(PDF Brochure)

COMPETENCE IN SOFTWARE TECHNOLOGY EXAMINATION

CSTE

January 21, 2007

C-DAC Mumbai and Electronics City, Bangalore
(formerly National Centre for Software Technology)

Date of the Examination: Sunday, January 21, 2007

Timings of the Examination

Level	Papers (Codes)	Timing
E	General Aptitude (GA) **(compulsory)** Computer Concepts (CC) **(compulsory)** C Programming (CP) **(Optional)**	14.30 - 15.30 15.35 - 16.35 16.45 - 17.45
D	Data Structures and Algorithms (DS) General Aptitude (GA) Computer Organisation and Operating Systems (CO) C Programming (CP)	12.15 - 13.15 14.30 - 15.30 15.35 - 16.35 16.45 - 17.45
G	Optional Papers (OP) Data Structures and Algorithms (DS) General Aptitude (GA) Computer Organisation and Operating Systems (CO)	10.00 - 12.00 12.15 - 13.15 14.30 - 15.30 15.35 - 16.35

NOTE:

All candidates must be seated in the examination hall 30 minutes before the commencement of the examination. No candidate is allowed to enter the examination hall 30 minutes after the start of the examination.

Candidates may obtain their CST ID number, using their Registration number, from www.cdacmumbai.in/education/cst, click on candidate login, type in your registration no., type in your password, the computer will give you the status of your CST-2007 application form (examples of messages popped up "Your application is under process", "your CST-id is _____"). The Password provided by the candidate and CST ID will be used by him/her while applying for the C-DAC, Mumbai courses.

Examination centres

Following are the cities where examination will be held: **Allahabad, Bangalore, Chennai, Coimbatore, Delhi, Goa, Hyderabad, Kolkata, Mumbai, Nagpur, Pune, Thane, Thiruvananthpuram and Visakhapatnam**. In some cities there may be more than one centre. **Allotment of centres will be made on a first-come-first-served basis subject to availability of seats.**

A complete list of candidates, alphabetically sorted centre-wise, will be displayed at www.cdacmumbai.in/education/cst/ on January 17, 2007. Candidates can check their centre allotments and CST exam roll numbers here.

C-DAC Mumbai will take special care to send hall tickets to candidates in time. However, if any candidate does not receive it by January 17, 2007 they may check for their seat allotments in the list displayed at www.cdacmumbai.in/education/cst/. If the candidate is still not able to spot his/her CST-id, name and centre allotted then he/she can contact C-DAC Juhu, Mumbai by fax, email, telegram or on phone. **If a candidate who has paid the fees does not receive the hall ticket or an intimation by email before the day of the examination, he/she may turn up at any of the examination centres listed below and contact the Control room, 60 minutes before the start of the examination. Refer to checklist of items in section** 1.5.7. Checklist of items to carry for examination

Examination Venues

City	Centre	Telephone
Allahabad	Motilal Nehru National Institute of Technology. Allahabad-211 004	0532-2445103
Bangalore	Mount Carmel College, 58, Palace Road, Bangalore-560 052	080-22261759
Chennai	Stella Maris College, 17, Cathedral Road, Chennai-600 086	044-28111951,28111987
Coimbatore	PSG College of Technology, Peelamedu, Coimbatore-641 004	0422-2572177, 2572477
Delhi	Gyan Mandir Public School, 'E' Block, Naraina Vihar, New Delhi-110 028	011-25793745
Goa	Mary Immaculate Girls High School, Rua de Curem, Panaji, Goa-403 001	0832-2421932
Hyderabad	Urdu Hall, Himayat Nagar, Hyderabad-500 029	040-23222919
Kolkata	St. Xavier's College, 30 Park Street, Kolkata-700 016	033-22877278, 22877274
Mumbai	Indian Education Society's, Raja Shivaji Vidyalaya (formerly King George High School), Hindu Colony, Dadar (E), Mumbai-400 014	022-24141285, 24144281
Nagpur	Visvesvaraya National Institute of Technology, Nagpur-440 011	0712-2223969
Pune	Garware College of Commerce, Karve road, Pune-411 004	020-25440605
Thane	Holy Cross Convent High School, K-Villa, Thane (West)-400 601	022-25345958
Thiruvananthapuram	University College, Palayam, Trivandrum-695 001	0471-2475830
Visakhapatnam	Andhra University College of Engineering, Visakhapatnam, Andhra Pradesh-530 003	0891-2754153, 2754586, 2754871

Relevant Dates for the CST-2007 Examination

Last Date for Receipt of CST application Form A-1	Tue, January 9, 2007
Date of Examination	Sun, January 21, 2007
Last Date for Receipt of CST application Form A-2	Fri, March 2, 2007

Announcement of results	Wed, March 7, 2007
Announcement of Merit awards	Fri, March 9, 2007
Score reports to reach all candidates by	Fri, April 6, 2007

List of candidates eligible for recruitment	Mon, March 12, 2007
Last date for receipt of application form for recruitment from 'D' and 'G' level candidates	Fri, March 30, 2007
Shortlist of candidates for the interview	Mon, April 16, 2007
Interviews to be held during (tentative)	3rd week of May 2007

Start date for receipt of applications for admissions to PGDST and FPGDST courses based on CST score	Mon, April 9, 2007
Last date for seeking admission to PGDST and FPGDST courses based on CST score	Fri, May 11, 2007
PGDST/FPGDST admissions finalised for candidates based on CST score	Fri, May 18, 2007
Date of posting of refund cheques	Thu, May 31, 2007
Open Admissions process begins on	Fri, June 8, 2007

Commencement of PGDST Course	Sat /Sun, August 4/5, 2007
Commencement of FPGDST Course	Mon, August 6, 2007

List of useful URLs:

Description	**URL**
C-DAC Mumbai home page	http://www.cdacmumbai.in
C-DAC, Electronics City, Bangalore home page	http://www.ncb.ernet.in
CST-2007	http://www.cdacmumbai.in/education/cst
About PGDST	http://www.cdacmumbai.in/education/pgdst
About FPGDST	http://www.cdacmumbai.in/education/fpgdst
About Professional Education courses	http://www.cdacmumbai.in/education/advcourses

Legend PGDST – Post-Graduate Diploma in Software Technology
FPGDST – Full-time Post-Graduate Diploma in Advanced Software Technology

CONTENTS

1. The Competence in Software Technology (CST) Examination

C-DAC, Mumbai and Electronics City, Bangalore, formerly known as National Centre for Software Technology (NCST), operate from Mumbai, Navi Mumbai and Bangalore. The Competence in Software Technology (CST) examination was launched by the erstwhile National Centre for Software Technology, now C-DAC, in September 1994.

The main objectives of CST are:

- To provide standardised scores to candidates which they can use while applying for employment in the IT industry
- To provide support to IT industry in identifying suitable candidates for recruitment
- To shortlist candidates for interviews, for employment at C-DAC, Mumbai, Electronics City Bangalore and other centres.
- To select students for C-DAC Mumbai and Electronics City, Bangalore's post-graduate diploma courses i.e. PGDST and FPGDST.
- To provide standardized scores to candidates seeking admission to post-graduate courses of other educational institutions

1.1. C-DAC : A Brief Profile

C-DAC is a scientific society of the Department of Information Technology, Ministry of Communications and Information Technology, Government of India. C-DAC has its centres at Mumbai, Noida, Kolkata, Delhi, Bangalore, Hyderabad, Chennai, Mohali, Thiruvananthapuram with the headquarters at Pune.

