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| 1. Sale of Information Bulletins at notified Syndicate Bank/
State Bank of India / Post Offices | 20.02.2009 |
| 2. Last date of sale of Application Forms | 20.03.2009 |
| 3. Last date of receipt of Application Form at the
Bank / Post Office from where the form is purchased | 23.03.2009 |
| 4. Last date of receipt of Application Form
at JEE Cell by Registered Post / Speed Post /
through Registered Courier Service | 23.03.2009 |
| 5. Date of Despatch of Admit Card | 06.05.2009 |
| 6. Date of Examination | 24.05.2009 |
| 7. Publication of Result | 14.06.2009 |

ADDRESS FOR COMMUNICATION

CHAIRMAN, Joint Entrance Examination-2009 (Orissa)
JEE Complex, Gandamunda,
Po : Khandagiri, Bhubaneswar-751030 (Orissa)

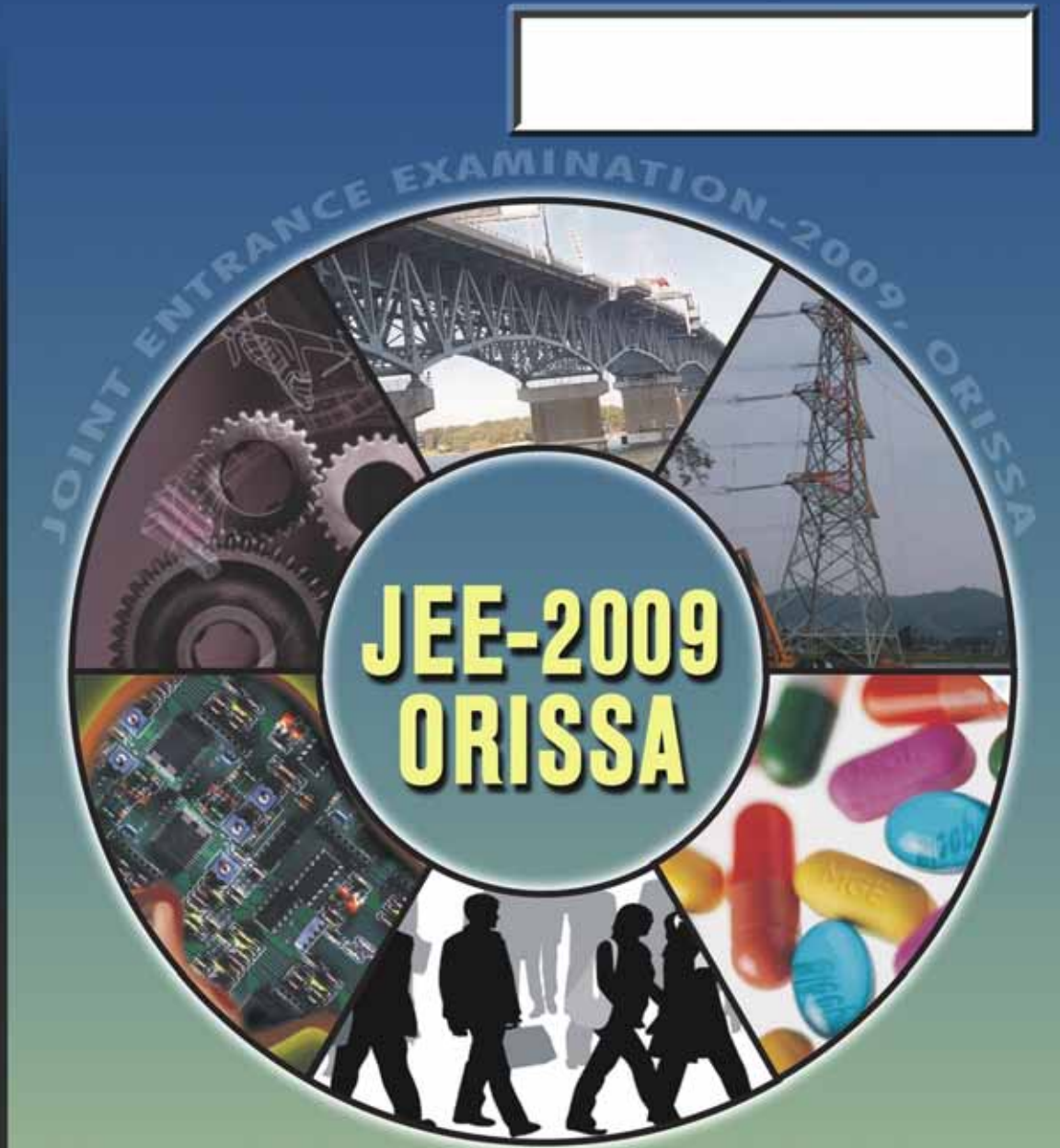
Phone No. : (0674) - 3268373
Fax No. : (0674) - 2350314
Website : www.jeeorissa.com

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For Admission to
First Year Degree Courses in
Engineering / Technology,
Medicine / Dentistry, Pharmacy and

First Year Masters Degree Courses in
Computer Application (M.C.A.)
Business Administration (MBA) and

Lateral Admission to
Second Year (Third Semester)
Engineering / Techonology,
Pharmacy

PROGRAMME FOR JOINT ENTRANCE EXAMINATION - 2009, ORISSA

DATE	1st Sitting		2nd Sitting 2.30 to 4.30 PM
24.05.2009	9.00 AM to 11.00 AM	Physics & Chemistry / Diploma Paper - I / B. Sc. Paper - I	Biology / Diploma Paper - II / B. Sc. Paper - II / Management Aptitude Test for MBA
	9.00 AM to 12.00 Noon	MCA	
	12.00 Noon to 1.00 PM	Mathematics	

The salient features of “The Orissa Professional Educational Institutions (Regulation of Admission and Fixation of Fee) Act, 2007” (Subjudice in the Hon’ble Apex court) are as follows.

- * **Methods of admission in professional educational institutions:** Subject to provisions of this Act, admission of students in all private professional educational institutions, Government institutions and sponsored institutions to all seats including lateral entry seats, shall be made through JEE conducted by the Policy Planning Body followed by centralized counselling in order of merit, in accordance with such procedure as recommended by the said body and approved by the Government.

- * **Reservation of seats:** In a private professional educational institution other than minority institution not exceeding fifteen per centum of the approved intake may be filled up by NRI from the merit list prepared on the basis of JEE.
Where any shortfall in filling up of seats from NRI occurs, such vacant seats may be filled up from the merit list of All India Engineering Entrance Examination or All India Medical Entrance Examination, as the case may be, conducted by Central Board of Secondary Education: provided that while filling such vacant seats NRI shall be preferred. In a private professional educational institution fifteen per centum of the approved intake may be filled up strictly from the merit list of All India Engineering Entrance Examination or All India Medical Entrance Examination, as the case may be, conducted by Central Board of Secondary Education.

- * **Prohibition of Capitation fee :** No capitation fee shall be collected by a professional educational institution or by any person who is in charge of the management of such institution, from any candidate in consideration of his admission to or continuance in any course of study or his promotion to higher class in such institution under the management.

IMPORTANT NOTES

1. Permanent resident certificate is mandatory for taking admission against any reserve category like: SC/ST/ES/PH/WO/GC/Lateral Entry in all courses. It has to be produced on the day of counselling for reserved category otherwise a candidate is not eligible to participate the counselling under the reserve category.
2. Results (Marksheets and Provisional Certificate) of qualifying examination has to be produced on the day of counselling. Without the final result of the qualifying examination, a candidate is not eligible to participate in the counselling.
3. A machine will process the top portion of the application form. The machine picks up only dark marks. Therefore, darken the appropriate circles using HB pencil or Black/Blue ball pen only.
4. First, write in capital letters the required information in the boxes above the circles (wherever provided) and then darken the appropriate circle underneath each of them. What you write in the boxes is only for your guidance that you are darkening the correct circle. Ensure that you have darkened the correct circle, as you are responsible for any error in darkening.
5. Do not scribble, smudge, cut, tear, or wrinkle the application form. Do not put any stray marks anywhere on the application form.
6. Your photograph, signature and address are to be scanned by another machine that recognizes only good quality images, and from the specified areas of the form. Therefore, paste a **good black and white photograph in the space provided taken not more than two months earlier**, and write your address and sign in Black / Blue ball pen only in the space provided.
7. Write the complete address giving your name and PINCODE carefully and legibly. Please note that this block will appear as such in all our correspondence with you, and therefore, it should be very clearly written in Black / Blue ball pen only. If you make any mistake, cover the whole box with an exact size white paper slip and write your address on it. Your address must not overflow this box. You may, if possible, type your address on a slip not larger than the box and paste it neatly within the box.
8. Do not fold the form. The envelope matches with the size of the form. **Do not put any pin or staple**. Paste only the photograph and nothing else on the form.
9. You are advised to ensure the correctness of your mailing address, PINCODE, and telephone number, if any, with STD codes. Please note that JEE-2009 will not be responsible if communications do not reach you due to incomplete or illegible address / phone number.
10. You must quote the six digit application number of your application form as a reference in all your future correspondence.
11. If the acknowledgement card does not reach you by April 30, 2009, you must check the website in the address given in back cover page.
12. Your application must be complete in all aspects. **Incomplete application or application filled in a language other than English will be summarily rejected.**
13. Options such as Category, Choice of Examination Center and Reservation filled by you in the application form can not be changed at a later stage.
14. Only give options with respect to category (S, ZZ, NRO, NRI) and Reservation type (SC/ST/PH/GC/WO/ES) that you can substantiate with documentary evidence during counselling.
15. The cost of application material is non-refundable.
16. The High Court of Orissa at Cuttack alone shall have the jurisdiction to settle and decide all the disputes related to JEE-2009. No other Court in the country shall have jurisdiction in this regard.
17. Do not submit any document along with the application form to support your claim.
18. Original certificates, mark sheets and other documents will be verified at the time of counselling with respect to category and reservation that you are claiming.
19. **Your claim for admission will be rejected if you can not submit the certificates, mark sheets, other necessary documents at the time of counselling or if you have filled the form wrongly.**
20. Your admission may be cancelled at any time, if certificate/mark sheets/any other documents found to be forged or manipulated. A candidate will not be considered for admission if he/she fails to substantiate the claim with respect to reservation, category, nativity, date of birth, qualification etc.

PLEASE ENSURE BEFORE SUBMITTING THE APPLICATION THAT :

- a. You have followed all the instructions in filling the form. You have gone through the important notes carefully.
- b. You have written your address on the acknowledgement card correctly.
- c. You have enclosed the acknowledgement card with the application in the envelope provided if you are submitting by post.
- d. You have not used a stapler / pin / tag.
- e. You have retained a photocopy of the application form.

ORIGINAL DOCUMENT TO BE BROUGHT ON THE DAY OF THE COUNSELLING.

- a. Admit card.
- b. Rank Card.
- c. Original Date of Birth Certificate / 10th certificate.
- d. 10+2 Certificate.
- e. 10+2 Mark sheet and 10th Mark sheet.
- f. Diploma certificate (for Lateral Entry of Diploma Candidates)
- g. Diploma Mark sheet (for Lateral Entry of Diploma Candidates)
- h. +3 Certificate (For MCA, MBA, & B.Sc. Lateral Entry)
- i. +3 Mark sheet and +2 Mark sheet (For MCA, MBA & B.Sc. Lateral Entry)
- j. School / College Leaving Certificate.
- k. Residential Certificate in the prescribed form.
- l. Relevant SC/ST Certificate in the prescribed form.
- m. Green Card certificate in original for children of Green card holders.
- n. Relevant certificate of Ex-Serviceman of candidate's parent / spouse.
- o. Any other relevant certificate as mentioned in this Brochure.

All Engineering, Pharmacy and most of the colleges offering MCA and MBA degree programmes are either constituent or affiliated colleges of the Biju Patnaik University of Technology, Orissa, Rourkela.

All the students to be admitted (except those to be admitted to Medical and BDS colleges, Pharmacy, MBA, DTE&T quota and MCA Courses in other Universities of the State) through JEE 2009 will be registered students of the Biju Patnaik University of Technology.

GENERAL INFORMATION

1. JEE refers to the Joint Entrance Examination conducted by the State of Orissa for admission to Engineering/Technology/Medicine/Dentistry/Pharmacy and Master in Computer Application (MCA) / Master in Business Administration (MBA)/ and Third Semester of Degree Courses in Engineering/Technology and pharmacy under Lateral Entry (both Diploma and B.Sc.) in the academic year 2009 - 2010.
- 1.1 Application form duly filled in should be submitted in person at the Bank from which you have purchased the form or by Registered/Speed post/registered courier service to the JEE Cell in the address given in the back cover page, so as to reach on or before March 23, 2009.
 - i) Hand-delivery of forms at the JEE cell will not be accepted.
 - ii) Any application received after the due date will not be considered.
 - iii) The JEE-2009 committee will not accept responsibility for any postal delay or irregularity or loss in postal transit of the application form.
 - iv) While submitting the application form by hand at the Bank, from where you have purchased the form, collect duly signed and stamped acknowledgement card from the Bank at the time of submission. The last date of submission of application form to the Bank is 23.03.2009.
- 1.2 The Joint Entrance Examination-2009 will be held on **Sunday, May 24, 2009** as per following programme.

Date	1st Sitting		2nd Sitting 2.30 PM to 4.30 PM
24.05.2009	9.00 AM to 11.00 AM	Physics / Chemistry / Diploma Paper-I / B.Sc. Paper-I	Biology / Diploma Paper-II / B.Sc. Paper-II / Management Aptitude Test for MBA
	9.00 AM to 12.00 Noon	MCA	
	12.00 Noon to 1.00 PM	Mathematics	

- 1.3 In no case the application form be stapled / pinned / tagged or folded. The acknowledgement card is to be collected from the Bank at the time of submitting the completed application. Those who send their application by post should duly fill up the acknowledgement card, affix postage stamp of denomination Rs.10/- and enclose the same inside the envelope meant for submission of application form.
- 1.4 **A single application form is sufficient for any possible combination of course to be opted. Do not send extra/duplicate forms which will be rejected. Not more than one set of application form shall be submitted in one envelope.** If the envelope contains more than one application form, the whole content will be rejected.
- 1.5 Any correspondence in future, should mention the application number printed below the bar code of the application form. The candidates are advised to keep the photocopy of the application form.
- 1.6 If an applicant does not receive the Admit Card for the examination by May 16, 2009 he/she must check his / her

roll no. and centre of examination from our website given in back cover page of this brochure. He/She May issue the duplicate admit card as per prosudure given in clause-6.28 (b) under ADMIT CARD heading.

1.7 Availability of Courses :

JEE-2009 will be conducted to draw the merit list of successful candidates for admission into :

- i) Degree course in Engineering / technology in different branches for engineering colleges/institutes in the State of Orissa affiliated to BPUT and DTE&T quota seats in outside state institutes. A list of colleges / institutes in Orissa and discipline wise seats available for the year 2008 are given in Table - II as an indicator.
- ii) MBBS/BDS courses in the colleges as per list given in Table - III for the year 2008 as an indicator.
- iii) B.Pharm. course in the colleges as per list given in Table-IV for the year 2008 as an indicator.
- iv) MCA course in the colleges/institutes as per list given in Table - V for the year 2008 as an indicator.
- v) 3rd semester of Engineering / technology and pharmacy, stream for diploma holders under lateral entry scheme. 3rd semester of Engineering / technology stream for B.Sc. or +3 Sc. with mathematics and 3rd semester of Pharmacy for B.Sc. or +3 Sc. with Biology holders under lateral entry scheme. 10% of intake capacity of last year in appropriate discipline (these seats will be over and above the intake capacity) and carry forward vacant seats of first year of engineering and pharmacy as per list submitted by JEE-2008 will be available for lateral entry at third semester level.
- vi) MBA course in the colleges/ institutes as per list given in Table - VI for the year 2008 as an indicator.

Note : List of Colleges/Institutes and availability of seats therein are for the year 2008 and this should be used for a reference or as an indicator.

1.8 Fee Structure :

1.8.1 Fees payable to colleges :

Fees payable to colleges at the time of admission will be decided by the competent authority and shall be published in our website.

1.8.2. (a) Fees payable to Biju Patnaik University of Technology:

The University will charge the following fees from all the students admitted to its constituent/affiliated colleges.

1.	One time Curriculum Development Fee	Rs.1500/-
2.	One time Fees payable towards Welfare Fund for Students	Rs.500/-
3.	One time University Registration Fee	Rs.500/-
4.	Subject wise Registration Fee in each Semester / Trimester	Rs.100/- (Per subject)
5.	Semester / Trimester Examination Fee	Rs.700/- (Per Semester/ Trimester)
6.	Insurance Fee (One Time) Five Year Programme Four Year Programme Three Year Programme Two Year Programme	Rs 300/- Rs 250/- Rs 200/- Rs 150/-
7.	One Time Sports & Cultural Fee	Rs 250/-

(b) Fees for other Universities: It will be decided by competent authorities of respective Universities.

1.9 Age limit :

Wherever there is no age limit for taking admission (vide clause 4), the Government of Orissa will not be responsible for any regulation of service where such requirement for age exists. The candidate should take admission at his / her own risk as regards to age.

1.10 Medical Fitness :

JEE will not be responsible if a candidate faces difficulty in employment on medical ground. Candidates claiming reservation under physically handicapped category will have to go through a Medical Board (Clause 2.1.4). The decision of the Medical Board will be final and binding.

