanism of hormone action.

Unit: 6 Reproduction, Growth and Movement in Plants

Asexual methods of reproduction; Sexual Reproduction - Development of male and female gametophytes; Pollination (Types and agents);

Fertilization; Development of embryo, endosperm, seed and fruit (including parthenocarpy and apomixis).

Growth and Movement – Growth phases; Types of growth regulators and their role in seed dormancy, germination and movement; Apical dominance; Senescence; Abscission; Photo-periodism; Vernalisation; Various types of movements.

Unit:7 Reproduction and Development in Humans

Male and female reproductive systems; Menstrual cycle; Gamete production; Fertilisation; Implantation; Embryo development; Pregnancy and parturition; Birth control and contraception.

Unit: 8 Ecology and Environment

Meaning of ecology, environment, habitat and niche.

Ecological levels of organization (organism to biosphere); Characteristics of Species, Population, Biotic Community and Ecosystem; Succession and Climax.

Ecosystem – Biotic and abiotic components; Ecological pyramids; Food chain and Food web; Energy flow; Major types of ecosystems including agroecosystem.
Ecological adaptations – Structural and physiological features in plants and animals of aquatic and desert habitats.

Biodiversity – Meaning, types and conservation strategies (Biosphere reserves, National parks and Sanctuaries)

Environmental Issues – Air and Water Pollution (sources and major pollutants); Global warming and Climate change; Ozone depletion; Noise pollution; Radioactive pollution; Methods of pollution control (including an idea of bioremediation); Deforestation; Extinction of species (Hot Spots).

Unit : 9 Biology and Human Welfare

Animal husbandry – Livestock, Poultry, Fisheries; Major animal diseases and their control. Pathogens of major communicable diseases of humans caused by fungi, bacteria, viruses, protozoans and helminths, and their control.

Cancer; AIDS.

Adolescence and drug/alcohol abuse;

Basic concepts of immunology.

Plant Breeding and Tissue Culture in crop improvement.

Biofertilisers (green manure, symbiotic and free-living nitrogen-fixing microbes, mycorrhizae);

Biopesticides (micro-organisms as biocontrol agents for pests and pathogens); Bioherbicides;

Microorganisms as pathogens of plant diseases with special reference to rust and smut of wheat, bacterial leaf blight of rice, late blight of potato, bean mosaic, and root - knot of vegetables.

Bioenergy – Hydrocarbon - rich plants as substitute of fossil fuels.

Unit: 10 Biotechnology and its Applications

Microbes as ideal system for biotechnology**;**

Microbial technology in food processing, industrial production (alcohol, acids, enzymes, antibiotics), sewage treatment and energy generation.
Steps in recombinant DNA technology – restriction enzymes, DNA insertion by vectors and other methods, regeneration of recombinants.

Applications of R-DNA technology. In human health –Production of Insulin, Vaccines and Growth hormones, Organ transplant, Gene therapy. In Industry – Production of expensive enzymes, strain improvement to scale up bioprocesses. In Agriculture – GM crops by transfer of genes for nitrogen fixation, herbicide-resistance and pest resistance including Bt crops.

(APPENDIX-II)
SYLLABUS FOR B.TECH. (LATERAL ENTRY)

MATHEMATICS

Unit 1: Ordinary Differential Equation

Differential equation of first order. Linear differential equation of second order (homogeneous and nonhomogeneous case). Cauchy, Euler's equation, Application of first order differential equations (mixture problem, Newton's law of cooling, orthogonal trajectory). Application to LCR circuits, Application to free and forced vibration of Mass spring system.

Unit 2: Series Method

Properties of power series, Radius of convergence of power series, Legender's equation and Legender's polynomial, properties of Legender's polynomial, Gamma function, ordinary and singular point Frobenious method, Bessel's equation and properties of Bessel's function.

Unit 3: Laplace Transform

Laplace transforms of standard function, periodic functions, Unit step function, Transforms of derivatives and integrals. Differentiation and integration of transforms, Linearity property, Inverse Laplace transform, Shifting theorems, Convolution. Application to solve differential and integral equations (initial value problem).

Unit 4: Fourier Series

Periodic function, Fourier series, Euler's formula, Even and odd functions, Fourier series expansions of even and odd function, half range expansion of functions, Expansion of functions with finite discontinuities.

Unit 5: Matrix

Types of matrices, algebra of matrices, rank, solution of non-homogenous system of equations, consistency of the system of equations, Linear dependance and independance, solution of homogeneous system of equation. Eigen values and eigen vectors. Norm and inner product. Orthogonal and projection matrix.