C-DAC, Mumbai, Navi Mumbai and Electronics City, Bangalore centres function as Centres of excellence in the area of software technology and related computer science, providing high-level technical consultancy services to other organisations and offering high-quality continuing education programmes at their centres. Some details of the research and development work and other activities of C-DAC Mumbai and Electronics City, Bangalore are given in Chapter 4. **As part of its educational activities in the area of continuing education, the following post-graduate diploma courses will be offered in the year 2007-2008:**

a) Post-Graduate Diploma in Software Technology (PGDST) – **1 year**
b) Full-time Post-Graduate Diploma in Advanced Software Technology (FPGDST) – **1 year**
c) Course on Networks and Information Security - **11 weeks**

1.2. Opportunities arising out of the CST Examination

The CST examination tests a candidate for conceptual knowledge and practical skills. Currently the different levels of the CST examination are used for different purposes as listed below (section numbers are given in brackets).

a) **Selection test for seeking admission** to C-DAC's diploma level educational programmes viz., 1) PGDST 2) FPGDST 3) Networks & Information Security *(ref 2.1)*
b) **Selection test for seeking admission to C-DAC ACTS-Pune's PG Diploma in Advanced Computing (DAC) –** for getting waiver from DAC-CET test *(ref 2.2.)*
c) **Qualifying test for recruitment** at C-DAC centres in **Mumbai, Bangalore, and other cities,** subject to staff requirement and fulfilment of other conditions (*ref 2.5*)
d) **Qualifying test for admission** to post-graduate degrees of institutes listed below:
   MCA course of Goa University (*ref 2.7.1*)
   MCA of Bangalore University at Alliance Business Academy (*ref 2.7.2*)
   Virginia Tech (USA)–SPJIMR Post-Graduate Diploma in System Management-Master's in Information Technology (PGDSM-MIT) of S.P. Jain Institute of Management & Research (*ref 2.7.3*)
   M.Sc (IT) of Goa University at Smt. Parvatibai Chowgule Cultural Foundation's College of Arts & Science (*ref 2.7.4*).
e) **The Standardised scores provided in the CST exam** have the recognition and acceptance of the IT industry for employment purpose (*ref 2.6*).
f) **Selection of ME, MTech, M.Sc. and MCA students** for dissertation projects at C-DAC, Mumbai and Electronics City, Bangalore (*ref 2.4*).
g) **Selection of PGDST students for employment** at C-DAC, Mumbai and Electronics City, Bangalore as Technical Associates, Sr. Technical Associates and Project Associates (*ref 2.3.1, 2.3.2, 2.3.3)*
h) **Selection of FPGDST students for employment** at C-DAC, Mumbai and Electronics City, Bangalore as Senior Technical Associates and Project Associates (*ref 2.3.2 and 2.3.3)*
i) **Identification of significant achievers** for encouragement through Cash Awards (*ref 1.12*).

1.3. Levels and papers of the Examination

There are three levels of examination namely, E, D, and G consisting of papers as listed below:

Level	Papers (Code)	Applicability / Utility
E	General Aptitude (GA) **(Compulsory)** Computer Concepts (CC) **(Compulsory)** C Programming (CP) **(Optional)**	• Admission to PGDST, FPGDST • Recruitment of Software Trainees (for those who appear for the optional C Programming Paper) • Admission to MCA of Goa University and ABA, Bangalore • Admission to SPJIMR's PGDSM-MIT Course (with optional C Programming Paper)
D	Data Structures and Algorithms (DS) General Aptitude (GA) Computer Organisation and Operating Systems (CO) C Programming (CP)	• Admission to PGDST, FPGDST • Admission to MCA of Goa University and ABA, Bangalore • Admission to M.Sc. (IT) at Parvatibai Chowgule College, Goa
G	Optional Papers (OP) – Any two out of • Computer Networks • Database Management • Object Oriented Programming and C++, • Software Engineering, • Java Technology, • Web Technology, • Power Electronics (to be introduced in CST-2008) • Embedded Technology (to be introduced in CST-2008) Data Structures and Algorithms (DS) General Aptitude (GA) Computer Organisation and Operating Systems (CO)	• Recruitment (Staff Scientist/ Assistant Manager/Project Engineer/Visiting Engineer) at C-DAC • Project Fellowship at C-DAC Mumbai • Admission to PGDST, FPGDST and course on Networks and Information Security

Note : The 'I' level examination is being discontinued from CST-2007. The 'I' level is now being integrated with the E level by adding an optional paper on "C Programming" in the E level.

Appendix D, E and F provides the syllabus and sample questions for above papers.

NOTE:

C-DAC is in the process of revamping the courses and CST examination. As a result, many of the existing patterns are likely to undergo major changes. A number of modifications are being envisaged and these may result in dropping/discontinuing of existing features and practices (in the forthcoming CST exams).

1.4. Eligibility Criteria

1.4.1. E Level

The candidate must meet any **one** of the following eligibility criteria:

a) A Bachelor's degree in any subject.
b) A diploma in Engineering with a minimum of 3 years' study after the 10th standard or 2 years' after the 12th standard. The diploma should be recognised by a state government or the central government as an engineering diploma.
c) Other qualifications recognised by a state government or the central government as equivalent to a Bachelor's degree. In such cases, the candidate should produce proof of Government recognition.

1.4.2. D Level

The candidate must meet **one** of the following eligibility criteria:

a) B.Sc. in Computer Science or any equivalent Bachelor's degree in the Computer/IT areas.
b) Bachelor's degree in any subject and at least 6 months' part-time training in software technology, comprising a minimum of 15 hours of work per week, covering basic computer concepts and computer programming in the C language.
c) Bachelor's degree in any subject with at least 3 months' full-time training in software technology, comprising a minimum of 30 hours of work per week, covering basic computer concepts and computer programming in the C language.
d) Graduates in any subject who have undertaken courses on computers, equivalent to the training in software technology requirement as mentioned in (c) above, as a part of their degree requirements. Candidates are required to produce attested mark lists as a proof that they have done at least a one-semester computer course.
e) Candidates who have completed a 3-year, full-time Diploma course in Computer Science or Computer Engineering after the 10th standard. This diploma should be recognised by a state government or the central government as an engineering diploma.

1.4.3. G Level

The candidate must meet **ONE** of the following eligibility criteria:

a) Four year Bachelor's OR Higher Degree in Engineering in RELEVANT STREAM*
b) MCA, M.Sc. (Comp Sci.), M.Sc. (IT), MCS, MCM or M.Tech in RELEVANT STREAM*
c) PGDST or FPGDST or APGDST from C-DAC, Mumbai or Electronics City, Bangalore.
d) Any degree equivalent to a BE in Computer Science or IT

***RELEVANT STREAM = Computer Science / Computer Engineering / Information Technology / Electronics / Telecommunication / Electrical / Instrumentation**

Note: Any software course of less than 1 year of full-time study or any software course done in parallel with undergraduate studies will not be considered as equivalent qualification for appearing for the G level.