1.11 Merit List :

Separate merit list for all qualifying candidates shall be drawn on the basis of JEE- 2009 results in the following manner.

- i) One for candidates seeking admission to Engineering / Technology degree courses on the basis of marks obtained in Physics, Chemistry and Mathematics,
- ii) One for candidates seeking admission to Medical/Dental degree courses on the basis of marks obtained in Physics, Chemistry and Biology,
- iii) One for candidates seeking admission to Pharmacy degree course on the basis of marks obtained either in Physics, Chemistry and 2xMathematics or in Physics, Chemistry and Biology whichever is higher,
- iv) One for candidates of diploma streams (discipline wise and according to subject grouping) seeking admission under Lateral Entry scheme to engineering and technology and pharmacy courses.
- v) One for candidates of B.Sc. (Math) or +3 Sc. (Math) streams seeking admission under lateral entry scheme to engineering/technology. The ratio of seats in engineering/technology and pharmacy under lateral entry scheme for Diploma: B.Sc. or +3 Sc. is 80:20.
- vi) One for candidates seeking admission to MCA courses.
- vii) One for candidate seeking admission to MBA Courses.

In addition, separate merit lists will also be drawn for candidates qualifying under each of the reservation categories. Each successful candidate shall be given a rank card.

2. Categories :

2.1 Orissa State Candidates (S- Category)

For admission to colleges under state category one has to satisfy at least one of the following three criteria. They will be eligible for admission to Government colleges, except Government Medical and Dental colleges, on the basis of their merit rank. However, for MBBS course in Govt. and Private Colleges and lateral entry the parents of the candidate must be permanent resident of Orissa. The S-category candidates under (a) and (c) are to produce the permanent residence certificate (Annexure-I) to claim any reservation.

- a) The candidate must have passed/appeared 10+2 examination from any of the recognised institution in the State.
- b) Parents of the candidate must be permanent resident of Orissa. To claim benefit under this category, a candidate shall furnish **at the time of counselling** a permanent residence certificate, in prescribed form (Appendix-I) from a Revenue Officer not below the rank of Tahasildar of the area where his/her parents have permanent residence.

- c) Sons / daughters / spouse of the permanent employees of Government of Orissa / Govt. of India/Govt. of Orissa undertakings/Govt. of India undertakings serving in the State of Orissa at the time of application. To claim the benefits under this category, candidate has to submit a certificate from the employer of his/her parents/spouse in the prescribed form (Appendix-II) **at the time of counselling.**

Reservation of Seats under State Categories :

The reservation of seats in different colleges under various categories will be as per the policy of the Government of Orissa. **The percentage of reservation of seats to be reserved for different categories are subject to change and the decision of the State Government as on the date of admission will be applicable.**

2.1.1 8% and 12% seats in all colleges are reserved respectively for candidates belonging to Schedule Caste and Schedule Tribe by birth (not by marriage or adoption).

Separate merit lists will be drawn up for each reserved category. If eligible candidates belonging to one reserved category are not available, seats can be filled up by the candidates belonging to the general category.

2.1.2 Candidates applying for SC/ST reserved category shall furnish SC/ST certificate from the Tahasildar of the place of birth in Orissa **at the time of counselling** in the format given in this brochure in Appendix - III.

NOTE : Scheduled caste/Scheduled tribe persons who have migrated from their state of origin to another state for the purpose of seeking education, employment etc., will be deemed to be scheduled caste/tribe of the state of their origin and will be entitled to derive benefits from the state of origin and not from the state to which they have migrated. (Vide Govt. India Letter No. BC/160 14.1.82 SC & BCD/dated 22nd Feb,1985). Thus, SC/ST candidates from Orissa who are staying outside the State have to produce SC/ST certificate from the competent authority of Orissa State during counselling.

2.1.3 5% of seats are reserved for children of Green card holders. Candidates applying under Green Card category shall furnish the Green card of their parents issued by Family Welfare Department, **Government of Orissa / any other appropriate authority**, in original **at the time of counselling**. The name, date of Birth of candidates and name of parents should be identical to that of 10th pass certificate.

2.1.4 3% of seats are reserved for Physically Handicapped candidates for admission to engineering/Technology/MBA/MCA/Pharmacy courses and candidates are eligible to be considered under Physically Handicapped Category for admission to these courses with 40% disabilities in consonance with section-39 of the Persons with Disabilities (Equal opportunities, Protection of Rights and Full participation) Act, 1995. 3% of total MBBS seats of three Govt. medical colleges of the state and BDS stream in SCB Medical College are reserved for persons with disabilities and they have to meet the medical standard of Locomotory disability of lower limbs between 50 to 70% (% of disability may vary subject to the decision of the Hon'ble Apex court). The medical standard of PH category candidates will be decided by a medical board specifically constituted with Senior Professors of the premier medical college and hospital: SCB Medical College, Cuttack, and Chairman JEE-2009 or his representative under the Chairmanship of Principal, SCB Medical College or his nominee, that they are eligible to be categorized as physically handicapped candidates and capable of undergoing each part of the requirements for Engineering/Medical studies.

The decision of this Board will be final and binding. They SHOULD NOT therefore, submit along with the application form any medical certificate to the effect that they are physically handicapped.

Further, for MBBS/BDS stream, the candidates claiming locomotory disabilities are only eligible for consideration. Visually handicapped and hearing disabled candidates are not eligible as stipulated by Medical Council of India.

2.1.5 2% of seats in engineering colleges and 3% seats in Government Medical Colleges in MBBS and BDS courses are reserved for children/widows of Ex-service men who are native of Orissa. Candidates applying under this reserved category shall furnish a certificate in the prescribed format provided in this brochure as Appendix-IV **at the time of counselling.** The priorities will be notified in the Counselling-cum-Admission Instructions as per decision of the Government of Orissa.

2.1.6 30% of the seats in all the categories [except Outside State (ZZ), Non-resident Indians (NRI), Non-residents Oriya(NRO)] are reserved for women candidates for Engineering/Technology, MBA and MCA courses .

NOTES :

1. All reservations shall apply to the permanent residents/ native of Orissa state only.
2. Seats available under General Category in any course are those available after deduction of the number of seats pertaining to all the Reserved Categories from the total number of seats available for that particular course.
3. For Engineering Stream a candidates belonging to categories 2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.1.5 and 2.1.6 can also compete under general category provided he/she satisfy all conditions of eligibility for the same. For MBA and MCA streams, the candidates belonging to categories 2.1.1, 2.1.2, 2.1.3, 2.1.4, and 2.1.6 can also compete under general category provided they satisfy all conditions of eligibility for the same. For Pharmacy stream, the candidates belonging to categories 2.1.1, 2.1.2, 2.1.3 and 2.1.4 can also compete under general category provided they satisfy all conditions of eligibility for the same. At the time of counselling for admission, a candidate figuring in the merit list for both Reserved and General Categories may first exercise his/her option for the college and discipline for admission under reserve category. A candidate who forgoes his/her option under reserved categories is entitled to exercise his/her option subsequently for the college and discipline for admission according to his/her merit position under general category.
4. For Medical/BDS stream, candidates belonging to 2.1.1, 2.1.2, 2.1.3, 2.1.4, and 2.1.5 categories can compete with General category candidates if they satisfy the eligibility condition. At the time of counselling, a candidate figuring in both General and Reserved category merit list will first exercise his/her option for General category seats. A candidate who foregoes his/her option for General category seat is entitled to exercise option for Reserved category as per his/her merit rank.
5. If a candidate does not report during scheduled hour of counselling, he/she will be treated as absentee and no seat will be kept reserved for him/her. A candidate failing to report for counselling will not be permitted to participate in the counselling subsequently under any circumstances.
6. Seats, if any, remaining vacant in the ST reserved category can be filled in by candidates belonging to General category. If all the seats belonging to SC reserved category are not filled

up due to non-availability of candidates belonging to SC category, such vacant seats may be filled up by candidates belonging to General category for the benefit of students/ institutions.

7. Seats reserved under all other category will be filled up by general category candidates in case the same are not filled up.

In case of any change in the percentage of reservation of seats/ reservation criteria mentioned in the clause above on the basis of guidelines from Government of Orissa, it will be intimated through the Counselling-cum-Admission Instructions to all the merit listed candidates. It will also be published in our website and in the notice board at the counselling venue.

2.2 (1) Non-Resident Indians : (NRI)

NRI means children or wards of a person of Indian origin residing outside India.The decision of the State Government as on the date of admission will be applicable.

(2) Outside state category : (ZZ)

Outside state candidates are not eligible for admission in Government Colleges to Engineering/MBA/MCA/ MBBS/BDS and admission under lateral entry programme and for private MBBS programmes.

Outside state candidates are eligible for admission in private Engineering/MBA/MCA/BDS/Pharmacy colleges as per their eligibility criteria.

2.2.1 Non-Resident Oriya : (NRO)

3% of seats in Government Engineering colleges are reserved for Oriya speaking people residing outside the State of Orissa. NRO reservation is not applicable to private engineering colleges / All MBA / All MCA / All MBBS / All BDS / All Pharmacy colleges. A candidate to be eligible to avail such facility should have oriya as a subject at High School/at level of VIII or at Primary level and he/she should produce attested copies of the mark-sheet/certificate of concerned State (except Orissa) in support of his/her claim at the time of counselling.

A Oriya person who has been ordinarily resident in India Outside the State of Orissa for a minimum period of 5 years immediately preceding the year in which his/her ward is seeking admission as non-resident Oriya irrespective of whether he/she is self-employed, privately employed or Govt.- Servant or unemployed. To qualify as an Oriya person either mother tongue should be Oriya/ should have resided for atleast 15 years in Orissa. This will applied to parent/legal Guardian of the candidate. Here it is necessary that the student has also been residing outside Orissa and has passed the qualifying examination outside Orissa. For the purpose of establishing NR the candidate is to produce domicile certificate and if he / she is unable to produce to do so, the following proofs of permanent resident will be accepted for relevant period: ration card/pan card/passport/official ID card/ driving license / telephone bill/electricity bill/voter ID card. Besides above educational certificate of passing relevant examination (+2 Sc.) outside the State should be produced. In addition to above the candidate who produce prescribed Oriya pass certificate would eligible for admission under NR category. Those who unable to produce such prescribed certificate should appear and obtain pass mark (40%) in a ME standard examination in Oriya language to be conducted by the JEE committee.

2.3. Enquiry Regarding Admission :

Information regarding admission may be obtained from the Chairman, JEE-2009.

Note : All enquires and correspondences with JEE authorities must bear the candidate's Application number. After receiving the admit card the candidate should also quote the Roll No. allotted to him/her in the correspondence, if any. **Telephonic enquiry will be attended during 4 PM to 6 PM on working days only.**

2.4. Choice of College and Discipline :

Selection for admission will be strictly on the basis of rank secured in the JEE-2009 merit list subject to the availability of seats in colleges and disciplines at the time of counselling for admission.

A candidate failing to report for counselling on the date and time prescribed will not be given chance subsequently under any circumstances.

2.5. Centres of Examination :

Following is a tentative list of places where JEE-2009 Examination will be conducted.

Angul, Balasore, Bargarh, Baripada, Bhawanipatna, Berhampur, Bhadrak, Bhubaneswar, Bolangir, Burla, Cuttack, Dhenkanal, Jagatsinghpur, Jajpur, Jeypore, Jharsuguda, Kendrapara, Keonjhar, Koraput, Nayagarh, Paralakhemundi, Phulabani, Puri, Rayagada, Rourkela, Sambalpur, Sarang, Sundergarh, New Delhi, Vizag, Kolkata, Kharagpur, Ranchi, Jamshedpur, Guwahati & Mumbai.

2.6. Option for Examination Centres :

Candidates should give three places of examination of their choice (as given in clause 6.9) in order of preference. Allocation of centre will be made subject to availability and facilities existing. If sufficient candidates in the centre(s) chosen by a candidate are not available, a candidate may be allotted to a centre not included in his/her choice for operational convenience. The decision of the JEE-2009 committee in the allocation of the centre shall be final and binding. Change of allotted centre is not permissible under any circumstance. **Candidates choosing a centre outside the state are required to opt two centres inside the state.**

For Lateral Entry the centres will be limited to following places only :

Balasore, Berhampur, Bhubaneswar, Cuttack, Rourkela and Sambalpur. Candidates desirous to appear for the above courses are to give their preference for the centres accordingly.

3. Admission Rules And Procedure

- 3.1.** The reservation policy of the Government of Orissa and the Government approved procedure given in the brochure for allocation of seats during counselling will be strictly followed.
- 3.2.** Admission is strictly based on JEE-2009 merit rank and choice of the candidate with respect to Institution and course given during the counselling.
- 3.3.** Candidates will be called for counselling as per a schedule to be despatched along with the Rank Card.
- 3.4.** During Counselling all certificates in original will be verified. No further verification at college level is required. For records of the college, a set of attested copies of the relevant certificates/ marksheet etc. will be collected during counselling and sent to the respective colleges.
- 3.5.** A candidate selected through the counselling for a course in a college automatically is admitted as a registered student of Biju Patnaik University of Technology, Orissa, if the college is a constituent/affiliated college of the University. The student

receives a Registration number and a University Registration card. Against this Registration card, a student has to pay the balance fees at college level.

Completion of counselling thus completes the admission process except for the payment of balance fee (if any) at the college level.

3.6. As per the resolution No. ME-II-ILL-4/2006-716/H Dated 09.01.2008 released by Government of Orissa in Health and Family Welfare Department, candidates taking admission into M.B.B.S. programme in Government medical colleges are to render two years of service in K.B.K./Rural areas under the State Government; accordingly the candidates are to sign the bond introduced by the State Government (the Bond format is given in Appendix-V) during admission.

In case a candidate does not join in the service of the State of Orissa within 30 days of receipt of an appointment order, he or she will be required to pay Rs. 5 lakhs within a period of four years and a half. In case, he/she does not pay the amount within the stipulated period, the amount shall be recovered from him/her as arrears of land revenue by invoking the provision of Orissa Public Recovery (OPDR) Act, 1962. If a candidate having completed MBBS course works for a period which is less than 2 years and gets selected for the PG course in a Govt. Medical College inside the state he/she shall be required to serve for a period of 2 years. However, if a candidate appointed in contractual basis chooses to join a PG course in an institution outside the State or in a private institution inside the state, he/she will be required to pay an amount @ Rs. 2.50 lakhs per annum for the period which falls short of 2 years. None of these provisions will apply to the candidates who take admission in MBBS in the state against All India Quota. Appoint under the State Government for this purpose shall mean and include regular appointment through selection process by Government/O.P.S.C, adhoc appointment and contractual appointment. For any relaxation in this regard, the decision of the State Government shall be final. This resolution came into force from first batch of MBBS students joining the degree course w.e.f. 2008-09

- 3.7.** Each candidate has to pay a counselling fee of Rs.200/- and the same is non-refundable. This amount is payable through an Account Payee Bank Draft in favour of "JEE - 2009" drawn on any Nationalised Bank payable at Bhubaneswar.
- 3.8.** A candidate has to pay Rs.16,000/- through a separate A/c Payee Bank Draft drawn in favour of "JEE-2009" on any Nationalised Bank payable at Bhubaneswar. The balance after deduction of the BPUT fee of Rs.4,500/- (for 4-year programme; as per clause 1.8.2) shall be paid to the admitting college for adjustment against the tuition and other fees payable to the college. The fees payable to various colleges as notified by Govt. will be given in the web site: www.jeeorissa.com
- 3.9.** A candidate must demand a receipt with the headwise break up of fees that he/she pays at the college level.
- 3.10.** A candidate once admitted through the counselling to a college forfeits the fee of Rs.16,000/- paid by him/her, if he / she later decides not to join the college/course in the allotted college.
- 3.11.** Candidates who do not receive the JEE-2009 rank card or have lost the rank card can get a duplicate rank card from the counselling venue on the day of his/her counselling on payment of Rs.200/- in the form of Bank draft in favour of "JEE-2009" drawn on any nationalised bank payable at Bhubaneswar. He / she can check the schedule of counselling from our website: www.jeeorissa.com.

- 3.12. The counselling process shall start on July 11, 2009 and ends by August 31, 2009. **MBBS and BDS classes will begin from August 1, 2009.**
- 3.13. The Admission process shall close by August 31, 2009. No admission can be done there after.
- 3.14. No candidate can be admitted to a college on the basis of marks scored in qualifying examination.
- 3.15. **The class of all streams affiliated to BPUT begins on August 31, 2009.**
- 3.16. A student admitted to a college under BPUT against a course cannot be transferred to another course in the same college in the First year.
- 3.17. A student admitted to a college under BPUT cannot be transferred to another college in the First year in same course or in another course.

4. Minimum Eligibility Criteria :

4.1 For admission to 1st Year Degree courses in Engineering / Tech., Pharmacy :

4.1.1 Engineering & Technology :

Pass or appearing in 2009 in 10+2 examination of CHSE or equivalent, with Physics and Mathematics alongwith one of the following subjects : Chemistry / Biotechnology / Computer Science / Biology.