Application of eigen values and vectors to solve the system of homogeneous linear differential equation.

Unit 6 : Vectors:

Vector algebra, product of vectors, vector differentiation, vector differential operator, gradient, directional derivatives, divergence, curl, line integral, double integral, green's theorem.

ENGINEERING MECHANICS

Unit 1:- Statics

Conditions of equilibrium, concept of free body diagram, methods of moments and solution to engineering problems.

Friction : Static friction, ladder friction, problems with friction, Belt friction and screw jack, force analysis of plane trusses (method of joint, method of sections, plane frames, methods of members), Parallel forces in a plane, Centre of parallel forces, Pappus Guldinus theorems, MI of plane figures, parallel axis theorem, perpendicular axis theorem, Polar MI, Principle of virtual work for a single particle, rigid bodies, ideal systems and constrained bodies.

Unit 2: Dynamics

Force proportional to displacement, free vibration, D' Alembert's principle, momentum and impulse. Application to principle of linear momentum to a single particle, rigid bodies and ideal systems. Application to principle of angular momentum to a single particle and rotating

rigid bodies. Principle of conservation of momentum.

Unit 3: **Work and Energy**

Principle of work and energy for ideal system, Conservation of energy.

BASIC ELECTRICAL ENGINEERING

Unit 1: Electrostatics

Coulomb's law, Electric charge, Potential, Field & Capacitance, Potential gradient due to spherical cylindrical and plane charges, Electric force, Flux density and permitivity. Calculation of Capacitance of spherical, coaxial, cylindrical and parallel plate condenser. Energy stored in a electric field.

Unit 2: Electromagnetism

Magnetic field due to current in conductor. Magnetic field intensity and Flux density. Permeability, B-H curves, Magnetisation, Concept in hystersis. Magnetomotive force and Magnetic reluctance.

Electrodynamic force:- Faraday's law of electromagnetic induction, Eddy current, emf induced in a conductor moving in a magnetic field. Energy stored in a magnetic field.

Unit 3: D.C. Circuit

Current distribution in series and parallel circuit. Power and energy in electric circuit. Star-Delta conversion. Kirchoff;s law & its application and solve electric circuit by branch & loop current method & nodal method. Superposition theorem.

Unit 4: A.C. Circuit

Production of alternating current – Instantaneous, average & rms value of current and voltage. Peak factor, Form factor, Amplitude, Frequency, Phase difference, Addition and subtraction of alternating quantity. Phasor diagram, Resistance, Inductance, Capacitance, impedance and admittance- power and power factor-series and parallel circuits. Q factor-Three phase circuit. Star-Delta connection-Active and reactive power. Power measurement with one and two wattmeter methods-Calculation in RLC circuit, in series circuit.

Unit 5: Instrument

Construction and principle of operation-PMMC, MI and dynamometer type ammeter, voltmeter and dynamometer type wattmeter. Power factor meter.

Unit 6: Illumination

Law of illumination- Solid angle, Luminous flux, Luminous intensity, illumination brightness and luminous efficiency.

Unit 7: Production Light

Filament lamp, Arc lamp, Electric discharge lamps, Sodium vapour lamp, Mercury vapour lamp-Theory of electrical energy radiation. Comparison between filament lamp and fluorescent lamp.

(APPENDIX-III)
SYLLABUS FOR MCA PROGRAMME

MATHEMATICS

Unit 1:- Algebra of Sets : Set operations, Union, Intersection, Difference, Symmetric Difference, Complement, Venn Diagram, Cartesian products of sets, Relation and Function, Composite Function, Inverse of a Function, Equivalence Relation, Kinds of Function.

Unit 2:- Number Systems : Real numbers (algebraic and other properties), rational and irrational numbers, Complex numbers, Algebra of complex numbers, Conjugate and square root of a complex number, cube roots of unity, De-moivre's Theorem with simple applications. Permutation and combinations and their simple applications, Mathematical induction, Binomial Theorem. Determinants up to third order, Minors and Cofactors, Properties of determinants. Matrices up to third order, Types of Matrices. Algebra of matrices, Adjoint and inverse of a matrix. Application of determinants and matrices to the solution of linear equation (in three unknows)

Unit 3:-Trigonometry : Compound angles, Multiple and Sub-multiple angles, solution of trigonometric equations, Properties of triangles, Inverse circular function.

Unit 4:- Co-ordinate Geometry of Two Dimensions : Straight lines, pairs of straight lines, Circles, Equations of tangents and normals to a circle. Equations of Parabola, Ellipse and Hyperbola, Ellipse and hyperbola in simple forms and their tangents (Focus, directix, eccentricity and latus rectum in all cases)

Unit 5:-Co-ordinate Geometry of Three Dimensions: Distance and division formulae, Direction cosines and direction ratios. Projections, Angles between two planes, Angle between a line and plane. Equations of a sphere-general equation.