1.4.4. Final year students and pre-final year students

Candidates who have appeared for the final examination for a degree or equivalent diploma mentioned in the eligibility criteria above, but have not received their results, and candidates who are in the final year of their degree or diploma are permitted to take the examination. They must, of course, satisfy other eligibility criteria.

MCA, M.Sc. and ME/M.Tech (Computer Science or Information Technology) students in their pre-final year are eligible to apply for D level in order to be considered for **Project Fellowships** at C-DAC, Mumbai and Electronics City, Bangalore during June 2007-June 2008. Please see *Section 2.4* for more details.

1.4.5. Admissibility of Qualifications

C-DAC, Mumbai reserves the right to decide on the admissibility of any diploma or degree as qualification for E/D/G levels. C-DAC's decision on this matter shall be final and binding on all applicants.

1.5. Details of Examination

The CST examination is conducted at different cities all over India in January each year. It is a written examination based on multiple-choice questions with evaluation subject to negative marking.

1.5.1. General Information about the tests

All candidates must be seated in the examination hall half an hour before the commencement of the examination. Candidates should bring with them their hall ticket, 2B pencils, a sharpener and a good quality eraser.

a) The duration of each paper will be 1 hour.
b) All questions will be of multiple-choice type with 4 alternative answers.
c) Each correct answer will carry 3 marks.
d) Each wrong answer will carry 1 negative mark.
e) If more than one choice is marked, the answer will be treated as wrong.
f) Unanswered questions will not carry any marks.
g) All questions are to be answered by choosing the most suitable of the given alternatives. If the candidate feels that the exact answer is not given in the alternatives, he/she should choose the best available answer.
h) It is likely that candidates may not find enough time to answer all questions. Since all questions are not of the same level of complexity, it is advisable to attempt the easier questions first. Failure to do so is the most common cause of poor performance.
i) Use of calculators, slide rules, log tables or any other arithmetic aids is not permitted. Books, notes, etc. are also not allowed.
j) No clarifications will be given during the examination.
k) Use of pagers and cell phones is strictly prohibited inside the examination hall. These should be in the power-off mode.
l) This brochure **is not allowed** in the examination hall.

1.5.2. Negative Marking

Blind guess work does not help in CST examination. Partial knowledge of the answer to a question increases the chances of being right. Guessing after careful elimination of possible wrong answers is likely to pay dividends. Suppose you know that one of the four alternatives in a question is wrong, but you are unable to identify the correct answer; it may still be beneficial for you to choose one of the remaining three answers. Negative marking does **not** penalise intelligent guesswork.

1.5.3. Understanding Your Score

The CST score report provides the Absolute, Percentile, Standardised and Overall Percentile score of a candidate.

a) Absolute marks obtained by a candidate for each paper will be computed using the following formula:

   Absolute Marks = 3 ***times*** (Number of Correct Answers) ***minus*** (Number of Wrong Answers)

   The above formula adds three marks for each question that is correctly answered and subtracts one mark for every wrong answer. **Unattempted questions carry no marks.**

b) The Percentile score is defined as the percentage of the candidates that have appeared in the same paper as the candidate and have secured marks less than that obtained by the candidate.

c) The Standardised Score of a candidate in a paper is computed using the marks secured by the candidate (M), the average (μ) and the standard deviation (σ) of marks obtained by all candidates who appeared for the same paper.

   Standardised Score = $50 + \frac{(M - \mu)}{\sigma} * 16.67$

   The Standardised Score maps a candidate's Absolute marks into a range, which is normally 0 to 100. Those who do exceptionally well may obtain a Standardised Score of above 100. However, this will be truncated to 100. The Standardised Score being relative and not absolute, provides fair comparison of candidates' performance even if they take the examination in different years.

d) The Overall Percentile score is defined as the percentage of the candidates who have appeared for the same papers as the candidate and have secured total marks (for applicable papers) less than that obtained by the candidate.

1.5.4. Validity of the Scores

Scores are valid for 2 years from the date of examination for the purpose of consideration for admission to our courses. **For employment, only current year CST exam scores will be applicable**.

The validity of CST-2007 scores in subsequent years for admission to PGDSM-MIT, MCA, M.Sc. (IT) shall be as per the policy specified by the respective institutions (*ref 2.7.1 to 2.7.4*).

1.5.5. Improvement of CST Scores

Candidates who have appeared for the CST examination earlier and want to improve their scores can do so by taking the **entire examination again**.

The Standardised Score (not the Absolute score) is used for comparison. If the Standardised Score of the previous examination is higher than the Standardised Score of the current examination, the Standardised Score of the previous examination will be considered. An asterisk (*) will be printed against the Standardised Score to indicate that it has been carried forward from a previous examination.

A new Overall Percentile will be computed by adding the Standardised scores considered for each subject, and comparing the total Standardised Score of the candidate with that of others taking the current examination.

Candidates seeking improvement must fill in their previous CST ID number (only CST-2005 and CST-2006) in the current year's CST application form A-1, without which earlier scores will not be considered for the score report.

1.5.6. Code of Conduct for the Examination

Candidates are expected to maintain a high level of conduct and integrity in all procedures relating to the CST examination. If a candidate is found to be using unfair practices during the examination, C-DAC reserves the right not to evaluate the candidate's answer sheets and/or ban the candidate from taking the CST examination for a specified period. Other actions as appropriate within the law may also be taken to punish any unfair practices.

1.5.7. Checklist of items to carry for examination

A candidate is required to carry the following items/documents on the day of the examination:

a) Hall ticket issued by C-DAC Mumbai
b) Photo-Identity card issued by the Central or a State Government department (such as driving license, passport, PAN Card, Voters ID Card, credit card with photo etc.)
c) 2B or HB Pencils
d) Sharpener and good quality eraser

If a candidate has not received the hall ticket, he/she must carry:-

a) Photo-Identity proof issued by a Government agency (such as driving license, passport, PAN card, election or voters' ID card, credit card etc.)
b) Proof of CST exam fee remitted to C-DAC, Mumbai.
c) 3 copies of his/her recent passport-size photograph with the name written on the back of the photograph.
d) A duplicate hall-ticket will be issued after the above conditions are satisfactorily met.

Candidates are expected to maintain a high level of conduct and integrity in all procedures relating to the CST examination. If a candidate is found to be using unfair practices during the examination, C-DAC reserves the right not to evaluate the candidate's answer sheets and/or ban the candidate from taking the CST examination for a specified period. Other actions as appropriate within the law may also be taken to punish any unfair practice.

1.6. Application Forms

Form A-1 should be filled by those candidates who wish to appear for the CST-2007 examination for the first time or for those seeking improvement of earlier CST scores by taking the entire examination again.

Form A-2 should be filled by candidates who do not wish to appear for the current CST-2007 examination but would like to be considered for courses based ONLY on their earlier CST scores (only CST-2005 and CST-2006 scores will be considered for this purpose). This option may not be available for next year.