OR

Diploma holders including those having less than 60% marks in aggregate from SCTE&VT, Orissa or equivalent are eligible for admission to 1st year Engg. / Technology courses and **they have to appear in Physics, Chemistry, and Mathematics paper in the Joint Entrance examination.**

For admission to Marine Engineering the candidate has to secure minimum 50% marks in English in 10th or 10+2 level and an aggregate of 60% marks in Physics, Chemistry and Mathematics at 10+2 level. Age Limit - 20 years maximum for male, 02 years relaxation for female candidates. SC/ST - 25 years maximum. Physical Fitness" height - 157 cm , weight-48 Kg (as per chart with height), Chest - 74 cm with 05cm expansion, Eye Sight - 6/12 maximum. Candidate should not have any record of major ailments or functional disorders of major Organs. Medical standard as per Merchant Ship Rule-2000 is applicable.

4.1.2. Pharmacy :

Pass or appearing in 2009 in 10+2 examination with Physics and Chemistry along with one of the following subjects : Mathematics / Biotechnology / Computer Science / Biology.

OR

Diploma holders including those having less than 60% marks in aggregate from SCTE&VT, Orissa or equivalent are eligible for admission to 1st year Pharmacy and **they have to appear in Physics, Chemistry, and Biology or Mathematics (or both) paper in the Joint Entrance examination.**

There is no age limit to appear at JEE-2009 for admission into Engineering & Technology, Pharmacy and HMCT courses.

4.2 For admission to 1st Year Medical Stream (MBBS/BDS) :

- (i) Pass in 10+2 or appearing in 2009 examination of CHSE, Orissa or equivalent, with Physics, Chemistry & Biology (Botany and Zoology) with at least 50% marks in aggregate (Physics, Chemistry & Biology taken together) for general category candidates and 40% marks in aggregate for

SC / ST candidates. For candidates seeking admission to MBBS courses through JEE to Govt. and Private Colleges the candidate must be a permanent resident/native of Orissa. They are to submit the Permanent Resident certificate (Appendix - I) at the time of counselling. For candidates seeking admission to BDS course in Govt. colleges the candidate must be a permanentresident/native of orissa.They are to submit the Permanent Resident certificate (Appendix - I) at the time of counselling.Out side state candidates are eligible for admission to BDS course in private dental colleges in which the merit list for out side state candidates shall be considered after exhaust of the same for the state candidates.

AGE : The lower age shall be 17 years as on December 31, 2009. The upper age shall be 25 years as on December 31, 2009. The upper age limit may be relaxed by three years for SC/ST candidates.

4.3 (i) For admission to 2nd year Degree courses in Engineering, & Pharmacy courses under Lateral Entry for Diploma holders:

Pass in 3 years diploma course in Engineering with a minimum 60% marks in aggregate from State Council of Technical Education and Training (SCTE&VT), Orissa or equivalent and for Pharmacy, pass in 2 years diploma course in Pharmacy with minimum 60% of marks in aggregate from Orissa State Board of Pharmacy (OSBP) or SCTE&VT for direct admission to the third semester degree courses specific to the diploma discipline of the candidate (See Table - I). The candidate must be a permanent resident / native of Orissa. Results of final diploma examination must be available on the date of counselling. Candidates whose results are not available on the day of counselling, will not be allowed to participate. There is no reservation of seats in various categories in lateral entry to degree engineering / Technology and pharmacy courses.

They are to submit the Permanent Resident Certificate (Appendix - I) at the time of counselling.

Choice of Discipline : (for Lateral Entry Stream)

Candidates having Diploma in Engineering in the disciplines indicated under Column – I are eligible to be admitted to the corresponding discipline only mentioned under Column - II (Table - I).

(ii)For admission to 2nd year Degree courses in Engineering / Technology underLateral Entry for B.Sc. or +3 Sc. students :

Pass or appearing in 2009, for the Bachelor's Degree examination of three years duration in Science from any University of Orissa or equivalent recognised by UGC and have passed with a minimum of 60% marks in aggregate(First Division) with Mathematics at +3 level.

They are to submit the Permanent Resident Certificate (Appendix - I) at the time of counselling.

Choice of Discipline : (for Lateral Entry Stream)

Candidates having B. Sc. or +3 Sc. with mathematics as a subject are eligible to be admitted to any discipline of engineering as per availability of seats.

(iii)For admission to 2nd year Degree courses in Pharmacy under Lateral Entry for B.Sc. or +3 Sc. students :

Pass or appearing in 2009, for the Bachelor's Degree examination of three years duration in Science from any University of Orissa or equivalent recognised by UGC and

have passed with a minimum of 60% marks in aggregate (First Division) with Biology at +3 level.

They are to submit the Permanent Resident Certificate (Appendix - I) at the time of counselling.

4.4 M.C.A. :

Pass or appearing in 2009, for the Bachelor's Degree examination of three years duration in any discipline from any University of Orissa or equivalent recognised by UGC and having passed in Mathematics at 10+2 level. Business mathematics at +2 level are not permitted.

There is no age limit to admission to MCA course.

4.5 M.B.A. :

Pass or appearing in 2009, for the Bachelor's Degree examination of three years duration in any discipline from any University of Orissa or equivalent recognised by UGC. There is no age limit for admission to MBA course.

NOTES :

- (i) Candidates should fulfill the requirements of reservations under clauses 2.1 as applicable.
- (ii) Women and Physically handicapped candidates are not eligible for admission to Mining engineering course.
- (iii) Candidates desirous to be admitted to Engineering colleges / institutes of outside state under DTE&T quota seats have to fulfil other conditional eligibility requirements of the institute concerned, as per data to be received by JEE from D.T.E.&T, Orissa.
- (iv) **The Govt. of Orissa will not be responsible for any regulation of service where such requirement for age / qualification exists. The student should take admission at his/her own risk, as regards to ages.**

5. Subjects for appearing at JEE-2009 :

- a) All candidates seeking admission to **1st year** degree courses in Engineering/Technology will have to appear in Physics, Chemistry and Mathematics.
- b) Candidates seeking admission to MBBS/BDS course will have to appear in Physics, Chemistry and Biology.
- c) Candidates seeking admission to B.Pharm. course will have to appear in Physics, Chemistry and either in Mathematics or Biology or both.
- d) All Diploma holders seeking admission to **2nd year** Degree courses under Lateral Entry scheme are to appear for two papers as follows (except for Pharmacy stream):
Paper - I : First year Degree courses in Mathematics, Basic Electrical Engineering, and Engineering Mechanics.
Paper - II : Third year Diploma course in the relevant discipline of diploma for session 2008 - 2009 of SCTE & VT, Orissa.
For Pharmacy stream, Paper - I and Paper - II shall cover the syllabus of part - I and part - II respectively of Diploma in Pharmacy as per the Education Regulation - 1991 of Pharmacy Council of India.
- e) All B.Sc. or +3 Sc. with Mathematics candidates seeking admission to 2nd year Degree courses under Lateral Entry scheme are to appear B.Sc. Paper-I (B.Sc. Mathematics) and B.Sc. Paper-II (B.Sc. Physics and B.Sc. Chemistry).
- f) All B.Sc. or +3 Sc. with Biology candidates seeking admission to 2nd year Degree courses under Lateral Entry scheme are to appear B.Sc. Paper-I (B.Sc. Biology) and B.Sc. Paper-II (B.Sc. Physics and B.Sc. Chemistry).
- g) All candidates seeking admission to MCA course will have to appear in Mathematics and Computer Awareness (in one sitting).
- h) Candidates seeking admission to MBA course will have to appear an aptitude test in verbal and analytical reasoning, general knowledge, comprehension and computer and business fundamentals (in one sitting).

TABLE - I

COLUMN - I	COLUMN - II
If you have Diploma in Engineering in the discipline :	You are eligible to be admitted to :
Civil Engg. / Rural Technology	Civil Engineering / Biomedical Engg.
Mechanical Engg. / Tool & Die Making	Mechanical Engg. / Manufacturing Sc. and Engineering / Bio-medical Engg.
Automobile Engineering	Mechanical Engineering / Bio-medical Engg.
Electrical Engineering	Electrical Engg. / Elect. & Electronics. / Bio-medical Engg.
Electronics & Telecommunication Engg. / Applied Electronics & Instrumentation Engineering	Applied Electronics and Instrumental, Instrumentation & Electronics Engg. / Electronics & Communication Engg. / Bio-medical Engg.
Metallurgical Engineering	Metallurgical Engineering / Mineral Engineering / Bio-medical Engg.
Mining Engineering	Mining Engineering / Mineral Engineering / Bio-medical Engg.
Chemical Engineering / Food Technology / Food Processing	Chemical Engineering / Biotechnology / "Bio-medical Engg.
Textile Technology	Textile Technology / Bio-medical Engg.
Computer Science & Engg. / Computer Application Programming	Computer Science & Engineering / Bio-medical Engg.
Information Technology	Information Technology / Bio-medical Engg.
Pharmacy	Pharmacy / Bio-medical Engg.
Drilling Technology	Mining or Mechanical Engineering / Bio-medical Engg.
Plastic Technology / Plastic Mould Technology	Plastic Technology
Bio-Technology	Bio-Technology / Bio Medical Engineering

Detailed syllabi are given under clause-8.

DISCIPLINES

The intake capacity of the AICTE approved new colleges based on approval of AICTE as on 30.6.2009 along with grant of affiliation from BPUT as on July 10, 2009 shall be considered for counselling. The revised or additional intake of the existing AICTE approved colleges/Institutions having approval of AICTE as on 30.06.2009 will be considered for counselling. The approval letters received by the Govt. of Orissa on or before 30.06.2009 shall be considered for counselling for 2009. The AICTE intake approvals received after 30.06.2009 for new or existing institutions shall not be considered for counselling for the year 2009-2010.

TABLE- II

AVAILABILITY OF SEATS (DISCIPLINE WISE) IN ENGINEERING AND TECHNOLOGY STREAM (2008-09) as an Indicator.

Government Engineering Colleges

COLLEGE	CHEM.	CIVIL	COMP. SC.	ELE&TC	ELECT.	I&E	IT	MECH	OTHERS
College of Engineering & Technology, Bhubaneswar		30	60		45	30	60	45	FASHION - 30 TEXTILE - 40 BIOTECH-30
Central Institute of plastic Engineering and technology, Bhubaneswar									Plastic Engg.-40
Indira Gandhi Institute of Technology, Sarang	30	30	45	45	45			45	META - 30
Orissa School of Mining Engineering, Keonjhar					30			30	MINING - 30 MINERAL-20
University College of Engineering, Burla		60	90	30	60		40	60	MANU - 30

Private Engineering Colleges

COLLEGE	AE&I	CHEM.	CIVIL	COMP. SC.	E&EE	ECE	ELE & TC	ELECT.	I&E	IT	MECH	OTHERS
Ajay Binay Institute of Technology, Cuttack	60			60	60		120	60			60	
Apex Institute of Technology & Management, Pahala, Bhubaneswar				60	60	60				60		
Balasore College of Engineering & Technology, Balasore				60			120		60	60	60	
Bhadrak Institute of Engineering & Technology, Bhadrak			60	60			90	60		60	60	
Black Diamond College of Engineering & Technology, Jharsuguda				60			60	60			60	
Bhubaneswar Engineering College, Khurda				60	60		60			60		
BRM International Institute of Technology, Bhubaneswar				60	60		60			60		
College of Engineering, Bhubaneswar			60	60	90		90			30	90	
C. V. Raman College of Engineering, Bhubaneswar	60	40		120			120	60		60	120	MARINE-40
Centurian Institute of Technology, Khurda				60	60	60				60		
Dhaneswar Rath Institute of Engineering & Management Studies, Cuttack	60			90			120	90		60		
Easter Academy of Science & Technology, Phulnakhra	60			60			60	60		60	60	BIOMED-22 ENV-30
Gopal Krishna College of Engineering & Technology, Jeypore			30				43		30			

COLLEGE	AE&I	CHEM.	CIVIL	COMP. SC.	E&EE	ECE	ELE &TC	ELECT.	I&E	IT	MECH	OTHERS
Gandhi Engineering College, Bhubaneswar				120	60	60				60		
Ghanshyam Hemalata Institute of Technology & Management, Puri				60			60	60			60	
Gandhi Institute of Technological Advancement, Bhubaneswar				90	60	90		60		60	60	
Gandhi Institute of Engineering & Technology, Gunupur	120	60		120	60	120		60		120	120	BIOTECH-60
Gandhi Institute for Technology, Bhubaneswar				60	60	120				60		
Gandhi Institute of Industrial Technology, Berhampur				60	60	60				60		
Gandhi Institute of Technology & Management, Khurda				60	60	60				60		
Gandhi Institute of Science & Technology, Rayagada				60		60		60		60		
Gurukul Institute of Technology, Janla, Bhubaneswar				60	60	60				60		
HI-Tech. Institute of Technology, Khurda				60	60	60				60		
Institute of Advanced Computer & Research, Rayagada			30	90	60	90				60	90	
Indus College of Engineering, Jatani, Khurda				60	60	60				60		
Indic Institute of Design & Research, Khurda				60	60	60				60		
Jagannath Institute of Engineering and Technology, Cuttack				30			60				60	
Jagannath Institute of Technology & Management, Paralakhemundi		30		60	60	90			60	60	60	
Krupajala Engineering College, Bhubaneswar	40			90			120	60		20	90	
Koustuva Institute of Self Doman (For Women), Bhubaneswar				120	60		120			120		
Konark Institute of Science & Technology, Bhubaneswar	60			90			120	90			60	
Kalam Institute of Technology, Berhampur				60	60	60				60		
Koustuva Institute of Technology, Bhubaneswar				60	60		60			60		
Morden Engineering & Management Studies, Balasore				60		60			60	60		
Mahavir Institute of Engineering & Technology, Bhubaneswar	60			60	60		120			60		BIOMED-30
Moharaja Institute of Technology, Bhubaneswar				60		60		60			60	
Morden Institute of Technology & Management, Khurda				60	60	60				60		
Majhighariani Institute of Technology & Science, Rayagada				90	60	90				60	60	BIOTECH-40

COLLEGE	AE&I	CHEM.	CIVIL	COMP. SC.	E&EE	ECE	ELE & TC	ELECT.	I&E	IT	MECH	OTHERS
NM Institute of Engineering & Technology, Bhubaneswar				120	60	120				60	60	
National Institute of Science & Technology, Berhampur				120	60	120			60	90		
Nalanda Institute Of Technology, Bhubaneswar				60		60				60	60	
Orissa Engineering College, Bhubaneswar			60	90			90	90		60	90	
Padmanava College of Engineering, Rourkela			30	90	60		90			60	45	
Purushottam Institute of Engineering & Technology, Rourkela	60			120	90		120			30		
Padmashree Kruthartha Acharya College of Engineering, Bargarh	30			60			60	60			60	
Rajdhani Engineering College, Bhubaneswar				90	60	90				60	60	
Roland Institute of Technology, Berhampur	30			90	60	60				60		
Satyasai Engineering College, Balasore				60			60				60	
Samanta Chandra Institute of Technology & Management, Semiliguda	30			60		90		60			60	
Seemanta Engineering College, Jharpokharia			30	90			120	60	60		60	
Subash Institute of Technology, Baranga, Bhubaneswar				60	60		60			60		
Silicon Institute of Technology, Bhubaneswar	60			90	90		120			60		
Sanjaya Management Institute of Technology, Berhampur			30	60	60		90	60			60	
Sundargarh Engineering college, Sundergarh				60		60		60			60	
Synergy Institute of Engineering & Technology, Dhenkanal				120			120	60		30	90	
Trident Academy of Technology, Bhubaneswar				120	60		120			60		
Temple city Institute of Technology, Khurda				60	60	60		60		60		
The Techno School, Bhubaneswar	60			90	60	60				60		
Vignan Institute of Technology & Management, Berhampur				60			60			60	60	

- First five colleges are government colleges.
- Ten percent of intake capacity of 2008 - 2009 in appropriate discipline of engineering (these seats will be over and above the intake capacity) and carry forward vacant seats of first year of engineering (as per list submitted by JEE-2008) will be available for lateral entry at third semester level.

(* Abbreviation for Disciplines :

AE&I - Applied Electronics & Instrumentation Engg
 BIOMED - Biomedical Engg
 BIOTECH - Biotechnology
 CHEM - Chemical Engg. COMP.Sc. -Computer Sc. Engg.
 ELECT - Electrical Engg.
 E&EE - Electrical & Electronics Engg.

ELE&TC - Electronics & Telecommunication Engg.
 ENV - Environmental Engg
 I&E - Instrumentation & Electronics Engg.
 IT - Information Technology
 MECH - Mechanical Engg.
 META - Metallurgy & Material Sc.
 MANU - Manufacturing Sc. & Engg.