Unit 6: -Vector Fundamentals, Dot and Cross product of two vectors, Scalar triple product, Simple Applications (to geometry, work and moment).

Unit 7:-Differential Calculus : Concept of limit, continuity, Derivation of standard functions, successive differentiation, simple cases, Leibnitz Theorem, Partial differentiation, Simple cases, derivatives as rate measure, Maxima and minima, indeterminate forms, Geometrical applications such as tangents and normals to plane curves.

Unit 8:-Integral Calculus:- Standard methods of integration (substitution, by pars, by partial fractions etc.) Definite integrals and properties of Definite Integrals, Areas under plane curves, Differential Equations only simple cases such as
(i) $dy/dx = f(x)$
(ii) $dy/dx=f(x)\ g\ (y)$
(iii) $d^2y/dx^2 = f(x)$ and application to motions in a straight line.

Unit 9:-Probability and Statistics : Averages (Mean, Median and Mode), Dispersion (standard deviation and variance). Definition of probability, Mutually exclusive events, Independent events, Addition theorem.

COMPUTER AWARENESS

Computer Basics**:** Organization of a Computer, Central Processing Unit (CPU), Structure of instructions in CPU, input/output devices, computer memory, back-up devices.

DATA REPRESENTATION

Representation of characters, integers and fractions, binary and hexadecimal representations, Binary Arithmetic : Addition, subtraction, multiplication, division, simple arithmetic and two's complement arithmetic, floating point representation of numbers, Boolean algebra, truth tables, venn diagram.

ANALYTICAL ABILITY AND LOGICAL REASONING

Questions in this section will test logical reasoning and quantitative reasoning.

(APPENDIX-IV)
SYLLBUS FOR M.SC. (BIOTECHNOLOGY / APPLIED MICROBIOLOGY)

BIOLOGY (10+2+3 Standard)

Unit 1:- General Biology
Taxonomy; Heredity; Genetic variation; Conservation; Principles of ecology; Evolution; Techniques in modern biology.

Unit 2 :-Biochemistry and Physiology
Carbohydrates; Proteins; Lipids; Nucleic acids; Enzymes; Vitamins; Hormones; Metabolism; Photosynthesis. Nitrogen Fixation, Fertilization and Osmoregulation; Nervous system; Endocrine system; Vascular system; Immune system; Digestive system, Reproductive System.

Unit 3 :-Basic Biotechnology
Tissue culture; Application of enzymes; Antigen-antibody interaction; Antibody production; Diagnostic aids.

Unit 4 :-Molecular Biology
DNA; RNA; Replication; Transcription; Translation; Proteins; Lipids; Membranes; Gene transfer.

Unit 5:-Cell Biology
Cell cycle; Cytoskeletal elements; Mitochondria; Endoplasmic reticulum; chloroplast; Golgi apparatus; Signaling.

Unit 6:-Microbiology
Isolation; Cultivation; Characterization and enumeration of virus; Bacteria; Fungi; Protozoa; Pathogenic micro-organisms.

CHEMISTRY (10+2+3 Standard)

Unit 1 :-Atomic Structure
Bohr's theory and Schrodinger wave equation; Periodicity in properties;Chemical bonding; Properties of s, p, d and f block elements; Complex formation; Coordination compounds; Chemical equilibria; Chemical thermodynamics (first and second law); Chemical kinetics (zero, first, second and third order reactions); Photochemistry; Electrochemistry; Acid-base concepts; Stereochemistry of carbon compounds; Inductive, Electromeric, conjugative effects and resonance.

Unit 2 :-Chemistry of Functional Groups
Hydrocarbons, alkyl halides, alcohols, aldehydes, ketones, carboxylic acids, amines and their derivatives; Aromatic hydrocarbons, halides, nitro and amino compounds, phenols, diazonium salts, carboxylic and sulphonic acids; Mechanism of organic reaction; Soaps and detergents; Synthetic polymers; Biomolecules-aminoacids, proteins, nucleic acids, lipids and carbohydrates (polysaccharides); Instrumental techniques – chromatography (TLC, HPLC), electrophoresis, UV-Vis-IR and NMR spectroscopy, mass spectrometry, etc.