These application forms are also available on our website as PDF downloadable files. Please read the instructions in Appendix H carefully before filling the forms.

1.6.1. Online submission of application form

Candidates are advised to apply online. Use manual form-filling and submission only when you do not have internet/Web access.

C-DAC locations at Juhu-Mumbai, Kharghar-Navi Mumbai and Electronics City-Bangalore provide the web kiosk facility to apply online. Addresses of these locations are given in Appendix B.

The application form is available on the website at http://www.cdacmumbai.in/education/cst/ . Candidates must fill up all the field in the form **online**. On submission of the form online, a Registration number will be assigned to the applicant by the system. The applicant must write the level of examination they are appearing for, his/her name and the registration number on the reverse of the Demand Draft. The Demand draft along with three passport size photographs should be sent so as to reach C-DAC Mumbai before the last date. **Candidates must write the name on the backside of each copy of the photograph.**

1.6.2. Manual submission of application form

Candidates who cannot apply online through our website, can fill in the A-1 form manually (either from the CST-2007 brochure or the PDF version downloaded from the site) and submit it to C-DAC, Juhu, Mumbai with 3 photographs and requisite fee D.D. as specified in the A-1 form in this booklet.

1.6.3. Submission of completed forms

The last date of receiving all application forms is January 9, 2007.

You must submit the completed form (online or manual) before the last date. Applications received after the last date will not be processed. If a postal application reaches C-DAC Mumbai after the last date, it is liable for rejection and the same shall be returned to the candidate.

We suggest that you do not wait till the last date for submission. The examination centre you select may not be available if you apply late. The examination centre is allotted on a first-come-first-served basis. In cities where there are more than one examination centre, allotment of centres will be at the discretion of C-DAC Mumbai.

The disclosures of candidates are assumed to be true and correct. Only at the time of interview or course admission, the verification will be done with his/her original certificates/testimonies. If the disclosures made by the candidate or any documents submitted in support of his/her claim are found to be false/incorrect at any stage, the candidate shall stand disqualified.

The application forms, complete in all aspects should be sent to C-DAC Mumbai (through registered post, speed-post or courier) at the address below:

The CST-2007 Examination Desk
Centre for Development of Advanced Computing (C-DAC)
(formerly National Centre for Software Technology) (NCST)
Gulmohar Cross Road No. 9, Juhu, Mumbai-400 049

Candidates or their representatives may submit the application form in person, on all working days (Monday to Saturday), at C-DAC, Juhu, Mumbai between 9.30 a.m. and 4.30 p.m.

1.7. Fees for Examination

The examination fees for different levels are as follows:

On-line Application & Registration	
Level	**Examination fees**
E	Rs. 500 for 2 compulsory papers Rs. 100 additional for taking optional paper on C Programming
D	Rs.700/-
G	Rs.800/-

Manual Application	
Level	**Examination fees**
E	Rs. 550 for 2 compulsory papers Rs. 100 additional for taking optional paper on C Programming
D	Rs.750/-
G	Rs.850/-

Those applying for the course admissions only on the basis of previous CST scores (CST-2005 and CST-2006 scores) (i.e. *not appearing for CST-2007)* must submit **application form A-2**, given in this brochure. A processing charge of Rs. 300/- must be paid with form A-2.

Candidates who have taken an earlier CST examination and wish to take CST-2007, must apply through A-1 form and take all papers of required level.

Fees must be paid through a Demand Draft crossed account payee drawn in favour of "C-DAC, Mumbai", **payable at Mumbai**. The fees should be paid in full and part payments will not be accepted.

Examination fees are non-refundable and cannot be adjusted against any subsequent CST examinations or utilised for any other purpose.

1.8. Hall Tickets

On acceptance of duly completed application form, each candidate will be issued a receipt for payment and a hall ticket. These documents will be sent by registered post or speed-post, to the address specified by the candidate. The hall ticket will indicate the examination centre allotted to the candidate, his/her CST ID number and names of papers for which he/she is appearing.

Candidates are advised to check the hall ticket immediately and inform C-DAC, Juhu, Mumbai about discrepancies, if any. It is compulsory to produce the hall ticket at the time of examination. The invigilator will collect it during the examination. The candidate must retain the fee receipt.

In case a candidate does not receive the receipt for payment and hall ticket for the examination before the day of the examination, he/she should: - a) check for the centre allotment and the respective CST-id in the list displayed at www.cdacmumbai.in/education/cst/, b) check their own email for any communication from C-DAC Mumbai, c) If the candidate is still not able to spot his/her CST-id, name and centre allotted, then he/she can contact C-DAC Juhu, Mumbai by fax, email, telegram or on phone

He/she go to the examination centre in the city specified by the candidate and contact the Examination Director in the Control room, at least 1 hour prior to the commencement of the examination.

The candidate should carry proof of identity issued by Central or State Government agency (such as driving license, passport, PAN card, election or voters' ID card, credit card with photo etc.), proof of payment of examination fees, and 3 identical copies of his/her recent passport-size photograph with the name written at the back of the photos.

1.9. Announcement of Results

The CST results will be declared at all C-DAC, Mumbai offices, and on our website at **http://www.cdacmumbai.in/education/cst/** on March 7, 2007. All candidates will receive their score reports by speed-post or registered post. The relevant dates are given in the brochure (*ref page ii*). **If any candidate does not receive his/her score report by the April 6, 2007, he/she should contact C-DAC, Juhu, Mumbai.**

Candidates seeking admission to C-DAC, Juhu, Mumbai's and Electronics City, Bangalore's courses are advised not to wait for their score reports, but refer to C-DAC Mumbai website soon after the announcement of results.

1.10. 1.10. Score Reports

All candidates who appear for the CST examination will be given score reports indicating their performance in the examination. The score report will indicate the Absolute marks, Percentile and Standardised Score that a candidate has obtained in each paper as well as the candidate's Overall Percentile. Absolute marks of less than 10 in a paper will not be specified in the score report, but will be indicated as "Below 10". Similarly, a Percentile or Standardised Score of less than 30 will be indicated as "Below 30". The Standardised Score of over 100 will be truncated to 100.

1.11. Re-evaluation

Candidates may apply for re-evaluation if they are not satisfied with the results. Those seeking re-evaluation must submit a written request along with their score report and a Demand Draft of Rs. 300/- drawn in favour of "C-DAC, Mumbai" payable at Mumbai by May 4, 2007. If there is any change in the marks, the revised score report will be sent to the candidate within 10 days of receipt of such a request. In such a case, the re-evaluation fee will be refunded to the candidate.

1.12. Awards of Merit

C-DAC recognises significant achievers among those who appear for the CST examination by awarding a certificate of merit and a cash award to the top 1% candidates in each level.

Level	Cash award
E	Rs. 1000/-
D	Rs. 1500/-
G	Rs. 2000/-

Awards will be given only to those who appear for all papers for a level in the CST-2007 examination and obtain 60 percentile or more in each paper. Scores obtained in the CST-2007 examination only will be considered for award. Scores carried forward from previous CST examinations will not be considered for these awards.