TABLE- III**Government Medical Colleges (For 2008-09)**

Sl. No.	College	MBBS	BDS
1	SCB Medical College, Cuttack	128	42
2	VSS Medical College, Burla	127	-Nil-
3	MKCG Medical College, Berhampur	127	-Nil-

Private Medical Colleges (For 2008-09)

Sl. No.	College	MBBS	BDS
1	Hi-Tech Medical College, Bhubaneswar	100	100
2	Gandhi Dental College, Bhubaneswar	-Nil-	60
3	Institute of Medical Science, Bhubaneswar	100	-Nil-
4	Kalinga Institute of Medical / Dental Science, Bhubaneswar	100	100

TABLE- IV**Private Pharmacy Colleges (For 2008-09)**

Sl. No.	College	Seats
1	College of Pharmaceutical Science, Berhampur	60
2	College of Pharmaceutical Sciences, Puri	60
3	Dadhichi College of Pharmacy, Phulnakhra	60
4	Gayatri College of Pharmacy, Sambalpur	60
5	Gayatri Institute of Science and Technology, Gunupur	60
6	Indira Gandhi Institute of Pharmaceutical Science, Bhubaneswar	60
7	Institute of Pharmacy & Technology, Salipur	60
8	Jeypore College of Pharmacy	60
9	Kanak Manjari Institute of Pharmaceutical Sciences, Rourkela	60
10	Roland Institute of Pharmaceutical Sciences, Berhampur	60
11	Royal College of Pharmacy & Health Science, Berhampur	60
12	Seemanta Institute of Pharmaceutical Sciences, Jharpokharia	60
13	Sri Jayadev College of Pharmaceutical Sciences, Naharkanta	60
14	The Pharmaceutical College, Barpali	60
15	IMT college of Pharmaceutical Sciences, Puri	60

TABLE- V**List of Government Institutes (MCA) (For 2008-09)**

Sl. No.	Name of the Institute	Seats
1	University College of Engineering, Burla	30
2	Institute of Management and Information Technology, Cuttack	32
3	Indira Gandhi Institute of Technology, Sarang	30
4	College of Engineering & Technology, Bhubaneswar	30
5	Centre for IT Education, Bhubaneswar	60
6	Utkal University, Bhubaneswar	30
7	Fakir Mohan University, Balasore	25
8	Berhampur University, Berhampur	30
9	Sambalpur University, Burla	40
10	Revenshaw University, Cuttack	30
11	G. M. College, Sambalpur	30
12	Khalikote College, Berhampur	30
13	North Orissa University, Baripada	30

Private MCA Colleges (For 2008-09)

Sl. No.	College	Seats
1	Academy of Business Administration, Balasore	60
2	Ajay Binay Institute of Technology, Cuttack	60
3	Bhadrak Institute of Engineering & Technology, Bhadrak	60
4	BRM Institute of Management and Technology, Bhubaneswar	60
5	C. V. Raman Computer Academy, Bhubaneswar	59
6	College of Engineering, Bhubaneswar	60
7	Dr. Ambedkar Memorial Institute of Information Technology, Rourkela	60
8	Gandhi Engineering college, Bhubaneswar	60
9	Gandhi Institute of Technological Advancement, Bhubaneswar	60
10	Gandhi Institute of Computer Studies, Gunupur	60
11	Gayatri Institute of Computer & Management Studies, Gunupur	45
12	Gandhi Institute for Technology, Bhubaneswar	60
13	Institute of Advanced Computer & Research, Rayagada	60
14	Indus college of Engineering	60
15	Indian Institute of Science & Information Technology, Bhubaneswar	90

Sl. No.	College	Seats
16	Koustuva Institute of Self Doman, Bhubaneswar	60
17	Kushagra Institute of Information and Management, Cuttack	34
18	Nalanda Institute of technology, Bhubaneswar	60
19	National Institute of Science and Technology, Berhampur	60
20	N.M. Institute of Engg. & Tech., Bhubaneswar	60
21	Orissa Computer Academy, Bhubaneswar	120
22	Purushottam Institute of Engg. & Tech., Rourkela	60
23	PJ College of Management and Technology, Bhubaneswar	60
24	Regional College of Management, Bhubaneswar	120
25	Rajadhani Engineering College, Bhubaneswar	60
26	Rourkela Institute of Management Studies, Rourkela	60
27	Rourkela Institute of Technology, Kalunga	60
28	Roland Institute of Technology, Berhampur	60
29	Seemanta Engineering College, Jharpokharia	60
30	Silicon Institute of Technology, Bhubaneswar	60
31	Srusti Academy of Management Studies, Bhubaneswar	60
32	Trident Academy of Creative Technology, Bhubaneswar	120
33	Tapaswini Institute of Information Technology, Kansbahal	60
34	The Techno School, Bhubaneswar	60

TABLE- VI
List of Government MBA Colleges (For 2008-09)

Sl. No.	College / Institute	Seats
1	Madhusudhan Institute of Cooperative Management, Bhubaneswar	45
2	Institute of Management & Information Technology, Cuttack	60
3	Centre for IT Education, Bhubaneswar (Self Sustaining Scheme)	60
4	Utkal University, Bhubaneswar	30
5	Fakir Mohan University , Balasore	40
6	North Orissa University, Baripada	30
7	Berhampur University, Berhampur	30
8	Gangadharmeher (Autonomous) College, Sambalpur	60

Private MBA Colleges (For 2008-09)

Sl. No.	College / Institute	Seats
1	Academy of Business Administration, Balasore	120
2	Academy of Management Studies, Bhubaneswar	120
3	Ajay Binay Institute of Technology, Cuttack	60
4	Apex Institute of Technology and Management, Baliaanta, Khurda	60
5	Astha School of Management,	60
6	Bhadrak Institute of Engineering & Technology, Bhadrak	60
7	Balasore College of Engineering and Technology, Balasore	60
8	Bhubaneswar Institute of Management & Information Technology, Bhubaneswar	120
9	Biju Patnaik Institute of Information Technology & Management, Bhubaneswar	120
10	BRM Institute of Management & Information Technology, Bhubaneswar	120
11	Centre for Management Studies, Bhubaneswar	60
12	College of Engineering, Bhubaneswar	60
13	C.V. Raman College of Engineering, Bhubaneswar	60
14	Dhaneswar Rath Institute of Engineering and Management Studies, Cuttack	120
15	Dr. Ambedkar memorial Institute of Information Technology & Management Science, Rourkela	60
16	Gandhi Institute of Management Studies, Gunupur	120
17	Global Institute of Management, Bhubaneswar	120
18	Institute of Advanced Computer & Research, Rayagada	60
19	Institute of Professional Studies and Research, Cuttack	120
20	IIPM- School of Management, Kansabal	60
21	Koustuva Institute of Self Domain, Bhubaneswar	60
22	Mahavir Institute of engineering and Technology, Bhubaneswar	60
23	NM Institute of Engineering & Technology, Bhubaneswar	60
24	NIIS Institute of Business Administration	60
25	National Institute of science and Technology, Berhampur	60
26	Post Graduate Centre for Management Studies, SMIT, Berhampur	60

Sl. No.	College / Institute	Seats
27	P.J. College of Management & Technology, Bhubaneswar	60
28	Rajdhani College of Engineering and Management, Bhubaneswar	120
29	Regional College of Management, Bhubaneswar	180
30	Rourkela Institute of Management Studies, Rourkela	180
31	Rourkela Institute of Technology, Kalunga, Rourkela	60
32	RJ School of Management Studies, Balasore	60
33	Srusti Academy of Management, Bhubaneswar	120
34	United School of Business Management, Bhubaneswar	60
35	The Techno School, Bhubaneswar	60
36	Trident Academy of Technology, Bhubaneswar	60

6. INSTRUCTIONS FOR COMPLETING JEE APPLICATION FORM

Notes :

- Please note down the six-digit application number for future reference. Read the instructions carefully before filling the application form. Refer to the sample filled in application form provided on the last two pages.
- First write in capital letters the required information in rectangular boxes above the circles (wherever provided) and then darken the appropriate circle underneath each letter. What you write in these boxes is only for your guidance and for verification that you are darkening the correct circle.
- A machine will process the top portion of the application form. The machine picks up only dark marks. Therefore, darken the circles carefully using HB pencil or blue / black ball pen only. Please see the illustration on the application form to learn how to darken the circles.
- If you wish to change a marking, erase the darkened circle completely and then darken the appropriate circle. This is possible if you are using pencil. Otherwise, you can use white correction fluid for covering wrongly darkened circle.
- Do not scribble, smudge, cut, tear, or wrinkle the application form. Do not put any stray marks any where on the application form.
- Do not write or mark on the Barcodes.
- Your photograph, signature and address are to be scanned by another machine that recognize only good quality images, and from the specified areas of the form. Therefore **paste a good black and white photograph taken not more than two months earlier**, and write your address and sign in **black / blue ball pen** only.
- Please note that your name, your parents/guardian's name, and your date of birth should exactly be the same as in your High school or your first Board/ Pre-University examination certificate. Any departure, whenever

discovered, may lead to cancellation of your candidature.

- Your application must be complete in all aspects. Incomplete application or application filled in a language other than English will be summarily rejected without any notice.
- Options filled by you in the application form can not be changed at a later stage.
- It is suggested that you make a photocopy of the application form before filling and use that first for practice.**

6.1 Name of the Candidate: (Item - 1)

Write your name in CAPITAL LETTERS as given in your original certificate of the High School or equivalent examination in **Black/Blue ball pen**. Write a single letter in each box. Within any one word of your name, do not leave any blank box. Leave one and only one blank box between any two words of the name. If your name has several initials leave one blank after each of them. If it requires more than 35 boxes abbreviate the middle name (s). Darken the appropriate circle under each letter of the name.

6.2 Category : (Item - 2)

Refer Clause No. 2 of this brochure for ascertaining the category to which you belong. (S-Orissa State, NRI-Non-Resident Indians, ZZ-Outside State, NRO-Non-Resident Oriya)

6.3 Reservation : (Item - 3)

Candidates belonging to S-Category (eligible to claim reservation as per Clause 2.1) and seeking admission under reservation in any of the following are to darken the appropriate circles (multiple choice may be given).

Category	Code
General	GE
Scheduled Caste	SC
Scheduled Tribe	ST
Physically Handicapped	PH
Wards / Widows of Ex-Servicemen	ES
Women	WO
Children of Green Card Holder	GC

6.4 Nationality : (Item - 4)

Darken the appropriate circle.

6.5 Gender : (Item - 5)

Darken the appropriate circle.

6.6 Course : (Item - 6)

Enter the appropriate code in the boxes provided at the top and darken the corresponding circles below them against the course code (given below) that you want to appear. (e.g Engineering, Medical, MCA, MBA, Lateral entry in a particular discipline or possible combinations). **Candidates are required to opt for only one course code.** For example if you are appearing for Engineering only darken the circle 01. If you are appearing for both the Engineering and Medical, darken circle 05. **Examination time table will not permit other combinations of courses.**

As per eligibility criteria, Diploma holders are required to apply either for First Year admission or Second Year admission but not for both. If two applications are received from one Diploma holder then both will be rejected.

For Admission to First Year Programme

Qualifying Exam.	Course	Course Code
10+2	Engineering only	01
	Medical only	02
	Pharmacy only	03
	Engineering and Medical	05
	Engineering and Pharmacy	06
	Medical and Pharmacy	08
	Engineering and Medical and Pharmacy	10
	Diploma (less than 60% marks)	Engineering
Pharmacy		18
Bachelor Degree	MBA	31
	MCA	32
	MBA and MCA	33

6.7. Mother Tongue : (Item - 7)

Use the language codes given below to indicate your mother tongue and darken the appropriate circle.

Assamese	01	Oriya	10
Bengali	02	Punjabi	11
English	03	Sanskrit	12
Gujarati	04	Sindhi	13
Hindi	05	Tamil	14
Kannada	06	Telugu	15
Kashmiri	07	Urdu	16
Malayalam	08	Others	17
Marathi	09		

For Admission to Second Year Programme (Under Lateral Entry)

Qualifying Exam.	Course	Course Code
Diploma (more than 60% marks)	Applied Electronics & Instrumentation	51
	Automobile Engineering	52
	Chemical Engineering	53
	Civil Engineering / Rural Technology	54
	Computer Application & Programming	55
	Computer Science and Engineering	56
	Electrical Engineering	57
	Electronics & Telecommunication Engg.	58
	Information Technology	59
	Mechanical Engg. / Tool and Die Making	60
	Metallurgical Engineering	61

Qualifying Exam.	Course	Course Code
	Mining Engineering	62
	Pharmacy	63
	Textile Engineering	64
	Drilling	65
	Plastic / Plastic Moulded Technology	66
	BioTechnology	67
	B.Sc. / +3 Sc. (Mathematics)	Engineering
B.Sc. / +3 Sc. (Biology)	Pharmacy	76

6.8 Date of Birth : (Item - 8)

Enter the date, month and year of your birth as per the English calendar and as recorded in your School / Board / Pre-University examination certificate. Use numerals 01 to 31 for DATE, abbreviations JAN, FEB etc. for MONTH, and the last two digits of the YEAR of birth. For example, if born on 23rd JANUARY 1988 the date should be entered as follows : 23 JAN 88. Darken the appropriate circle in each column.

6.9 Choice of Examination Centres : (Item - 9)

Table – VII gives a list of the numerical codes of the places where centres for the JEE-2009 will be located. Select three different places in order of your preference. Enter the appropriate codes in the boxes provided at the top and darken the corresponding circles below them. The first preference must be entered under column-I and the second and the third preferences under column-II & III respectively.

A JEE centre may be cancelled owing to poor response, operational difficulties or any other reason. Candidates may not necessarily be allotted a particular place as JEE centre of their choice.

TABLE- VII

Tentative List of JEE-2009 Centres with Centre Code

Inside Orissa :			
Place	Code	Place	Code
Angul	11	Jeypore	25
Balasore	12	Jharsuguda	26
Bargarh	13	Kendrapara	27
Baripada	14	Keonjhar	28
Bhawanipatna	15	Koraput	29
Berhampur	16	Nayagarh	30
Bhadrak	17	Paralakhemundi	31
Bhubaneswar	18	Phulbani	32
Bolangir	19	Puri	33
Burla	20	Rayagada	34

Cuttack	21	Rourkela	35
Dhenkanal	22	Sambalpur	36
Jagatsinghpur	23	Sarang	37
Jajpur	24	Sundergarh	38
Outside the State			
NEW DELHI	40	GUWAHATI	43
RANCHI	41	KOLKATA	44
JAMSHEDPUR	42	VIZAG	45
KHARAGPUR	46	MUMBAI	47

6.10 Year of Qualifying Examination : (Item - 10)

(For Engineering / Medical / Pharmacy)

- Those who have already passed 10+2 or an equivalent qualifying examination should indicate the year of passing and darken the appropriate circles.
- MCA / MBA : Those who have already passed Bachelors Degree or an equivalent qualifying examination should indicate the year of passing and darken the appropriate circle.
- Lateral Entry : Those who have already passed Diploma or B.Sc. or +3 Sc. examination should indicate the year of passing and darken the appropriate circle.
- Those who are appearing for their qualifying examination in 2009 should darken the circles corresponding to 2009.

6.11 Percentage of Marks : (Item - 11)

- Write the actual percentage of aggregate marks obtained in the 10th Class / Equivalent examination under column I.
- Write the actual percentage of aggregate marks obtained in the qualifying examination under column II if the results are available. Otherwise leave it blank. Enter only integer part of the percentage of marks and ignore the decimal point. For example 76.15, 76.56 or 76.90 be taken as 76 only. Darken the appropriate circles against each entry.

6.12 Photograph : (Item - 12)

Paste (do not staple) a recent good quality **black and white** photograph of size 3 cm x 4 cm taken not more than two months earlier. It is expected that the candidate will have the same appearance at the time of examination and counselling as in this photograph. In case your appearance changes, you are required to bring two new photographs at the time of examination. Do not sign on the photograph and do not get it attested.

NOTE : Photograph should not be larger than the space provided in the box for pasting it. Keep four more copies of the same photograph, to be required at the time of counselling.

6.13 Complete Mailing Address : (Item - 13)

Write the complete postal address to which any communication is to be sent till August 2009. The address must include your name, C/o name if required, and other details including the PINCODE for the mail to reach you. Indicate phone number, if any, with STD code. Please note that this block will be machine scanned and therefore, it should

be written very clearly in **black / blue ball pen** only (not in pencil). If you make any mistake, cover the whole box with an exact sized white paper slip and write your address on it. You may also paste a typed address slip inside the box. Your address must not overflow this box.

6.14 Signature : (Item - 14)

Put your usual signature in **black / blue ball pen** within the box provided. Your signature must not overflow or touch the border of the box provided. Your signature establishes your identity. **Hence, do not merely write your name in capital letters. This may lead to rejection of your application.**

6.15 Left Hand Impression : (Item -15)

Put your Left Hand Thumb Impression in the specified box.

6.16 Board of Qualifying Examination : (Item - 16)

Darken the appropriate circle.

6.17 PINCODE of Address for Communication : (Item - 17)

Write PINCODE in the space provided. Darken the appropriate circle against each digit.

6.18 Phone Number including STD Code : (Item - 18)

Write your phone number, if there is any, with STD code, on which you can be contacted or a message can be left for you. Darken the appropriate circles below the phone number.

6.19 This Attempt at JEE : (Item - 19)

Will JEE-2009 be your first, second or a higher attempt? Darken the appropriate circle.

6.20 Name of one Parent / Guardian : (Item - 20)

Write the name of one of your parent or guardian exactly as in your 10th class or equivalent certificate, if given. Write the name of your father if no name is given in the 10th certificate. Write a single letter in a box. Within any word of the name, do not leave any blank box. Leave one and only one blank box between any two words of the name. Darken the appropriate circle under each letter of the name. If the name has several initials, leave one blank after each of them.

6.21 Relationship : (Item - 21)

Indicate your relationship with the parent/ guardian named in item 6.19 by darkening the appropriate circle.

6.22 Candidate's Residence district (Item - 22)

Candidate's belonging to S-category (Orissa State candidates as per Clause no. 2.1(a)) should mention the code against the name of the district where he/she studied +2 course in Government Colleges/Institutions, refer Table - VIII.