MATHEMATICS (10+2 Standard)

Sets, Relations and Functions, Mathematical Induction, Logarithms, Complex numbers, Linear and Quadratic equations, Sequences and Series, Trignometry, Cartesian System of Rectangular Coordinates, Straight lines and Family, Circles, Conic Sections, Permutations and Combinations, Binomial Theorem, Exponential and Logarithmic Series, Mathematical Logic, Statistics, Three Dimensional Geometry, Vectors, Stocks, Shares and Debentures, Average and Partition Values, Index numbers, Matrices and Determinants, Boolean Algebra, Probability, Functions, limits and Continuity, Differentiation, Application of Derivatives, Definite and Indefinite Integrals, Differential Equations, Elementary Statics and Dynamics, Partnership, Bill of Exchange, Linear Programming, Annuities, Application of Calculus in Commerce and Economics.

PHYSICS (10+2 Standard)

Physical World and Measurement, Kinematics, Laws of Motion, Work, Energy and Power Electrostatics, Current electricity, Magnetic Effects of Current and Magnetism, Electromagnetic Induction and Alternating Current, Electromagnetics waves, Optics, Dual Nature of Matter and Radiations, Atomic Nucleus, Solids and Semiconductor Devices, Principles of Communication, Motion of System of Particles and Rigid Body, Gravitation, Mechanics of Solids and Fluids, Heat and Thermodynamics, Oscillations, Waves.

(APPENDIX –V)
STATE CODE

State/ Union Territory	Code
Andaman & Nicobar Islands	01
Andhra Pradesh	02
Arunachal Pradesh	03
Assam	04
Bihar	05
Chandigarh	06
Chhattisgarh	07
Dadra & Nagar Haveli (UT)	08
Daman & Diu (UT)	09
Delhi (NCT)	10
Goa	11
Gujarat	12
Haryana	13
Himachal Pradesh	14
Jammu & Kashmir	15
Jharkhand	16
Karnataka	17
Kerala	18
Lakshadweep (UT)	19
Madhya Pradesh	20
Maharashtra	21
Manipur	22
Meghalaya	23
Mizoram	24
Nagaland	25
Odisha	26
Pondicherry (UT)	27
Punjab	28
Rajasthan	29
Sikkim	30
Tamil Nadu	31
Tripura	32
Uttar Pradesh	33
Uttaranchal	34
West Bengal	35

(APPENDIX –VI)
EXAMINATION CENTRE FOR KIITEE-2011

Name of the State / City	Exam. Centre	Centre Code
Andaman Nicobar	Port Blair	01
Andhra Pradesh	Hyderabad	02
	Vishakhapatnam	03
Assam	Guwahati	04
	Silchar	05
Bihar	Bhagalpur	06
	Gaya	07
	Patna	08
Chhatisgarh	Bilaspur	09
	Raipur	10
Delhi	New Delhi	11
Gujarat	Ahmedabad	12
Goa	Panjim	13
Himachal Pradesh	Shimla	14
Jharkhand	Bokaro	15
	Dhanbad	16
	Jamshedpur	17
	Ranchi	18
Jammu Kashmir	Jammu	19
Kerala	Thiruanantapuram	20
Karnataka	Bangalore	21
Madhya Pradesh	Bhopal	22
	Gwalior	23
	Indore	24
Maharashtra	Mumbai	25
	Nagpur	26
	Pune	27
Manipur	Imphal	28
Meghalaya	Shillong	29
Nagaland	Dimapur	30

Odisha	Angul	31
	Balasore	32
	Baripada	33
	Berhampur	34
	Bhawanipatna	35
	Bhubaneswar	36
	Bolangir	37
	Cuttack	38
	Keonjhar	39
	Koraput	40
	Rourkela	41
	Sambalpur	42
Punjab	Chandigarh	43
Pondicherry	Pondicherry	44
Rajasthan	Jaipur	45
	Kota	46
Sikkim	Gangtok	47
Tamil Nadu	Chennai	48
Tripura	Agartala	49
Uttar Pradesh	Allahabad	50
	Banaras	51
	Bareilly	52
	Gorakhpur	53
	Kanpur	54
	Lucknow	55
Uttaranchal	Dehradun	56
	Pant Nagar	57
West Bengal	Durgapur	58
	Kharagpur	59
	Kolkata	60
	Siliguri	61

CALENDAR OF EVENTS

Apply online From	:	10-01-2011 to 28-02-2011
Last date of receiving filled in Application form	:	05-03-2011
Last date of hosting Admit Card in the website	:	31-03-2011
Date of Entrance Examination	:	24-04-2011
Declaration of Result	:	15-05-2011
Counseling	:	02-06-2011 to 15-06-2011

Detailed counseling schedule would be notified after the publication of result.

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