1.13. CST Brochure

The price of this brochure is Rs.100/-. Those requesting for a copy of the brochure by post (i.e. speed-post) should send a crossed, account payee Demand Draft for Rs.150/- drawn in favour of "C-DAC, Mumbai" **payable at Mumbai** to C-DAC (formerly NCST), Gulmohar Cross Road No. 9, Juhu, Mumbai-400 049.

Copies of this brochure can also be obtained from any of the C-DAC offices (addresses given in Appendix B) or from locations listed in Appendix C. The brochure is also available online at **http://www.cdacmumbai.in/education/cst/**.

2. Opportunities arising out of CST Examination

2.1. Educational Opportunities at C-DAC, Mumbai and Electronic City, Bangalore

This section provides a brief overview of our various diploma programmes and specifies their eligibility criteria. More details of these courses are given in Chapter 5.

2.1.1. Post-Graduate Diploma in Software Technology (PGDST)

The Post-Graduate Diploma in Software Technology is an intensive first-level course in computing which provides a comprehensive introduction to software technology. This course is designed for:

- those working in industry who would like to get acquainted with computing, or switch to the area of computing
- students who have earned their degrees and would like to specialize in the area of software technology

The course provides a strong foundation for work in the area of software technology. Students who complete the course would be able to contribute significantly to development work in this area within any IT organization.

The PGDST course uses the part-time education format, assuming that many of the students may be employed. Classes, tests and evaluations are usually scheduled on Saturdays and/or Sundays. Course material is given to each participant in advance, and students are expected to put in at least 15 hours of self-study and hands-on practice per week as per their convenience.

Candidates who have taken any level of the CST examination may apply for PGDST admission. Selection is on the basis of performance in the GA and CC papers for E level or GA and CO papers for candidates appearing for D / G levels.

Candidates need to secure 50 percentile or more in GA, and at least 50 percentile in the GA + CC combined (for E level) or GA + CO combined (for D / G levels) in order to be eligible for admission to the course.

When considering applications from all levels for admission to PGDST, comparison across levels is done using the following formula to compute total Standardised scores (SS denotes Standardised Score):

SS of GA paper + SS of CC paper (for E)
SS of GA paper + 1.2 * SS of CO paper (for D / G)

2.1.2. Full-time Post-Graduate Diploma in Advanced Software Technology (FPGDST)

FPGDST is a full-time course. The classes, tests and evaluations are scheduled throughout the week. FPGDST students have almost double the study/work load as compared to PGDST. Students are expected to put in at least 30 hours of self-study and hands-on practice per week.

Candidates from any level of the CST examination may apply for FPGDST admission. Selection will be made on the basis of performance in the GA and CC papers for E level and in the GA and CO papers for D / G levels.

Candidates need to secure 50 percentile or more in GA, and at least 50 percentile in the GA + CC combined (for E level) or GA + CO combined (for D / G levels) in order to be eligible for admission to the course.

When considering applications from all levels for admission to FPGDST, comparison across levels is done using the following formula to compute total Standardised scores (SS denotes Standardised Score):

SS of GA paper + SS of CC paper (for E)
SS of GA paper + 1.2 * SS of CO paper (for D / G)

2.1.3. Course on Networks and Information Security

Overview:
With a rapidly growing IT industry, serious threats can come to computer systems. This course aims to train IT professionals in the fundamental aspects of computer networks and information security. Packed with theoretical concepts as well as hands-on practicals, this course aims to gear-up a regular IT professional to understand one's environment and plan techniques to secure it.

We conducted a course on *Network and System Security* last year. More information on this course can be found at: http://www.cdacmumbai.in/~nesys/

Course Duration: 11 weeks

The theory and practical sessions will be conducted on weekends.

Contents:

The course contents are not fixed some modules such as kernel security, penetration testing may be newly introduced, some modules may be dropped and some other modules may be given indepth focus.

The tentative course (Network and System Security) contents are given below:

1. Networking and Operating System Fundamentals
2. Perimeter security: IDS, Firewalls, ACLs
3. Incident handling, steganography, forensics, threat/vulnerability assessment
4. Secure programming practices
5. Cryptography
6. Security standards, cyber laws and ethics

Apart from addressing the theoretical aspects of the above mentioned concepts, the main thrust is on practicals and hands-on activities.

Prerequisites:

(a) Basic understanding of computer networks (as covered in the PGDST/FPGDST CNET module)
(b) An understanding of Operating System concepts. Familiarity with Unix / Linux is necessary
(c) Programming skills in C/C++/Java etc.

Eligibility:

(a) Candidates with a valid G-Level score

(b) APGDST course students are also eligible to register for this program, and can consider this program to be equivalent to ONE module of APGDST

(c) BE in Computer Science/IT, M.Sc. or MCA in computer science are also eligible

(1st preference will be given to candidates with valid G-Level CST score)

2.2. Selection test for seeking admission to C-DAC ACTS-Pune's PG Diploma in Advanced Computing (DAC)

a) Waiver for appearing for the CET

Candidates with a valid score of Graduate Aptitude Test in Engineering (GATE) conducted by IIT(s) and / or **Competence in Software Technology (CST) conducted by C-DAC, Mumbai, the erstwhile National Centre for Software Technology (NCST)** are eligible for a waiver in appearing for the CET. The GATE score for Computer Science stream and/or CST "E" level score along with the optional paper on C Programming, pertaining to the last 2 examinations (i.e. CST-2005 and CST-2006 examinations) will only be considered for this waiver. Candidates who wish to apply under the CET waiver scheme need to (are recommended to) fill in the application form online at http://acts.cdac.in and submit the non-refundable registration fees of Rs. 350/- by a D.D. drawn in favour of **'C-DAC, ACTS' payable at Pune**.

Candidates who wish to apply under the CET waiver scheme by filling in the manual (handwritten) application form need to submit a D.D. of Rs. 500/- towards registration fees for the CET.

Candidates with a valid GATE/CST score can either appear for CET or avail the CET waiver facility. Candidate must not apply for both i.e. for appearing in CET and for the CET waiver. This will be treated as double registration and he/she will be disqualified for the course and the registration will be treated as cancelled automatically. No separate communication shall be made regarding the disqualification.

b) Course Structure

The Diploma in Advanced Computing (DAC) is a 24-week, full-time, post-graduate course comprising of 10 compulsory modules and a project.

There are up to 120 seats available at each centre offering the course.

c) Eligibilty for DAC

BE/ME or equivalent (AMIE, AIETE), B.Sc. (Engg.), MCA (after B. Sc.), MCS (after B.Sc.), M.Sc. (Electronics), M.Sc. (Instrumentation), MCM (with B.Sc.), MBA (Systems), BCS, B.Sc. (IT), B.Sc (Comp. Sc.), BCA, BIS (Bachelor of Internet Sciences), Bachelor of E-Commerce.

d) Computing Background

Sound knowledge of computing fundamentals and fundamentals of programming is essential. The applicant must also be conversant with basics of VB programming, Object-Oriented Programming concepts and must be proficient in C programming.