TABLE- VIII

District's Name	Code	District's Name	Code
Angul	A1	Kandhamal	B7
Balasore	A2	Kendrapara	B8
Bargarh	A3	Keonjhar	B9
Bhadrak	A4	Khurda	C1
Bolangir	A5	Koraput	C2
Boudh	A6	Malkanagiri	C3
Cuttack	A7	Mayurbhanj	C4

District's Name	Code	District's Name	Code
Deogarh	A8	Nabarangpur	C5
Dhenkanal	A9	Nayagarh	C6
Gajapati	B1	Nuapada	C7
Ganjam	B2	Puri	C8
Jagatsingpur	B3	Raygada	C9
Jajpur	B4	Sambalpur	D1
Jharsuguda	B5	Sonepur	D2
Kalahandi	B6	Sundergarh	D3

6.23 Serial Number of 10th Class Certificate (Item - 23)

Enter the serial number of your 10th Class Certificate in the boxes provided at the top (only digits), Darken the corresponding circles below them. If there is any alphabet before or after the serial number omit the same.

6.24 Parent's / Guardian's Total Annual Income : (Item - 24)

Darken the appropriate circle.

6.25 Parents' Educational Background : (Item - 25)

Darken the appropriate circle.

6.26 Place of Residence : (Item - 26)

Darken the appropriate circle.

6.27 Declaration by the Candidate : (Item - 27)

The candidate must sign the declaration in **black / blue ball pen**. The place and date should also be entered. Two signatures; the one below the declaration and the other in the box below your photograph, should be identical. Applications without signatures or with different signatures at the two places will be treated as incomplete and rejected. The declaration by the candidate must be counter signed by Parent / Guardian. Write the name of Parent / Guardian in the space provided.

6.28 Enclosures with Application Form :

You have to enclose the Acknowledgement Card duly filled in.

Those who submit the application in the notified Bank should collect the Acknowledgement Card duly signed and stamped by the authorized person of the concerned bank.

SHOULD NOT enclose any copies of certificates / marksheets / appendix forms with the application form.

ADMIT CARDS :

- Admit Cards will be despatched around 15 days before the date of examination. If an applicant does not receive the admit card ten days before the examination (i.e. by May 16, 2009) he/she must search the website indicating the application number.
- If a candidate does not receive or lose his/her admit card, the Centre Superintendent may issue him/her a **Duplicate Admit Card** on receiving Rs.20/- (Rupees Twenty only) with an application written by the candidate and two attested recent passport size photographs of the candidate identical with the photograph pasted on the original application. Two numbers of the duplicate admit cards will be prepared by the Centre Superintendent; one of them will be issued to the candidate and the other is to

be sent along with the answer books, to the Chairman, JEE-2009. No complaints will be entertained for non receipt of admit cards after Joint Entrance Examination is over.

7. Rules for Entrance Examination :

- The Joint Entrance Examination will be held as per the scheduled date and time mentioned.
- The medium of examination is English.
- The examination hall shall be opened to the candidates half an hour before the examination commences. No candidate will be allowed to enter in the examination hall without a valid original/duplicate admit card.
- Candidates are required to take their respective seats at least 15 minutes before the commencement of the examination, strictly according to the sitting chart notified earlier by the Centre Superintendent.
- In no case a candidate be allowed to enter the examination hall after the examination starts.
- Attendance will be taken by the invigilators on the Attendance Roll sheets provided with full signature of candidates against their Roll Numbers, fifteen minutes before the commencement of examination. During examination the candidates have to enter against their Roll Number, the Application Number and the answer sheet serial number on the Attendance Roll sheets which shall be verified by the invigilators.
- No candidate will be allowed to leave the hall without surrendering his/her question booklet and answer sheet until the examination is over. Ordinarily no candidate shall be allowed to leave the hall temporarily during the examination.
- Candidates suffering from any disease which renders their presence in the examination hall undesirable in the interest of other candidates will not ordinarily be allowed to enter the examination hall. Candidates are not allowed to have substitute writer.
- Candidates should bring their own black / blue ball pens, HB pencils for writing and blackening the circle. Books, printed papers (other than their Admit Cards), manuscripts, or electronic gadgets such as mobile phones, cell phones and electronic diary calculators etc. should not be taken into the examination hall.
- The candidates are advised to inspect the question booklet and answer sheet about its completeness before attempting to answer. In case page / pages are found missing, torn or not in order, the candidates should immediately report to the invigilator and get a fresh question answer book issued after surrendering the defective one.
- Candidates are not permitted to talk to each other in the examination hall. No one should receive any help from or assist another in any manner. Malpractice of any form detected during or after the examination would entail not only cancellation of candidature but also more severe punishment as deemed fit by the JEE committee.
- A candidate should write his/her roll number as assigned in his/her admit card and sign in the space provided in the question booklet and answer sheet. He/she should

on no account write anywhere in the answer sheet his/her own name, roll number or any thing else that is not strictly connected with the answers to the question given. Writing of any such thing or a false Roll Number is a serious offence. The answer sheet without the candidate's roll number clearly written in the space provided will not be examined.

xiii) A candidate wishing to say anything should stand up in his/her seat and remain standing until the invigilator attends to him/her. He/she should on no account leave the seat or make any noise to draw the invigilator's attention.

xiv) In any other matter not provided in these rules, the Centre Superintendent is empowered to take necessary decisions.

7.1 Examination Procedure / Valuation methodology :

There will be multiple choice type question. The number of questions will be sixty(60) per each hour of examination. Each question shall have four answers (including one or more correct answer(s)) and the examinee shall have to blacken only the appropriate circle (which he / she considers most correct) in HB pencil or black / blue ball point. Each correct answer shall fetch four marks whereas each incorrect answer will lead to deduction of one mark. Each unattempted question will fetch zero. If more than one circles are darkened for one question, it will be treated as an incorrect answer and one mark will be deducted.

The Answer Sheet consists of two pages, the top one is the Original answer sheet whereas the annexed one is the carbon copy. The part-A of the original sheet contains the details such as Roll No., Question Booklet number, Name and signature of the candidate, Name of the centre, Signature of the Invigilator.

The Part – B of the answer sheet is meant for recording the answers by darkening the appropriate circle(s) by the candidate.

Whatever impression of written/marked on the main sheet, will be reproduced in the second sheet.

This will be detached **by the invigilator** and returned to the candidates at the end of the examination.

7.2 Retotalling and Review :

The JEE Answer sheet are all machine evaluated with adequate care that machine evaluation is made error free. The Joint Entrance Examination is held only for preparing a relative merit list. There is no award of class. Marksheets are not issued in general. A candidate, may however request for verification with a verification fee of Rs.500/- (Rupees five hundred only) in the shape of an Account payee demand draft in favour "JEE-2009" drawn on any nationalized bank at Bhubaneswar should reach the JEE office **within seven calender days** of the publication of result. A committee will manually verify the results and its decision will be final and binding. No Xerox copy of the answer sheet(s) will be made available to the candidate.

7.3 Wrong / Correct ways of Marking :

Each question is followed by answers which have numbers A, B, C and D. Select the most appropriate answer. Then by using HB pencil or black / blue ball pen darken the circle bearing

the correct answer in the answer sheet against the corresponding number of the question. The wrong & correct method of answering is illustrated below.

Wrong & Correct Methods of showing your answer

WRONG METHOD	<input type="radio"/> A	<input checked="" type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D
WRONG METHOD	<input type="radio"/> A	<input type="radio"/> B	<input type="radio"/> C	<input checked="" type="radio"/> D
WRONG METHOD	<input checked="" type="radio"/> A	<input type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D
WRONG METHOD	<input type="radio"/> A	<input checked="" type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D
WRONG METHOD	<input checked="" type="radio"/> A	<input type="radio"/> B	<input checked="" type="radio"/> C	<input type="radio"/> D
CORRECT METHOD	<input checked="" type="radio"/> A	<input type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D
CORRECT METHOD	<input type="radio"/> A	<input checked="" type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D
CORRECT METHOD	<input type="radio"/> A	<input type="radio"/> B	<input checked="" type="radio"/> C	<input type="radio"/> D
CORRECT METHOD	<input type="radio"/> A	<input type="radio"/> B	<input type="radio"/> C	<input checked="" type="radio"/> D

7.4 Issue of Marks

Candidates desirous of knowing subjectwise marks secured by them should make a written request enclosing a demand draft of Rs.200/- (Rupees two hundred only) in favour of "JEE-2009" drawn on any Nationalised Bank at Bhubaneswar, so as to reach the JEE office within 10 days of the publication of result.

7.5 Sample Questions

- If we dip capillary tubes of different radii r in water and water rises to different height h in them, then
 - $h/2 = \text{constant}$
 - $h/r = \text{constant}$
 - $hr = \text{constant}$
 - $hr^2 = \text{constant}$
- The drug taxol is obtained from the bark of
 - Pacific Yew
 - Eucalyptus
 - Cinnamon
 - Cinchona
- The number of different types of F-S-F bond angles in SF₄ are
 - two
 - one
 - three
 - four
- The integral $\int_0^2 1-x \, dx$ equals :
 - 1
 - 0
 - 3
 - 2

8.1 SYLLABI FOR (ENGG / MEDICAL / BDS /PHARMACY)

The Syllabi given hereunder for JEE-2009 are only illustrative and not exhaustive. The syllabi are in line with courses of studies in Science stream for the Higher Secondary Examination 2009 of CHSE, Orissa. Since JEE is conducted with a view to preparing merit lists for admission the decision of the JEE Committee as regards the scope of the syllabus is FINAL.

8.1.1 PHYSICS :

Measurements and Motion : Concept of Mass, Length and Time, SI Units. Conversion of MKS system of units to SI units. Dimension and Dimensional equations of mechanical quantities, Vector addition, Subtraction, scalar and Vector products. Lami's Theorem. Equations of linear motion for uniformly accelerated bodies (by calculus method). Newton's laws of motion, conservation of energy and momentum, collision, work, energy, power, sliding and rolling friction. Motion in circular orbits, centripetal force. Banking of tracks, Kepler's laws (Statements only). Newton's laws of gravitation. Earth satellites-orbital and escape velocities. Moment of inertia-definition and expression for rod, ring and circular disc. Angular momentum and conservation of angular momentum, Projectile motion.

Kinetic theory of gases and Thermodynamics : Basic assumptions, derivation of expressions for pressure, law of equipartition of energy, mean energy, gas equation, specific heats of gases, relation between C_p and C_v .

Work and heat : Concept of temperature. Definition of "J". First law of thermodynamics, reversible, isothermal and adiabatic processes. Carnot cycle/Carnot engine. Second law of thermodynamics, absolute scale of temperature, law of radiation. Newton's law of cooling. Thermal energy, specific heat, latent heat, thermal conductivity and its determination by Searle's method.

Characteristics of Materials : Elastic and plastic behaviors of solids, elastic limit Young's modulus, Shear and Bulk modulus, Poissons ratio.

Liquids : Intermolecular force, cohesion, adhesion, surface and surface energy, determination of surface tension by capillary rise method.

Flow of liquids : Streamlined and turbulent flow. Atmospheric Pressure, equation of continuity. Bernoulli's equation and its application. Viscosity- coefficient of viscosity, Stokes law.

Electricity : Electric field and potential at a point and capacitor, Kirchhoff's laws and their application, wheatstone bridge. Joule's law of heat. Faraday's law of electrolysis. Biot-Savart's law, Field due to circular coil at its centre. Moving coil galvanometer (dead beat only). Force on a moving charge in magnetic fields. Lenz's law. Faraday's laws of electromagnetic induction rotating coil in a magnetic field. Alternating current, self and mutual induction, phase relation between voltage and current in a pure resistance, inductance and capacitance, dynamo, motor, transformer, elementary idea on electromagnetic waves. Capacitance, dielectric constant and

its effect on capacitance. Permeability susceptibility, diamagnetic, paramagnetic and ferromagnetic substance.

Wave motion : Simple harmonic motion, wave propagation, characteristics of wave motion, longitudinal and transverse waves, superposition of waves, stationary waves. Beats, open and closed organ pipes, velocity of sound in air- effect of pressure, temperature and humidity on it. Doppler effect, laws of transverse vibration of string (Statement only).

Optics : Reflection and refraction at curved surfaces. Spherical mirror and thin lens formula and refraction through prism. Total internal reflection, Dispersion. Huygen's principle, reflection and refraction by plane surface, Young's double slit experiment.

Electronic Devices : Energy and band (descriptive idea only), metals, insulator and semi conductors, intrinsic P- type and N- type semiconductors. Thermionic emission, vacuum triode construction and characteristics, PN junction, PNP and NPN transistor, PN Junction as a rectifier, vacuum triode and transistor as amplifiers.

Nuclear Physics : Atomic nucleus, nuclear forces, nuclear mass, binding energy, mass defect, artificial radio activity, radio isotopes and their uses. Nuclear fission, energy released, chain reaction, controlled chain reaction, fusion, energy generation in the sun, radiation hazards.

8.1.2 CHEMISTRY :

General behaviour of matter

Solid State : Characteristics, Classification, Solubility, Melting points, Crystal structure of simple ionic compounds.

Liquid state : Characteristics, Boiling and Freezing points, Viscosity, Surface tension, Osmosis, Raoult's law, Lowering of vapour pressure, Depression of freezing points, Elevation of boiling points.

Gaseous State : Gas laws, Kinetic model of gases, ideal gas equation, Vanderwaal's equation, Average root mean square and most probable velocities.

Atoms and molecules : Symbols, Valency, Atomic mass, Molecular weight, Avogadro's hypothesis, Mole concept, Determination of equivalent weight of zinc and copper, Atomic mass by Dulong Petit's method and Molecular mass by Victor Mayor's method.

Structure of atoms and molecules : Fundamentals particles and their properties, Rutherford and Bohr models of atom, Hydrogen spectrum, Atomic structure, Energy levels, Shell and Sub-shells, s, p and d orbitals, Quantum numbers, Pauli's exclusion principle, Aufbau-principle, Hund's rule, Electronic configuration of atoms.

Chemical bonds : Ionic, Covalent, Co-ordinate and Hydrogen bond, Hybridisation- SP^3 , SP^2 , and SP , Shapes of molecules, Molecular Orbital Theory.

Periodic classification : Periodic table and periodic laws, s, p, d and f block elements, Periodicity in properties such as atomic and ionic radii, Dalton's atomic theory, Laws of chemical

combination, Ionisation energy, Electro negativity and Oxidation state.

Chemical energetics, equilibrium and kinetics :

Energetics: Internal energy, Enthalpy, Heat of reaction, Bond energy, Hess's law, Idea on enthalpy, entropy and free energy.

Equilibria : Reversible reaction, Laws of mass action, Equilibrium constant K_p , K_c and their relation. Its application to ammonia synthesis and dissociation of HI, Decomposition and thermal dissociation, Solubility product, Common ion effect, Ionic product of water, pH Hydrolysis of salt, Buffer solution. Theory of acid and base.

Kinetics : Rate of reaction, Factors affecting the rate, Rate constant, Order and Molecularity of a reaction, Simple zero and First order reaction, Half life period, Arrhenius equation and Activation Energy.

Types of chemical reaction : Neutralisation and oxidation–Reduction reaction, Equivalent weight, Normality, Molarity and Molality, Oxidation number, Balancing chemical reactions, Ion electron reactions involving KMnO_4 , $\text{K}_2\text{Cr}_2\text{O}_7$, $\text{Na}_2\text{S}_2\text{O}_3$, oxalate etc.

Non-metals : Group study, Preparation, Properties and uses of elements of compounds of hydrogen (ortho and para hydrogen, isotopes of hydrogen, D_2O and H_2O_2). Allotropes of carbon, Silicones, Silicon carbide, Nitrogen family (NH_3 and HNO_3). Oxygen and sulphur family (O_2 , H_2S , SO_2 , H_2SO_4 , contact process), Halogens, Hydrogen halides and Interhalogen compounds, Zero group elements (properties & uses).

Electro chemistry : Electrolysis, Electrical Conductivity, Faraday's laws, Kohlrausch law, Galvanic cell, Cell reaction, Nernst equation, Standard electrode potential, Electro chemical series e.m.f. of simple cells.

Nuclear chemistry : Radio activity, Group displacement law, Half-life period, Carbon dating, Nuclear Fission and Fusion.

Metals and metallurgy : Occurrence of metal, Metallurgy ores, flux, slag calcinations, roasting, smelting (by reduction of oxides) and refining. General trends in the characteristics, principles of extraction of Na, Mg, Ca, Al, Cu and Fe and their oxides, hydroxides, chlorides, nitrates and sulphates.

Organic chemistry: Introduction, Functional Groups, Nomenclature, Isomerism, Polymerisation, sp^3 , sp^2 , sp hybridization, Ideas on nucleophile and electrophile, Preparation and properties of simple alkanes, alkenes, alkynes and monohalogen derivatives. Preparation and properties of aliphatic nitro paraffins, types of aliphatic amines, preparation and properties of simple primary amines.

General methods of preparation, properties and uses of alcohols, aldehydes, ketones, carboxylic acids, esters, acid, chlorides and amides.

Aromatic compounds : Aromaticity, Aromatic substitution, Addition and Oxidation reactions, phenol, Reimer-Tiemann reaction, benzaldehyde (by Etard's reaction), Cannizzaro's reaction, benzoic acid.

Biochemistry : Biological importance of organic compounds such as carbohydrates, amino acids, proteins, lipids and nucleic acids (only by metabolic process).