For further information on DAC, please refer to their website at: http://acts.cdac.in

2.3. Opportunity for Post-Graduate/Diploma Students of C-DAC

2.3.1. Technical Associateship

C-DAC, Mumbai and Electronics City, Bangalore offers Technical Associateship to a few of the PGDST students for a period of one year. These are purely temporary appointments. Technical Associates are expected to work full-time at C-DAC, Mumbai or at Electronics City, Bangalore. They will be paid a monthly compensation of Rs.9000/- and will also get refund of 50% of tuition fee on satisfactory completion of their course work. Subject to satisfactory performance in every module taken, the associateship will be continued during the duration of the course. If a Technical Associate fails in any particular module during the associateship, his/her appointment is liable for termination, at the discretion of the Centre.

Students of PGDST who are admitted on the basis of CST scores, or through the open category are eligible to apply. A notice inviting applications from students shall be put up on the notice boards within two months of the commencement of the course. Short-listed candidates will be called for an interview.

2.3.2. Senior Technical Associateship

C-DAC, Mumbai and Electronics City, Bangalore offers Senior Technical Associate positions to a few of the FPGDST/PGDST students who have completed the course. These are purely temporary appointments. Senior Technical Associates are expected to work full-time at C-DAC, Juhu/Kharghar, Mumbai / Navi Mumbai or at Electronics City, Bangalore. Senior Technical Associates would be paid a monthly compensation of Rs.13,000/-.

These positions will be offered initially for a period of one year and are extendable for a maximum period of two years. A notice inviting applications from students shall be put up on the notice boards. Short-listed candidates will be called for an interview.

2.3.3. Project Associateship

Those students who have successfully completed and passed the FPGDST/PGDST course will be offered Project Associateship initially for a period of one year and extendable for a further period based on the project exigencies of the Centre, but limited to not more than a total of three years. These are purely temporary appointments. Project Associates would be paid a monthly compensation of Rs. 16000/-. Short-listed candidates will be called for an interview.

2.4. Project Fellowships (PF)

Students from the field of Computer Science, Computer Engineering or Information Technology studying for MCA, ME, M.Sc. or MTech will be considered for doing their dissertation projects at C-DAC, Juhu, Mumbai, C-DAC, Kharghar, Navi Mumbai or at Electronics City, Bangalore. A few project fellowships will be awarded, based on performance in the D/G level of the CST examination as well as individual academic records. The project fellowships will cover dissertation project work lasting a maximum of 12 months. Selected students will be paid a stipend of Rs. 4000/- per month. Only those students who are formally required to complete their project during the period June 2007 to June 2008 will be considered for the project fellowships. Note that the project must be a part of the respective degree requirements and candidates will be required to produce a letter from their college to this effect at the time of joining. The candidates must tick appropriate field in A-1 form to be considered for Project Fellowships.

2.5. Recruitment for C-DAC (2007)

About C-DAC

Centre for Development of Advanced Computing (C-DAC) represents a unique facet to the nation's policies and initiatives in Information Technology. As an institution for high end Research and Development (R&D), C-DAC has been at the forefront of the Information Technology (IT) revolution, constantly building capacities in emerging technologies, innovating and leveraging its expertise, calibre and skill sets to develop and deploy IT solutions for different sectors of the economy, as per the mandate of its parent, the Department of Information Technology, Ministry of Communications and Information Technology, Government of India and other stakeholders including funding agencies, collaborators, users and the market-place.

The decade and a half of core competence garnered through its R&D activities has enabled C-DAC to consolidate its brand equity as a leader for innovative Information Technology (IT) and electronic technologies, products and services. The technologies that C-DAC has addressed include High Performance Computing (HPC) including Scientific Modelling & Visualization; Multilingual Computing, Applied Artificial Intelligence and Speech Processing; Software including Open Source Software (Linux), Multimedia, Graphics and Database Technologies; Strategic and Power Electronics and Agrielectronics; Real Time Systems, Embedded Systems and VLSI Design; Health Informatics; Geomantic; Cyber Security; Digital / Broadband and Wireless Networks; e-Governance and ICT for Digital Divide; and Education and Training including e-Learning.

C-DAC, over the years, has diversified its activities, transferring the expertise it acquired and technologies it developed to industry, end-users and the market-place to further develop and deploy advanced Information Technology (IT) based solutions in key sectors of the economy like Science and Technology, Healthcare, Power, Steel, Defence, Telecom, Agriculture, Industrial Controls, Broadcasting, Education and e-Governance. These initiatives have played a major role in cataloging economic activity and enhancing efficiencies through the use of ICT products / solutions in these economic and social sectors. Simultaneously, C-DAC has continued to add new feathers to its cap with the coming together of other R&D Labs, into several related areas of technology like power electronics, agrielectronics and wireless that hold great benefit to the nation and citizens.

C-DAC offers employment opportunities through the current CST examination at its various centres in Mumbai, Navi Mumbai, Bangalore, and other cities as per recruitment procedures. **It is expected that all put together, C-DAC may recruit 200 to 300 Technical Staff in various positions/grades/scales through this examination.**

The recruitment takes place in the following grades for technical staff:

S. No.	Grade	Pay-scale
1	Staff Scientists	8000-275-13500
2	Assistant Managers	8000-275-13500
3	Project Engineers	Consolidated salary of Rs. 14000/- to Rs. 20000/-
4	Visiting System/Software Engineers	Consolidated salary of Rs. 14000/- to Rs. 20000/-
5	Software Trainees	Consolidated salary of Rs. 9000/-

Depending on availability of vacancies, requirements and the performance of the candidates in the G level examination, C-DAC may invite applicants for recruitment. Short-listing of candidates will be based on the merit list of the relevant level of CST scores. **Those applicants who are desirous of being considered for recruitment should necessarily fill in column no 13 in A-1 form. Multiple choices are permissible. Those who do not exercise this option of filling column no 13 in A-1 application form will not be considered for any recruitment with C-DAC.** A shortlist of candidates will be available on our website within a week after declaration of CST examination results *(refer page ii for dates).* The Short listed candidates will be called to appear for interviews through appropriate "Call Letters".

There is a provision to pay second-class (ordinary) return train fare to those called for interviews. Applicants, who are working in Government, Semi-Government or Autonomous bodies (including Government Aided Organizations and Public Sector Undertakings), are required to produce a no-objection certificate at the time of the interview. **They can, however, appear for the CST examination without the NOC certificate.**

2.5.1. Staff Scientist (SS) & Assistant Manager (AM)

a) Must have valid G level score of CST-2007.

b) Must have First Class in B.E. /B. Tech./MCA/ or equivalent in RELEVANT DISCIPLINE*****.

OR

Must have First Class in Post-graduation in Engineering/Technology in RELEVANT DISCIPLINE*****.

OR

Must have First Class in Post-graduate degree in RELEVANT DISCIPLINE*****.

***RELEVANT DISCIPLINE= IT / Computer Science / Electronics / Telecommunication / Electrical / Instrumentation**

c) Should not be older than 30 years (relaxation as per Govt. of India orders shall apply).

The candidates' starting basic pay will be fixed taking into consideration their qualifications and their prior experience. Candidates will be eligible for other benefits such as:

- Dearness Allowance (DA),
- Dearness Pay (DP),
- City Compensatory Allowance (CCA),
- Transport Allowance (TA)
- House Rent Allowance (HRA) (if not provided accommodation).

The minimum gross starting salary of a Staff Scientist is about Rs. 2.5 lakhs per annum. Other perquisites include Leave Travel Concession (LTC), medical reimbursement, provident fund contribution, gratuity and general insurance.

The initial appointment will be either against a regular vacancy available at the centre or on contract basis against project vacancies covering an initial period of 3 to 5 years. C-DAC follows the reservation policy for SC/ST/OBC candidates as per Government of India rules.

2.5.2. Project Engineers (PE) and Visiting System/Software Engineers

a) Must have valid G level score of CST-2007.

b) Must have First Class in B.E. /B. Tech./MCA/ or equivalent in RELEVANT DISCIPLINE*****.

OR

Must have First Class in Post-graduation in Engineering/Technology in RELEVANT DISCIPLINE*****.

OR

Must have First Class in Post-graduate degree in RELEVANT DISCIPLINE*****.

OR

Engineering Degree in any stream **/** graduation in RELEVANT DISCIPLINE***** with additional qualification of FPGDST/APGDST/PGDST of C-DAC (formerly NCST).

***RELEVANT DISCIPLINE= IT / Computer Science / Electronics / Telecommunication / Electrical / Instrumentation**

c) Should have completed all requirements for the qualifying degree before August 1, 2007.

d) Should not be older than 30 years (the age limit may be relaxed in case of relevant work experience, at the discretion of C-DAC, Mumbai).

Project Engineers are paid a consolidated salary and no other allowances except medical reimbursement. They will be paid consolidated salary as follows:

1. Rs. 18000/- to 20000/- p.m. will be paid to Project Engineers, Visiting System/Software Engineers with basic qualification – First class BE / B. Tech / M. Sc (RELEVANT DISCIPLINE*) / MCA.

2. Rs. 16000/- p.m. will be paid to Project Engineers, Visiting System/Software Engineers with Engineering Degree in any stream or graduation in RELEVANT DISCIPLINE* with additional qualification of FPGDST / APGDST / of C-DAC (formerly NCST).

3. Rs. 14000/- p.m. will be paid to Project Engineers, Visiting System/Software Engineers with graduation in RELEVANT DISCIPLINE* with additional qualification of PGDST of C-DAC (formerly NCST).

The consolidated salary will be reduced by Rs. 1000/- if accommodation is provided by C-DAC, Mumbai or at Electronics City, Bangalore. They will also be charged a nominal service charge per month, at the rates applicable. Project Engineers, Visiting System/Software Engineers positions are contractual positions, offered initially for a period of three years, extendable annually on the basis of satisfactory performance.

2.5.3. Software Trainee (ST) at C-DAC centres in Mumbai and Bangalore

a) Must have valid E Level score (with C Programming (CP) paper) of CST-2007
b) Must have B.Tech / B.E. / BCA / BCS / BSc. degree or 3 yr. Diploma in Computers/Electronics/any related field of Engineering and must have taken at least one Mathematics paper at the diploma/degree level **(those with higher or other qualifications are not eligible)**
c) Should have completed all requirements for the qualifying degree before August 1, 2007.
d) Should not be older than 27 years (the age limit may be relaxed in case of relevant work experience, at the discretion of C-DAC, Mumbai and Electronics City, Bangalore).

Software Trainee positions carry a fixed honorarium and **do not carry** any allowances except medical reimbursement. Candidates will be paid an honorarium of Rs. 9000/- per month (Rs. 8000/- if accommodation is provided) or more based on their educational qualification and academic performance. Those who are provided accommodation by C-DAC, Mumbai and Electronics City, Bangalore will also be charged a nominal service charge per month, at the rates in force.

Software Trainees are required to complete the PGDST (one-year course) programme conducted by C-DAC, Juhu, Mumbai and Electronics City, Bangalore. They are not required to pay fees for these courses. However, they are required to sign a bond for Rs.30,000/- when they join, undertaking to work for at least 2 years after completion of training. Candidates selected as Software Trainees will qualify for the award of the PGDST Diploma if they complete requirements for the same.

On satisfactory completion of the PGDST, and satisfactory work during the period, they will be given an increment of Rs.1000/-. The Software Trainee positions are contractual positions. These positions will be offered initially for a period of one year, extendable annually on the basis of satisfactory work for a maximum period of three years.

2.5.4. Conditions for final-year students

Based on the requirements of the Centre, final year students awaiting results in the year 2007 and with a valid G level CST-2007 score, may be considered for the post of **Project Engineer** on a consolidated salary.

1. On selection, such candidates shall be offered an appointment for the post of Project Engineer and on successful completion of the qualifying degree they may be considered for the post of Staff Scientist **subject to availability of posts.**

2. Documentary evidence to be produced :-

   a. Proof of having taken all the examinations for the qualifying degree must be produced before joining the Centre.

   b. Proof of the qualifying degree must be produced on or before December 31, 2007. If a candidate is unable to do so, he/she will have to discontinue from the job.

2.6. Opportunities for Employment in the IT Industry

The CST examination is also aimed at helping IT industry identify potential candidates for recruitment. The bulk of the IT industry need is for candidates with good basic education, relevant training and some experience in the computer field. Candidates who do well in the G-level examination are in considerable demand. The IT industry, at times, also recruits graduates who have no prior training in software technology or experience. They are provided with on-the-job training and then assigned to projects. Industry needs to identify candidates who have the potential for computer-related training. The E Level examination is aimed at helping companies identify such candidates. Companies also use CST Score Reports to select candidates who are technically good and call these candidates directly for interviews for job. The interview in such cases focuses on other important aspects such as career plans, motivation, choice of posting, etc.

2.7. Educational Opportunities at other Institutions

Several institutions use CST examination as entrance exam for admitting candidates to their courses. The details are given below on the basis of the information provided by the respective institutions.

2.7.1. Admissions to MCA of Goa University

Goa University will be admitting candidates to its Master of Computer Applications (MCA) programme for the academic year 2007-2008 based on performance in the paper General Aptitude of E-level / D-level of CST examination.

Eligibility Criteria

- A score of 50 percentile or more in the General Aptitude paper of the E-Level / D-level CST examination. The CST examination should have been taken within 29 months of the last date announced by the University for receipt of application forms.
- Graduate in any discipline securing at least 55% marks at the first-degree examination (50% in case of SC and OBC candidates).
- Candidates must have taken mathematics as one of the subjects at HSSC (10+2) level or at a higher level (documentary evidence is essential).

Candidates who have appeared for a degree examination and are awaiting results are also eligible to apply. In case such candidates are selected and their results are not available at the time of admission, these candidates will be given provisional admission.

Availability of Seats

A total of 30 seats are available for enrolment to the MCA programme, distributed as follows:

- 24 seats are reserved for candidates graduating with first degree from colleges affiliated to Goa University, distributed into General category, OBC and SC/ST as per reservation policy of Government of Goa.
- 6 seats are open to candidates graduating with first degree from Universities outside Goa.

If there are insufficient applicants in any of the above category, vacancies will be open to those from other categories.