Industrial chemistry : General idea on fertilizers, pesticides, polymers (nylon, terylene, neoprene, buna-s pvc, Teflon bakelite) and medicine-analgesic, antipyretic, antibiotic and antiseptic (structure and preparation not required).

8.1.3 **MATHEMATICS :**

Logic : Statement, Negation, Implication, Converse, Contrapositives, Conjunction, Disjunction, Truth Table.

Algebra of sets : Set operation, Union, Intersection, Difference, Symmetric difference, Complement, Venn diagram, Cartesian product of sets, Relation and functions, Composite function, Inverse of a function, Equivalence relation, Kinds of function.

Number system : Real numbers (algebraic and order 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 application. Permutations and combinations-simple applications, Mathematical induction, Binomial theorem.

Determinants and matrices : Determinants of third order, Minors and cofactors, Properties of determinants, Matrices upto third order, Types of matrices, algebra of matrix, adjoint and inverse of matrix, Application of determinants and matrices to the solution of linear equations (in three unknowns).

Trigonometry : Compound angles, Multiple and Submultiple angles, Solution of trigonometric equations, Properties of triangles, Inverse circular function, Sum and product of sine and cosine functions.

Co-ordinate geometry of two dimensions : Straight lines, Pairs of straight lines, Circles, Equations of tangents and normals to a circle, Equations of parabola, Ellipse and hyperbola in simple forms and their tangents (focus, directrix, eccentricity and latus rectum in all cases).

Coordinate geometry of three dimensions : Distance and Division formulae, Direction cosines and direction ratios, Projection, Angle between two planes, Angle between a line and a plane. Distance of a point from a line and a plane. Equation of a sphere – general equation).

Vectors : Fundamentals, Dot and cross product of two vectors, Scalar triple product, Simple applications (to geometry, work and moment).

Differential calculus : Concept of limit, Continuity and derivative of standard functions, Successive differentiation (simple cases), Leibnitz theorem, Partial differentiation (simple cases), Derivative as a rate measure, Maxima and Minima, Indeterminate forms, Geometrical application such as tangent and normals to plane curves.

Integral calculus : Standard methods of integration (substitution, by parts, by partial fraction, etc), Definite integrals and properties of definite integrals. Areas under plane curves.

Differential equations (only simple cases)

(i) $dy/dx = f(x)$

(ii) $dy/dx = f(x) \cdot g(y)$

(iii) $d^2y/dx^2 = f(x)$ and applications to motions in a straight line.

Probability and statistics : Average (mean, median and mode). Dispersion (standard deviation and variance), Definition of probability, Mutually exclusive events, Independent events, Addition theorem.

Computer and computing : Computer arithmetic, decimal, binary, octal, hexadecimal and their conversion and operation, Simple programmes in BASIC.

8.1.4 BOTANY

History : History, Botanical studies, Branches of Botany, Brief classification of plant kingdom. Scope of Botany, Cell Biology, Cell theory.

Plant cell : Structure of typical plant cell, Cell wall and Cell membrane, Protoplasm - physical and chemical nature, Cell organelle - structure and functions, nucleus, lysosomes, golgi bodies, plastids, ribosomes, mitochondria, chromosomes, spherosomes, Important compounds of cell, water, amino acids, carbohydrates, fats, nucleotides, nucleic acids.

Cell inclusions, physical and chemical nature and functions of enzymes, Vitamins and hormones, mode of enzyme action, cell cycle.

Complexities of plant life : Meristematic tissues, permanent, simple and complex tissues, Internal structure of dicot and monocot systems and roots, Internal structure of Isobilateral and Dorsiventral with functions of different tissues, Normal, secondary growth in dicot stems.

Morphology of angiosperms : Normal and Modified stems, roots and leaves, Inflorescence, Flower and its parts, floral diagram and floral formula, pollination, fertilization, fruits.

Taxonomy of flowering plants : Principle and units of classification (species, genus, family), Knowledge of important families and their economic importance.

Continuity of plant life : Genetics (elementary knowledge), Mitosis and Meiosis and their significance, Principle of Mendel's law of inheritance, Monohybrid and Dihybrid ratio, Concept of gene, Elementary idea of gene action, Evolution, evidence, theories and mechanism of evolution, variation and mutation, Role of mutation in agriculture, origin of species.

Microorganisms and diversities of plant life : Elementary idea and economic importance of virus, bacteria, fungi, algae and lichen, Elementary idea of gymnophytes, pteridophytes and gymnosperms.

Processes in plants : Absorption and transport of water and minerals, Transpiration, Stomatal mechanism, Life energy and ATP, Respiration and Fermentation, Photosynthesis, Elementary idea of protein synthesis, growth, reproduction, movements (with special reference to geotropism and phototropism).

Environmental biology : Man and his environment, Biotic community, Ecological adaptations (Hydrophytes and Xerophytes).

Botany and human welfare : Agricultural crops – Brief description and economic importance of crop plants like Rice, Gram (green gram) Jute, Groundnut, Sugarcane, and Potato.

Common plant diseases – control of blight in rice, rot of sugarcane, Forestry, Genetic conservation and Crop improvement.

Genetic engineering and biotechnology : Recombinant DNA, Gene library, Transgenic plants, Fermentation, Bakery, Antibiotics, Monoclonal antibodies.

8.1.5 ZOOLOGY

Animal world : Definition, Scope and branch of Zoology.

Species concept, binomial nomenclature, classification, scientific name of some common animals : Fishes-rohu, bhakura, mrigal, Amphibians-frog, toad, Reptiles-house lizard, garden lizard, crocodile, turtle, Snakes-cobra, krait, Birds-fowl. Peacock, pigeon, Mammals-tiger, lion, elephant, cat, dog, cow, rabbit & man.

Diversity of life

Kingdom-protista : General characters of the phylum, protozoa, Classification - amoeba, entamoeba, paramoecium, euglena, trypanosoma, plasmodium.

Kingdom-animalia : Concept of body plan, symmetry, coelom, germ layers homeothermic and poikilothermic animals.

General characters of Non-chordata like - porifera, coelenterata, platy helminth, nematahelminthes, annelida, arthropoda, mollusca, echinodermata & hemichordata.

Multi Cellularity in Animals :-

Animal tissues - Types- epithelial, connective (details about blood and lymph), Muscular & nervous - organs & organ systems.

Locomotion - Locomotory organelis in protozoans, hydra, annelid, brief account of joints and muscles in movement of man, modes of nutrition - Nutrition in amoeba.

Digestive system of man - Structure and function of alimentary canal associated glands, physiology of digestion and absorption.

Types of Respiration - Structure and function of respiratory system in man : Respiratory organs, mechanics of pulmonary respiration, plunomary exchange of gas, transport of gases, Glycolysis & Krebs's cycle.

Types of Circulation - Open circulation, closed circulatory system in man : Structure of Heart, Cardiac cycle, Arteries, Veins, Capillaries, Portal system, Coronary circulation, Blood pressure, Respiratory pigments, group and coagulation.

Excretory Reproduction in Man - Structure and function of kidney.

Control and co-ordination in Man - Nervous system- central, peripheral and autonomic sense organs, endocrine system.

Types of Reproduction - A sexual, binary & multiple fission, budding.

Sexual reproduction in man - male & female reproductive system, menstrual cycle.

Genetics - Chromosomes and heredity : heredity and viriation, mendelian principle, laws of heredity, chromosomes, Interaction of genes, chromosomal variation.

Evolution - Origin of life Anatomical, embryological biochemical, palaeontological, and biogeographical evidences of evolutions, Darwin's theory of natural selection, Modern synthetic theory.

Environmental Biology - Biosphere and ecosystem.

Environmental Pollution - Source, effects and control of air, water and sound pollution.

Common Human Disease - Non communicable diseases– Diabates & cardiac diseases. Communicable diseases like, amoebiasis, filariasis, malaria (Mode of inflection- pathogens, prevention and treatment).

Defence Mechanism of Body - Cells, Immune system and their function, immune deficiency in AIDS.

Wild life Conservation - Importance of wild life, Causes of extinction, Threatened species - endangered, valunerable and rare species, conservation of wild life.

8.2 SYLLABI FOR LATERAL ENTRY STREAM (Diploma)

The syllabi given here for JEE - 2008 (Lateral Entry of Diploma Holders in Engineering and Technology) is only illustrative and not exhaustive . Since JEE - 2008 is conducted with a view to preparing a relative merit list only for admission, the decision of the JEE - 2008 Committee as regards to the scope of the syllabi is final. **This paper is common to all the disciplines, except Pharmacy and HMCT.**

8.2.1 PAPER - I

(A) BASIC ELECTRICAL ENGINEERING

Electrostatics, electromagnetism and electrodynamics: Coulomb's Law, Gauss theorem and its applications in calculating the field intensity, potential gradient due to spherical, cylindrical and plane charges. Calculation of capacitance of spherical, coaxial, cylindrical and parallel plate condensers, dielectrics, energy stored in and electric field.

Circuital Law of magnetism, magnetic field intensity and flux density due to a long straight conductor, solenoid and toroid carrying current. Ferromagnetic material in a magnetic field, permeability B-H curves, cyclic magnetisation and hysteresis. Idea of magnetic circuit, mmf and reluctance, calculation of simple magnetic circuits, effect of leakage.

Faraday's law of electrodcmagnetic induction, e.m.f in a conductor and a coil moving in a magnetic field. Self and mutual, inductance series parallel combination, Energy stored in magnetic field.

D.C. Circuits : Idea of d.c. circuits, power and energy in electric circuits, reduction of electric network by series, parallel and star-delta conversion, representation of voltage source and current source, Kirchoff laws and their application to solve electrical circuits by branch and loop current method and nodal method. Transient phenomena in RL, RC and RLC circuits with D.C. excision.

A.C. Circuits : Alternating current voltage, different wave forms, average value, effective value and form factor. Sinusodial voltage and current, amplitude, frequency and phase, addition and substraction of A.C.quantities, phasor diagram, complex representation of sinusoidal quantities, reactance, impedance and admittance, Simple series and parallel circuits and use of complex algebra in solving them, Power and power factor, active and reactive components, idea of power factor improvement, series and parallel resonance Q - factor. Introduction to three phase circuits, relation between phase and lien quantities. Star and Delta connection of sources and loads, active and reactive power in 3-phase circuits, single and two wattmeter method of power measurement. Steady circuit equations, solutions of simple coupled circuits containing R,L, C and M.

Instruments : Construction and principle of operation of permanent magnet moving coil, moving iron and dynamometer type ammeters and voltmeters, dynamometer type wattmeters.

Illumination : Definition and units of luminous flux, luminous intensity, illumination, brightness, luminous efficiency.

Production of light : Filament lamps, halogen lamps, sodium and mercury vapour lamps, fluorescent lamps, lighting calculation by inverse Square law and light flux method, co-efficient of utilization and maintenance factor.

8.2.2 (B) MATHEMATICS

Ordinary Differential Equations : Differential equations of first order, Physical applications, Linear differential equations, Homogeneous and non- homogeneous second order linear differential equation with constant co-efficients. Application to free and forced vibration of spring mass systems, method of variation of parameters. Normal form change of dependent and independent variables. Cauchy's Euler's equation.

Series Method : Properties of power series, solution of ordinary differential equations. Legendre equations. Legendre Polynomials and functions, methods of Frobenius, the Gamma function, the Bessel -Clifford equations, Bassel's equation, non-homogeneous equations.

Laplace Transforms : The Laplace transforms (L.T), L.T. of derivaties and integrals, derivatives and integrals of Laplace transforms, L.T. of periodic functions, Inverse Laplace transforms, Convolution theorem, Application of L.T. to solution of differential equations, special techniques.

Fourier Series : Fourier theorem, Fourier expansion, even and odd functions, half range expansion, seems and scale changes, forced oscillation, Miscellaneous expansion techniques.

Matrices : Notation and terminology, Solution of simultaneous equations by Gaussian elimination, Rank, Computation of rank by reduction of Rowechelon normal form, Algebra of matrix, inverse determinants, linear dependence and independence, solution of homogeneous and non-homogenous systems. Norms and products, Gram-schmidt Process, Projection matrix, eigenvalues, eigenvectors, Symmetric and simple matrix, System of linear differential equations the homogenous case.

Vectors : Vector algebra, Vector differentiation, Vector operator del, gradient, divergence, curl, integral theorem.

8.2.3 (C) ENGINEERING MECHANICS

Statics : System of co-planer forces – Condition for equilibrium - concept of free body diagrams - Methods of solution of engineering problems, problem with friction- Belt friction and screw jack. Force analysis of plane trusses (Method of joints and method of sections) Analysis of frames (Method of members). First moment of area and centroid – theorem of Pappus, Second momentum of areas, Polar moment of Inertia. Principle of virtual work for a single particle, rigid bodies, ideal systems and constrained bodies.

Dynamics : Kinematics of rigid body – Plane motion, Kinetics of translation and rotating rigid bodies, moment of inertia of bodies.

D'Alembert's Principle- Application to a single particle rigid body in translation and rotation, ideal systems. Momentum and impulse, Application to principle of linear momentum to a single particle, rigid bodies and ideal systems, Impact – application of principle of angular momentum to a single particle and rotating rigid bodies, Principle of conservation of momentum.

Work and energy : Principle of work and energy for a single particle, rotating rigid body and ideal systems, Principle of conservation of energy.

8.3 SYLLABI FOR LATERAL ENTRY STREAM (B.Sc.)

8.3.1 B. Sc.Paper I (B.Sc MATHEMATICS, LATERAL ENTRY)

Algebra : Mappings. Equivalence relations and partition. Congruence modulo n relation.

Symmetric. Skew symmetric. Hermitian and skew Hermitian matrices. Elementary operations on matrices. Inverse of a matrix. Linear independence of row and column matrices. Row rank, column rank and rank of a matrix. Equivalence of column and row ranks. Eigenvalues, eigenvectors and the characteristic equation of a matrix. Cayley Hamilton theorem and its use in finding inverse of a matrix. Applications of matrices to a system of linear (both homogenous and non-homogenous) equations. Theorems on consistency of a system of linear equations.

Definition of a group with examples and simple properties. Subgroups. Generation of groups. Cyclic groups. Coset decomposition. Lagrange's theorem and its consequences. Fermat's and Euler's theorems. Homomorphism and isomorphism. Normal subgroups. Quotient groups. The fundamental theorem of homomorphism. Permutation groups. Even and odd permutations. The alternating groups A_n .

Cayley's theorem. Introduction to rings, subrings, integral domains and fields. Characteristic of a ring.

Differential Calculus : Definition of the limit of a function. Basic properties of limits. Continuous functions and classification of discontinuities. Differentiability. Successive differentiation. Leibniz theorem. Maclaurin and Taylor series expansions. Asymptotes. Curvature. Tests for concavity and convexity. Points of inflexion. Multiple points. Tracing of curves in Cartesian and polar coordinates.

Integral Calculus : Integration of irrational algebraic functions and transcendental functions. Reduction formulae. Definite integrals. Quadrature. Rectification. Volumes and surfaces of solids of revolution.

Ordinary Differential Equations : Degree and order of a differential equation. Equations of first order and first degree. Equations in which the variables are separable. Homogeneous equations. Linear equations and equations reducible to the linear form. Exact differential equations. First order higher degree equations solvable for x, y, p . Clairaut's form and singular solutions. Geometrical meaning of a differential equation. Orthogonal trajectories. Linear differential equations with constant coefficient. Homogeneous linear ordinary differential equations.

Linear differential equations of second order. Transformation of the equation by changing the dependent variable / the independent variable. Method of variation of parameters.

Ordinary simultaneous differential equations.

Vector Analysis : Scalar and vector product of three vectors. Product of four vectors. Reciprocal Vectors. Vector differentiation. Gradient, divergence and curl . Vector integration. Theorems of Gauss, Green, Stokes and problems based on these.

Geometry : General equation of second degree. Tracing of conics. System of conics. Confocal conics. Polar equation of a conic.

The st. line and the plane, sphere, cone, cylinder.

Advanced calculus : Continuity. Sequential continuity. Properties of continuous functions. Uniform continuity. Chain rule of differentiability. Mean value theorems and their geometrical interpretations. Darboux's intermediate value theorem for derivatives. Taylor's theorem with various forms of remainders.

Limit and continuity of functions of two variables. Partial differentiation. Change of variables. Euler's theorem of homogeneous functions. Taylor's theorem for functions of two variables. Jacobians.

Envelopes. Evolutes. Maxima, minima and saddle points of functions of two variables. Lagrange's multiplier method. Indeterminate forms.

Beta and Gamma functions. Double and triple integrals. Dirichlet's integrals. Change of order of integration in double integrals.

Definition of a sequence. Theorems of limits of sequences. Bounded and monotonic sequences. Cauchy's convergence criterion. Series of non-negative terms. Comparison tests. Cauchy's integral test. Ratio tests. Raabe's, logarithmic, De Morgan and Bertrand's tests. Alternating series. Leibnitz's theorem. Absolute and conditional convergence.

Series solutions of differential equations-Power series method, Bessel, Legendre and Hypergeometric equations. Bessel, Legendre and Hypergeometric functions and their properties-convergence, recurrence and generating relations. Orthogonality of functions. Sturm-Liouville problem. Orthogonality of eigen-functions. Reality of eigenvalues. Orthogonality of Bessel functions and Legendere polynomials.

Laplace Transformation - Linearity of the Laplace transformation. Existence theorem for Laplace transforms. Lapalce transforms of derivatives and integrals. Shifting theorems. Differentiation and integration of transforms. Convolution theorem. Solution of integral equation and systems of differential equation using the Laplace transformation.

Statics : Analytical conditions of equilibrium of Coplanar forces. Virtual work, Catenary.

Dynamics : Velocities and accelerations along radial and transverse directions, and along tangential and normal directions. Simple harmonic motion. Elastic strings.

Motion on smooth and rough plane curves. Motion in a resisting medium. Motion of particles of varying mass. Central Orbits. Kepler's laws of motion.

Numerical Analysis : Solution of equations: Bisection, Secant, Regula falsi, Newton's Method, Roots of Polynomials

Interpolation: Lagrange and Hermite Interpolation, Divided Difference, Different schemes, Interpolation formula using Differences.

Numerical Differentiation

Numerical Quadrature : Newton-Cotes formula, Gauss quadrature formula, Chebychev's Formulas.

8.3.2 B.Sc PAPER – II (B. Sc. PHYSICS , LATERAL ENTRY)

Mechanics : laws of motion, motion in a uniform field, components of velocity and acceleration in different coordinate systems. Motion under a central force, Kepler's law, Gravitational law and field. Potential due to a spherical body, Gauss and Poisson equations for gravitational self-energy. System of particles, center of mass, equation of motion, conservation of linear and angular momenta, conservation of energy, elastic and inelastic collisions. Rigid body motion, rotational motion, moment of inertia and their products.

Oscillations : Harmonic oscillations, kinetic and potential energy, examples of simple harmonic oscillations, spring and mass system, simple and compound pendulum, torsional pendulum. Superposition of two simple harmonic motions of the same frequency along the same line, interference, superposition of two mutually perpendicular simple harmonic vibrations of the same frequency, Lissajous figures, case of different frequencies.

Motion of charged particles in elastic and magnetic fields : E as an accelerating field, electron gun, case of discharge tube, linear accelerator, E as deflecting field-CRO, sensitivity, fast CRO.

Properties of Matter : Elasticity, small deformations, Hooke's law, elastic constants for an isotropic solid, beams supported at both the ends, cantilever, torsion of a cylinder, bending moments and shearing forces. Bernoulli's theorem, viscous fluids, streamline and turbulent flow. Poiseulle's law. Capillary tube flow, Reynold's number, Stokes law. Surface tension and surface energy, molecular interpretation of surface tension, pressure on a curved liquids surface, wetting.

Electrostatics : Coulomb's law in vaccum expressed in vector forms, calculation of E for simple distributions of charge at rest, dipole and quadrupole fields Work done on a charge in an electrostatic field expressed as a line integral, conservative nature of the electrostatic field. Electric potential ϕ , $E = -\nabla\phi$, torque on a dipole in a uniform electric field and its energy, flux of the electric field, Gauss's law and its application for finding E for symmetric charge distributions, Gaussian pillbox, fields at the surface of a conductor. Screening of E field by a conductor, capacitors, electrostatic field energy, force per unit area of the surface of a conductor in an electric field.

Electric Currents : Steady current, Current density J, non-steady currents and continuity equation, Kirchoff's law and analysis of multiloop circuits, rise and decay of current in LR and CR circuits, decay constants, transients in LCR circuits, AC circuits, Complex numbers and their applications in solving AC circuit problems, complex impedence and reactance, series and parallel resonance, Q factor, power consumed by an AC circuit, power factor.

Magnetostatics : Force on a moving charge, Lorentz force equation and definition of B, force on a straight conductor carrying current in a uniform magnetic field, torque on a current loop, magnetic dipole moment, Biot and Savart's law, calculation of H order in simple geometric situations, Ampere's law $\nabla \cdot B=0, \nabla \times B = \mu_0 j$, field due to a magnetic dipole.

Time Varying Fields : Electromagnetic induction, Faraday's law, electromotive force $e = -\oint E \cdot dr$, integral and differential forms of Faraday's law, mutual and self inductance, transformers, energy in a static magnetic field, Maxwell's displacement current, Maxwell's equations, electromagnetic field energy density.

Electromagnetic Waves : The wave equation satisfied by E and B, plane electromagnetic waves in vacuum, poynting's vector.

Kinetic theory of Matter : Real gas : vander Waals gas, equation of state, nature of Vander Waals forces, comparison with experimental P-V curves. The critical constants, gas and vapour, Joule expansion of ideal gas, and of a Vander Waals gas, Joule coefficient, estimates of J-T cooling.

Thermodynamics : Blackbody radiation: Pure temperature dependence, energy distribution in blackbody spectrum. Planck's quantum postulates, Planck's law, complete fit with experiment. Interpretation of behaviour of specific heats of gases at low temperature.

Kinetic Theory of Gases : Maxwellian distribution of speeds in an ideal gas: distribution of speeds and of velocities, distinction between mean, rms and most probable speed values.

Physical Optics : Interference of a light: The principle of superpositions, two-slit interference, coherence requirement for the sources, optical path retardation, lateral shift of fringes, Localized fringes: thin films, Michelson interferometer, Fresnel diffraction: Fresnel half-period zones, plates, straight edge, rectilinear propagation. Fraunhofer diffraction : Diffraction of a single slit, the intensity distribution, diffraction at a circular aperture and a circular disc. Diffraction gratings: Diffraction at N parallel slits, intensity distribution, plane diffraction grating, polarization of transverse waves, plane, circular and elliptically polarized light. Polarization by reflection and refraction. Double reflection and optical rotation: Refraction, in uniaxial crystals, its electromagnetic theory. Phase retardation plates, double image prism, rotation of plane of polarization, origin of optical rotation in liquids and in crystals.

Quantum Mechanics: Origin of the quantum theory: failure of classical physics to explain the phenomena such as blackbody spectrum, photoelectric effect, Ritz combination principle in spectra, stability of an atom, Planck's radiation law, Einstein's explanation of photoelectric effect, Bohr's quantization of angular momentum and its applications to hydrogen atom, limitations of Bohr's theory. Wave particle duality and uncertainty principle: de Broglie's hypothesis for matter waves, the concept of wave and group velocities, evidence for diffraction and interference of particles, experimental demonstration of matter waves. Consequence of de Broglie's concepts; quantization in hydrogen atom; energies of a particle in a box, wave packets, Heisenberg's uncertainty relation for p and x, its extension to energy and time. Consequence of the uncertainty relation: gamma ray microscope, diffraction at a slit, particle in a box, position of electron in a Bohr orbit. Quantum Mechanics: Schrodinger's equation. Postulatory basis of quantum mechanics, operators, expectation values, transition probabilities, applications to particle in a one dimensional box, harmonic oscillator, reflection at a step potential, transmission across a potential barrier.

Week spectra : continuous X-ray spectrum and its dependence on voltage, Characteristics X-rays. Moseley's law, Raman effect, Stokes and anti-Stokes lines, fission and fusion (concepts), energy production in stars by p-p and carbon cycles (concepts). Cyclotron.

Solid State Physics

X-ray diffraction, Bragg's law,

Magnetism : Atomic magnetic moment, magnetic susceptibility, Dia-Para-, and Ferromagnetism, Ferromagnetic domains, Hysteresis.

Band Structure : Energy bands, energy gap, metals, insulators, semiconductors.

Solid State Devices

Semiconductors : Intrinsic semiconductors, electrons and holes, Fermi level. Temperature dependence of electron and

hole concentrations. Doping: impurity states, n and p type semiconductors.

Semiconductor devices : p-n junction, majority and minority carriers, diode, Zener diode.

Electronics

Power supply : diode as a circuit element, load line concept, rectification, ripple factor, zener diode, voltage stabilization, IC voltage regulation, characteristics of a transistor in CB, CE and CC mode.

Field effect transistors : JFET volt-ampere curves, biasing JFET, RC coupled amplifier, gain frequency response, input and output impedance.

8.3.3 B.Sc PAPER – II (B. Sc.CHEMISTRY, LATERAL ENTRY)

Thermodynamics : Definition of thermodynamic terms, systems, surroundings etc. Types of systems, intensive and extensive properties, state and path functions and their differentials, thermodynamic processes, concept of heat and work. First law of thermodynamics, statement, definition of internal energy, enthalpy, heat capacity, heat capacity at constant volume, pressure and their relation, Joule's law, Joule-Thomson coefficient and inversion temperature, calculation of w, q, u, H, for the expansion of ideal gases under isothermal and adiabatic conditions for reversible processes.

Thermochemistry : standard state, standard enthalpy of formation, Hess's law of heat of summation and its application, heat of reaction at constant pressure, volume, enthalpy of neutralization, bond dissociation energy and its calculation from thermochemical data, temperature dependence of enthalpy. Kirchoff's equation.

Chemical equilibrium : equilibrium constant and free energy. Derivation of law of mass action. Le chatelier's principle.

Phase equilibrium: Statement and meaning of the terms - Phase, component and degree of freedom, derivation of Gibbs phase rule, phase equilibrium of one component system - water and sulphur system.

Electrochemistry-I : Electrical transport-conduction in metals and in electrolyte solution, specific conductance and equivalent conductance, measurement of equivalent conductance, variation of equivalent and specific conductance with dilution, migration of ions and Kohlrausch law, Arrhenius theory of electrolytic dissociation and its limitations, weak and strong electrolytes, Ostwald's dilution law, its uses and limitations. Application of conductivity measurements, determination of degree of dissociation, determination of K_a of acids, Determination of solubility product of a sparingly soluble salt, conductometric titration.

Electrochemistry-II : Types of reversible electrodes- gas metal ion, meta-metal ion, metal-insoluble salt-anion and redox electrodes. Electrode reactions, Nernst equation, derivation of cell EMF and single electrode potential, standard hydrogen electrodes-reference electrodes, standard electrode potentials, sign conventions, electrochemical series and its significant, EMF of a cell and its measurements. Computation of cell EMF,

concentration of cell with and without transport, liquid junction potential, definition of pH, and Pka, determination of pH using hydrogen electrode, buffers-mechanism of buffer action, Henderson & Hessel baltch equation. Hydrolysis of salts.

Atomic Structure : Idea to de Broglie matter waves, Heisenberg uncertainty principle, atomic orbitals, Schrodinger wave equation (Mathematical derivations excluded) significance of and 2, quantum numbers, shapes of s,p,d orbitals. Aufbau and Pauli exclusion principles, Hund's multiplicity rule. Electronic configurations of the elements, effective nuclear charge.

Periodic Properties : Atomic and ionic radii, ionization energy, electronegative-definition, methods of determination or evaluation, trends in periodic table and applications in predicting and explaining the chemical behaviour.

Chemical Bonding : Covalent Bond - valence bond theory and its limitations, directional characteristics of covalent bond, various types of hybridization and shapes of simple inorganic molecules and ions. Valence shell electron pair repulsion (VSEPR) theory to NH_3 , H_3O^+ , SF_4 , ClF_3 , ICl_2 and H_2O . MO theory, homonuclear and heteronuclear (CO and NO) diatomic molecules.

s-Block Elements : Comparative study, diagonal relationships, salient features of hydrides, solvation and complexation tendencies including their function in biosystems,

p-Block Elements : Comparative study (including diagonal relationship) of groups 13-17 elements, compounds like hydrides, oxides, oxyacids and halides of groups 13-16, hydrides of boron-diborane, borazine, borohydrides, fullerenes, carbides, fluorocarbons, silicates (structural principle), basic properties of halogens, interhalogen compounds.

Chemistry of Noble Gases : Chemical properties of the noble gases, chemistry of xenon, structure and bonding in xenon compounds.

Chemistry of Elements of First Transition Series

Characteristic properties of d-block elements.

Properties of the elements of the first transition series, their binary compounds and complexes illustrating relative stability of their oxidation states, coordination number and geometry.

Coordination Compounds : Werner's coordination theory and its experimental verification, effective atomic number concept, chelates, nomenclature of coordination compounds, isomerism in coordination compounds (4 and 6 only) valence bond theory of transition metal complexes.

Acids and Bases : Arrhenius, Bronsted-Lowry, Lewis concepts of acids and bases.

Structure, bonding and mechanism of Organic reactions : Inductive effect, resonance, steric effect, influence of these effects on acidity, basicity and dipolemoments, reactive intermediate- carbocations, carbanions, free-radicals and carbenes; formation, stability and structure, types and mechanism of organic reactions- SN_1 , SN_2 , SE_1 , SE_2 , E_1 , E_2 , AdE , AdN ,

Stereochemistry of Organic compounds: Concept of isomerism, types of isomerism, optical isomerism, elements of symmetry, molecular chirality, enantiomers, stereogenic center, optical activity, properties of enantiomers, chiral and achiral molecules with two stereogenic centers, diastereomers, threo-erythro diastereomers, meso compounds, relative and absolute configuration, sequence rules, D-L, R-S, systems of nomenclature, geometric isomerism, determination of configuration of geometric isomers, E-Z system of nomenclature, conformational isomerism, conformational analysis of ethane and n-butane, conformations of cyclohexanes, axial and equatorial bonds, conformation of monosubstituted cyclohexane derivatives, Newman projection, Sawhorse, Fischer and Flyingwedge formulae, difference between conformation and configurations.

8.3.4 B. Sc Paper I (B. Sc. Biology, Lateral Entry) BOTANY

Microbes : Viruses and Bacteria : General account of viruses and bacteria – structure, nutrition, reproduction and economic importance.

Diversity of seed plants : Characteristics of seed plants; evolution of the seed habit; seed plants with (angiosperms) and without (gymnosperms) fruits. Morphology of vegetative and reproductive parts; anatomy of root, stem and leaf; Reproduction and life cycle of Cycas, Pinus and Ephedra. Botanical nomenclature : Principles and rules; taxonomic ranks; type concept; principle of priority. Classification of angiosperms; salient features of the systems proposed by Bentham and Hooker and Engler and Prantle. Major contributions of cytology, phytochemistry and taximetrics to taxonomy. Diversity of flowering plants as illustrated by members of the families : Ranunculaceae, Brassicaceae, Malvaceae, Rutaceae, Fabaceae, Apaceae, Acanthaceae, Apocynaceae, Asclepiadaceae, Solanaceae, Lamiaceae, Chenopodiaceae, Euphorbiaceae, Liliaceae and Poaceae.

Development & reproduction in flowering plants : The basic body plan of a flowering plant – modular type of growth. The shoot systems : the shoot apical meristem and its histological organization; vascularisation of primary shoot in monocotyledons and dicotyledons; formation of internodes, branching pattern; monopodial and sympodial growth; cambium and its functions; formation of secondary xylem; a general account of wood structure in relation to conduction of water and minerals; characteristics of growth rings, sapwood and heart wood; secondary phloem – structure – function relationships; Leaf : origin, development, arrangement and diversity of size and shape; internal structure in relation to photosynthesis and water loss; adaptations to water stress; senescence and abscission. The root system : the root apical meristem; differentiation of primary and secondary tissues and their roles; structural modification for storage, respiration, reproduction and for interaction with microbes. Flower : a modified shoot; functions; structure of anther and pistil; the male and female gametophytes; types of pollination; pollen-pistil interaction, self incompatibility; double fertilization; formation of seed – endosperm and embryo; fruit development and maturation.

Cell Biology & Genetics : Structure and function of nucleus : Ultrastructure of nuclear membrane & nucleolus. Chromosome organization : Morphology; centromere and telomere; Chromosome alterations : deletions, duplications, translocations, inversions; Variations in chromosome number : aneuploidy, polyploidy; Sex chromosomes. DNA the genetic materials : DNA structure; replication; DNA- protein interaction; the nucleosome model; genetic code; satellite and repetitive DNA. Cell division : mitosis; meiosis. Genetic inheritance : Mendelism Linkage analysis; Allelic and non-allelic interactions. Gene expression : Structure of gene; transfer of genetic information; transcription, translation. Genetic variation : Mutations, spontaneous and induced; transposable genetic elements; DNA damage and repair. Extranuclear genome : Presence and function of mitochondrial and plastid DNA. Structure and function of other organelles : Golgi, ER, peroxisomes, vacuoles. The cell envelopes : Plasma membrane; functions; the cell wall.

Biochemistry : Basics of enzymology : Discovery and nomenclature; characteristics of enzymes; concept of holoenzyme, coenzyme and cofactors; regulation of enzyme activity; mechanism of enzyme action. Photosynthesis : Significance; historical aspects; photosynthetic pigments; action spectra and enhancement effects; Z-scheme; photophosphorylation; Calvin cycle; C4 pathway; CAM plants; photorespiration. Respiration : ATP – the biological energy currency; aerobic and anaerobic respiration; Krebs's cycle; electron transport mechanism (chemi-osmotic theory). Nitrogen and lipid metabolism : Biology of nitrogen fixation; importance of nitrate reductase and its regulation. Structure and function of lipids; fatty acids biosynthesis; β -oxidation ; saturated and unsaturated fatty acids; storage and mobilization of fatty acids. The concept of photoperiodism; physiology of flowering; florigen concept; Physiology of senescence, fruit ripening; Plant hormones – auxins, gibberellins, cytokinins, abscisic acid and ethylene: history of their discovery, biosynthesis and mechanism of action. Genetic engineering : Tools and techniques of recombinant DNA technology; cloning vectors; genomic and cDNA library; transposable elements; techniques of gene mapping and chromosome walking.

Biotechnology : Functional definition; basic aspects of plant tissue culture; cellular totipotency, differentiation and morphogenesis; biology of *Agrobacterium*; Vectors for gene delivery and marker genes; salient achievements in crop biotechnology.

Ecology : Plants and environment : Atmosphere (gaseous composition), water (properties of water cycle), light (global radiation, photosynthetically active radiation), temperature, soil (development, soil profiles, physico- chemical properties), and biota. Population ecology : Growth curves; ecotypes; ecads. Community ecology : Community characteristic, frequency, density, cover, life forms, biological spectrum; ecological succession. Ecosystems : Structure; abiotic and biotic components; food chain, food web, ecological pyramids, energy flow; biogeochemical cycles of carbon, nitrogen and phosphorus. Biogeographical regions of India : Vegetation types of India: Forests and grasslands.

Economic Botany : Food plants : Rice, wheat, maize, potato, sugarcane. Fibers : Cotton and jute. Vegetable oils : Groundnut, mustard and coconut. General account of sources of firewood, timber and bamboos : Spices : General account. Medicinal plants : General account. Beverages : Tea and coffee. Rubber.

ZOOLOGY

Animal Diversity-I : Principles of classification – salient features and classification upto orders in non-chordates. Structural organization in different classes of non-chordates. Protozoa – Type study (paramecium), parasitic protozoans. Porifera and coelenterata – Type study (Sycon and Aurelia), Coral and coral reefs. Platyhelminthes and Nematelminthes– Type study (Fasciola, Taenia) and parasitic adaptations. Annelida – Type study (Earthworm). Mollusca – Type study (Pila). Arthropoda – Crustacean larval forms, Type study (Prawn).

Cell Biology : Cell Theory. Structure of prokaryotic and eukaryotic cells. Cellular organelles. Role of mitochondria in cellular energy transactions. Membrane transport of small molecules. Cell signalling. Cytoskeleton. Cell-division cycle. The mechanics of cell division (Mitosis and Meiosis). Cell junctions, cell adhesion. Biology of cancer.

Animal Diversity-II : Origin and general characters of chordates. Protochordates – Classification upto orders, structural organization of Amphioxus, Balanoglossus and Herdmania. Agnatha – Classification upto orders. Fishes – Classification upto orders, Type study (Scoliodon). Amphibians – Origin of land vertebrates, classification upto orders, parental care. Reptiles – Classification upto orders, poisonous snakes of India. Bird migration, principles of bird flight, origin of birds. Mammals – Origin, classification and general characters. Comparative anatomy of systems (e.g. kidney, heart).

Physiology : Aim and Scope of Physiology – Cell Physiology, mammalian physiology, comparative physiology and applied physiology. Chemical foundations of physiology – solutions, osmotic pressure, diffusion, PK and pH, buffers. Biomolecules – Carbohydrates, lipids, proteins, nucleic acids. Blood – Composition and function of blood; Blood groups; Blood coagulation;. Heart – Structure; origin, conduction and regulation of heart beat;. Respiration – Mechanism and control of breathing. Digestion and absorption of dietary components. Structure and function of kidney, physiology of urine formation. Physiology of contraction of skeletal and smooth muscle. Physiology of nervous conduction. Endocrine glands (Pituitary, Thyroid). Nature of enzymes.

Vertebrate Endocrinology and Reproductive Biology : Classification of hormones. Hormonal regulation of physiological processes – basic concepts. Hormones and human health – production of hormones as pharmaceuticals. Reproductive cycles in vertebrates. Fertilization in vivo and in vitro. Embryo transfer technology. Sex determination and sex differentiation. Endocrine disorders – brief description.

Evolution & Behaviour : Concept of Evolution. Origin of life on Earth. Origin of prokaryotic and eukaryotic cells. Variations, mutations, recombination, Isolation, Natural selection. Concept

of species and speciation. Mimicry. Population genetics, Genetic drift, Hardy-Weinberg Law. Evolution of Man. Introduction to Ethology – animal sense organs. Patterns of behaviour. Reproductive behavioural patterns. Social organization in animals, social interactions among individuals. Learning behaviour in animals. Drugs and behaviour.

8.4. SYLLABI FOR LATERAL ENTRY (PHARMACY)

8.4.1. PAPER - I (Pharmacy)

The course content is same as the syllabus of Part-I of Diploma in Pharmacy as per the Education Regulation - 1991 of Pharmacy Council of India.

8.4.2. PAPER - II

Its syllabus is the same as the 3rd year Diploma courses in Engineering & Technology in the relevant discipline (except for Pharmacy) for the session 2005-2007, in the subjects published under the authority of State Council for Technical Education and Vocational Training, Orissa.

8.4.3. PAPER-II (Pharmacy)

The course content is same as the syllabus of Part-II of Diploma in Pharmacy as per the Education Regulation-1991 of Pharmacy Council of India.

8.5 SYLLABUS FOR MCA STREAM

8.5.1 MATHEMATICS :

Logic : Statement, Negation, Implication, Converse, Contra positives, Conjunction, Disjunction, Truth Table.

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.

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 application.

Permutation and combinations and their simple applications, Mathematical induction, Binomial Theorem.

Determinants upto third order, Minors and Cofactors, Properties of determinants. Matrices upto third order, Types of Matrices. Algebra of matrices, Adjoint and Inverse of a matrix. Application of determinants and matrices to the solution of linear equations (in three unknowns)

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

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, directrix, eccentricity and latus rectum in all cases).

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 a plane, Distance of a point from a line and plane. Equations of a sphere-general equation.

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

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.

Integral calculus : Standard methods of integration (substitution, by parts, by partial fractions etc.). Definite integrals and properties of Definite Integrals, Areas under plane curves, Differential Equations (only simple cases).

- (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 with constant acceleration.

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

8.5.2 COMPUTER AWARENESS :

Introduction to Computer : Brief history of Computers, Components of a Computer, Computer related general knowledge, Application of Computers, Classification of Computers, Simple DOS Commands.

Computer Arithmetic : Number System with general base, Number base conversion, Elementary arithmetic operation.

BASIC Language Programming : Flow Charts, Algorithms, Constants, Variables, Arithmetic and logical expression, Elementary BASIC statements, Writing simple programs (using sequence, repetition and control structures), Subscripted Variables, Matrix operations Function and Subroutines, Concept of Files.

Note : The Question will cover the entire course and will be multiple choice type similar to the ones given in Section 7.5.

8.6 Syllabus For MBA Stream :

Questions will be meant to measure a person's general aptitude in the following aspects :

Section	No. of Questions
Verbal reasoning	40
Analytical reasoning	40
General Knowledge	10
Comprehension	20
Computer and Business fundamentals	10

8.6.1 Sample Questions :

A sample of questions is being provided for making the candidates aware of the style and difficulty level of the questions. The topics covered here in sample are not true indication of the syllabus and the test may contain questions from all related areas under different sections. The samples are given primarily to help the candidates understand the pattern of the test.

Section A : Verbal Reasoning

- Identify the odd word
 - Sweep
 - wipe
 - Scrub
 - Stain
- The place where bricks are baked
 - Foundry
 - Mint
 - Cemetery
 - Kiln
- My watch is 6 minutes fast and the train which should have arrived at my station at 11.30 am was 5 minutes late. What time was it by my watch when the train arrived?
 - 11.41 am
 - 11.40 am
 - 11.38 am
 - Don't Know

Section B : Analytical Reasoning

- Which of the following ratio is greatest ?
 - 7:15
 - 15:23
 - 17:25
 - 21:29
- If 6 men and 8 boys can do a piece of work in 10 days while 26 men and 48 boys can do the same in 2 days, the time taken by 15 men and 20 boys in doing the same type of work will be:
 - 4 days
 - 5 days
 - 6 days
 - 7 days
- When the integer n is divided by 6, the remainder is 3. Which of the following is not a multiple of 6 ?
 - $n-3$
 - $n+3$
 - $2n$
 - $3n$

Section C : General Knowledge

- The term 'steeplechase' is associated with
 - Horse racing
 - Boxing
 - Polo
 - Rowing

- The first indigenously built missile boat is named as:
 - INS Mani
 - INS Shilpi
 - INS Bibhuti
 - INS Vikrant
- Central Salt and Marine Chemicals Research Institute is located at
 - Ahmedabad
 - Bhavanagar
 - Gandhi nagar
 - Panaji

Section D : Comprehension

Speech is a great blessing but it can also be great curse, for which it helps us to make our intentions **and desires known to our fellows, it can also, if we use it carelessly, make our attitude completely misunderstood. A slip of the tongue, the use of an unusual word, or of an ambiguous word and so on, may create an enemy where we had hope to win a friend. Again different classes of people use different vocabularies, and the ordinary speech of an educated man may strike an uneducated listener as pompous. Unwittingly we may use a word which bears a different meaning to our listener from what it does to men of our own class. Thus speech is not a gift to use lightly without thought, but one which demands careful handling. Only a fool will express himself a like to all kinds and conditions of men.**

- Speech can be a curse, because it can
 - reveal our intentions
 - lead to carelessness
 - hurt others
 - create misunderstanding
- A 'slip of tongue' means something said
 - unintentionally
 - wrongly by chance
 - without giving proper thought
 - to hurt another person
- The best way to win a friend is to avoid _____ in speech
 - ambiguity
 - verbosity
 - promposity
 - irony

Section E : Computer & Business Fundamentals

- The widely used code in data communication is
 - 8 bit ASCII
 - 7 bit ASCII
 - EBCDIC
 - None of these
- Point of Sales terminal refers to
 - Terminal associated with MICR
 - Smart Terminal
 - Terminal associated with OCR
 - None of the above
- How many Stock Exchanges are there in India ?
 - 21
 - 22
 - 26
 - None of the above

APPENDIX - I

Office of the

Miscellaneous Certificate Case No. of 2008.

PERMANENT RESIDENT CERTIFICATE FOR JEE-2009, Orissa

This is to certify that Shri / Smt / Miss

Son / daughter / wife of Shri is a

native of the district of in the State of

Orissa and he / she belongs to P.S. Tahasil

The certificate is being granted only for the purpose of JEE-2009, Orissa.

Full Signature of the Applicant

Signature of Revenue Officer

Date :

Round Seal of the Office

Designation (with Seal of Office)

- Note:**
1. Revenue Officer means the Chief Officer in charge of Revenue Administrative in the District, Sub-Division of Tahasil and includes an Additional District Magistrate and Additional Tahasildar.
 2. No part of the form should be mutilated in any manner. In case of mutilation the certificate is liable to be rejected.

APPENDIX - II

(Clause 2.1 of Information Brochure of JEE - 2009, Orissa)

Certificate of employment of candidate's parent / spouse

Employer - Government of Orissa / Government of India / Government of India Undertakings and Government of Orissa Undertakings located in Orissa at the time of application (Strike off which ever is not applicable).

This shall not be considered as a proof of permanent resident certificate for candidates opting for admission under any reserved category.

1. Name and Address of Organisation / Office in which employed
2. Name and Designation of the certifying authority (Employer / Head of Office / Organisation)
3. a) Name in full and designation of employee to whom certificate is being issued.
b) Whether in permanent employment
c) Present Place and State of posting
d) Permanent address as per service records
4. Name of the candidate in full
5. JEE-09, Orissa Rank
6. Relationship of the employee with the candidate
7. Details of the Institution from which the candidate has passed / appeared at 10+2 /+3 level
8. Particulars of employment of the employee
Place Date of Joining Period of Service

Signature of the Employer /
Head of Office / Organisation

Full Signature of Employee

Date.....

Designation with Seal of Office

- Note :** In case the employee is on deputation either from Government of Orissa or India, the above certificate should be signed by the original employer.

APPENDIX – III
SC/ST CERTIFICATE BY BIRTH FOR JEE - 2009, Orissa

This is to certify that Sri / Smt / Miss
Son / daughter / wife of Shri of
village / Town P.S Tahasil
in the district of of the State of Orissa belongs to the
Caste / Tribe which is recognized as Scheduled Caste / Tribe under Constitution (Scheduled Castes) order 1950 / the Constitution
(Scheduled Tribes) Order, 1950 as amended by the Scheduled Castes and Scheduled Tribes (Amendment) Orders Act 1976.
The Place of birth of Sri / Smt / Miss..... is
village / town P.S Tahasil
in the district of of the State of Orissa.

Full Signature of the Applicant

Signature

Round Seal of Office

Date

Designation with Seal of Office

Note : This certificate should be issued by the Tahsildar of the place of residence of parent in Orissa. No part of the form should be mutilated in any manner. In case of mutilation the certificate is liable to be rejected.

APPENDIX - IV

(Clause 2.1.5 of Information Brochure of JEE - 2009, Orissa)
Certificate of Ex-Servicemen of Candidate's Parent / Spouse

1. Name of the Candidate
2. Full name of employee / person
3. Permanent address as per service records
4. Whether serving / permanently disabled / killed in war / hostilities
5. Rank in Defence Service
6. Full name of the Candidate
7. Relationship of the employee / person with the Candidate
8. Present place of posting including details of unit (in case of serving personnel)
9. Last place of posting including details of unit
(in case of Ex-Serviceman)
10. Awards received in any
11. Priority (to be filled by Rajya Sainik Board)

Full Signature of Station Commander /
Officer Commanding /
Officer-in-charge / Secretary
Zilla / Rajya Sainik Board

Full Signature of

Candidate's Parent Date Designation with Seal of Office

APPENDIX-V

BOND BY THE CANDIDATE AT THE TIME OF TAKING ADMISSION INTO UNDER GRADUATE COURSE (MBBS) FOR STATE QUOTA IN GOVERNMENT MEDICAL COLLEGES.

KNOW ALL MEN BY THESE PRESENTS THAT weson/daughter/wife of.....aged about.....years resident ofin the districtat present admittedin.....Medical college (Here in after called the Principal Obligor) and Shri/Smt. aged about years Daughter/son/wife of resident of in the District of at present employed as in the Office/Department of.....and Shri/Smtdaughter/son/wife of aged about years resident of in the district of at present employed asin the Office/Department of.....(hereinafter called "the surity") do hereby jointly and severally bind ourselves and our respective heirs, executors and administrators and legal representative to pay to the Governor of orissa, his successors and assigns (hereinafter called "the Government") on demand the amount of stipend and other expenses, as the case may be, which amount for the purpose of these presents shall be taken to be the sum of Rs. 5.00 lakhs (Rupees five lakhs) only that the Government will incur on account of the principal obligor having been placed on undergraduate (MBBS) Course and admissible under Rules 1992/80 of in service candidates or under any other rules for the time being in force on Govt. stipend and other expenses or if payment is made in a country other than India the equivalent of the same amount in the currency of that country converted at the official rate of exchange between that country and India.

WHEREAS the above principal obligor is placed on admission into MBBS course and admissible by the Government; AND WHEREAS for better protection of the health care of the Government in the State the Principal obligor has agreed to execute this bond with such condition as hereunder written; AND WHEREAS the said surety has agreed to execute this bond as surety on behalf of the above bourden (Principal obligor) Shri/Smt.....

NOW THE CONDITION OF THE ABOVE WRITTEN OBLIGATION is that in the event of the Principal obligor Shri/Smt.....failing to render minimum period of 2 (two) years of service on successful learning completion of MBBS graduate course and registration thereof thereby resigning/ duty due to any reason Shri/ Smt.....

fails to resume duty or resign from service, an amount of Rs. 5,00 lakhs (@ 1.00 lakh per annum) shall be recovered from the candidates for violation of terms and conditions of the bond by not joining/leaving the service before completion of 2 years owing to seeking an employment acceptance of other employment somewhere other than under Govt. of orissa.

Appointment under the State Government after successful complition of MBBS course shall mean and include regular employment through OPSC, ad hoc appointment, contractual appointment. once an appointment (any one of the above type) is given, the candidate shall have to join within 30 days from the receipt of the appointment order. If he/she does not join within the stipulated time except in some abnormal circumstances beyond his/her control, he/she will be required to pay Rs. 5.00 lakhs.

AND UPON in principal obligor Shri/Smt. and or Shri/Smt. and or Shri/Smt.....the surity(ies) as aforesaid making such refund, the above written obligation shall be void and of no effect, otherwise it shall be and remain in full force and virtue and it is agreed and declared by the principal obligor and the surety that in the event of default without prejudice to other remedies that the Government may adopt, the Government shall be entitled to recover the aforesaid amount from the Principal obligor and the sureties jointly and severally in the form of public demand under the Orissa Public Demand Recovery Act, 1962.

Save and except permanent disability, under no circumstances, I can forgo my promotion and posting to any rank or special status with a view to avoiding my place of posting. I shall also be liable to refund the money that spent by the State for my study.

PROVIDED that the liability of the surety hereunder shall not be impaired or discharged by reason of time being granted by the Government or by any forbearance, Act or omission on the part of the Government or any person authorized by them (wherever with or without the consent or knowledge of the surety nor shall it be necessary for the Government to sue the said principal obligor before suing the above bounden surety Shri/Smt.....and Shri/Smt.....or any of them for the amount due hereunder.

IN WITNESS to the written bound and to all terms and conditions herein before contained we have signed hereunder this.....day of200.....

Witness 1.
In Presence of Witness:
1.
2.

Signed and delivered by the Principal Obligor
Signed and delivered by the surety above named

Signed and delivered by the surety above named

ACCEPTED

For on behalf of The GOVERNOR OF ORISSA
(Principal, Medical college)