Contact Details

The Coordinator
Admissions 2007-2008
Department of Computer Science & Technology
Goa University, Taleigao Plateau
Goa-403 206

Phone : (0832) 2456139 (direct)
(0832) 2451345 to 48, 2451375 ext. 357
Fax : (0832) 2451184, 2452889
Email : dcst@unigoa.ac.in
Website : www.unigoa.ac.in

Admission Procedure:

Admission process for the academic year 2007-2008 will start in the month of April 2007. Interested candidates need to apply in the prescribed application form for being considered for admission to the MCA programme. **No separate admission notice will appear in the newspaper inviting the applications.** The prospectus along with the application form giving the details of the course will be available from 4th April, 2007 to 17th May, 2007 and can be obtained in person from State Bank of India, Goa University Extension counter, located on the Campus by paying Rs. 300/- or by writing to the Coordinator, Admissions 2007-2008 along with a Demand Draft of Rs. 350/- drawn in favour of the "Registrar, Goa University", payable at any bank at Panaji, Goa.

The envelope containing the request for prospectus and application form should be superscribed "Admission to MCA". **Last date for receiving completed application forms is 17th May 2007.**

All the admission related information will be hosted on the Goa University website. This website will be

continuously updated to reflect the admission status of the MCA programme. The application form will also be available at the website and may be downloaded and used. However, the downloaded application form should be accompanied by a Demand Draft of Rs. 350/- drawn in favour of the "Registrar, Goa University", payable at any bank at Panaji, Goa. The completed application form should be sent to the Coordinator at the department address. Downloaded application forms will not be accepted without the Demand Draft.

2.7.2. Admissions to MCA of Bangalore University at Alliance Business Academy

Alliance Business Academy (Approved by AICTE) will be admitting candidates to its Master of Computer Applications (MCA) program for the academic year 2007-2008 based on the performance in the General Aptitude and Computer Concepts papers of the E–Level of the CST-2007 examination conducted by C-DAC, Mumbai and Electronics City, Bangalore. This course is an ISO 9001-2000 certified course.

Eligibility Criteria
Students seeking admission to the MCA program should have passed Bachelor's degree examination of any recognized education body in any discipline, and should have secured at least an aggregate of 50% in all subjects including languages (45% for SC/ST) with Mathematics / Statistics / Computer Applications / Computer Programming / Electronics as a subject at PUC level or equivalent HSC (XII Standard) or at degree level, are eligible. The candidate must also qualify in an All India Entrance Test (if announced by the Government).

Candidates who have appeared for a degree examination and are awaiting results are also eligible to apply. In such cases, candidates who are selected will be given provisional admission.

Availability of Seats:
The total intake for the course at ABA is 60. Of these, 50% is the Government quota as per the present Government policy, which is subject to change.

Contact Details

Manager - Admissions
Alliance Business Academy
19th Cross, 7th Main
BTM 2nd Stage, N.S. Palya
Bangalore-560076

Phone : (080) 26681444 / 0324
Fax : (080) 26680051
E-mail : alliance@bgl.vsnl.net.in
Website : www.alliancebschool.org

Admission Procedure

- Clearing the E-Level of CST examination
- Apply in the prescribed application form to Alliance Business Academy.
- Appear for the Admission Selection Process - Conceptual and Aptitude Test; Presentation and Personal Interview.
- Selected candidates will have to submit the necessary documents and pay the fees within the stipulated time.

2.7.3. Admissions to Virginia Tech (USA)–SPJIMR's PGDSM-MIT Course

The Centre for Information Technology of Bharatiya Vidya Bhavan's S.P. Jain Institute of Management & Research, Mumbai offers the course Post-Graduate Diploma in System Management - Master's in Information Technology (PGDSM-MIT) jointly with Virginia Polytechnic Institute and State University, USA during the academic year 2007-2009. The program is customized to address the needs of the IT Industry in Asia. This is a unique 2-year program that offers high class US education in Information Technology Management in India**.**

Eligibility

- Good continuous academic record (distinction / high 1st class in tenth, twelfth and degree)
- High value system & good communication/corporate personality
- High percentile in CAT/GMAT/XAT
- High percentile in CDAC – E level (with C Programming (CP) paper) for non-IT functional executives
- Experience

  Category A
  - Non-IT (Functional) professionals -1 to 3 years
  - IT Engineers - 0 to 1.5 year

Category B
- Non IT-Engineers Freshers

Availability of Seats
The total intake for the course is 120.

Contact Details
Prof. Aditi Divatia/Ms. Dipali Manjrekar
Admissions 2007–2008
S.P. Jain Institute of Management & Research
Munshi Nagar, Dadabhai Road,
Andheri (West), Mumbai – 400 058

Phone : (022) 2625 4013 (D)
(022) 2623 7454/2401 (B)
Fax : (022) 2623 7042
E-mail : pgdsm-mit@spjimr.ernet.in
Website: www.spjimr.org

Admission Procedure
The following steps are involved in the admission process:
- Online application in a prescribed form
- Entrance Exam (CDAC-E Level (with C Programming (CP) paper) / CAT / XAT / GMAT)
- Interview and Group Discussion
- Final Selection and Admission Letter
- Acceptance of admission offer and payment of fees

Important Dates
Last date for submitting Completed Application forms: November 30, 2006

Short-Listed candidates will be intimated by SPJIMR for Group Discussion & Personal Interview scheduled in January 2007.
Please refer to our website www.spjimr.org

2.7.4. Admissions to M.Sc. (IT) of Goa University at Smt. Parvatibai Chowgule College

The Post-Graduate Department of Computer Science, Smt. Parvatibai Chowgule Cultural Foundation's College of Arts & Science, Margao, Goa has initiated the M.Sc. (Information Technology) programme from August 2003. The admission to this course for the academic year 2007-2008 will be based on the performance in D-level of CST examination.

Eligibility Criteria
- B.Sc. (Computer science) or B.C. A.
- Must have obtained minimum 50 percentile in the General Aptitude paper in the D level examination conducted by C-DAC (formerly NCST), Mumbai.
- Admission is based on the merit list having average score in the remaining three papers (namely, Computer programming in C, Computer Organisation and Operating systems, Data structures and Algorithms) at the D level examination conducted by C-DAC (formerly NCST), Mumbai. The score reports of the D level examination are valid for 29 months from the date of examination.

Availability of Seats
- The intake capacity for the course is 20 seats.

Contact Details
The Principal,
Smt. Parvatibai Chowgule Cultural
Foundation's College of Arts and Science,
Margao, Goa–403601.

Phone :(0832)-2759504
Email : principal@chowgulecollege.ac.in
Website: www.chowgulecollege.ac.in

Admission Procedure
Admission to the M.Sc. (Information Technology) programme for the academic year 2007-2008 will commence in the month of June 2006. Interested candidates need to apply in the prescribed application form to be considered for admission to the M.Sc.(Information Technology) programme. The prospectus along with the application form will be available on the college website www.chowgulecollege.ac.in from 1st May 2006. All other admission/course related information will also be available on college website.

The completed application forms along with a Demand Draft of Rs. 350/- drawn in favour of The Principal, Smt. Parvatibai Chowgule College of Arts and Science, Margao, Goa–403602 should reach the college on or before 31st May 2006.

3. Frequently Asked Questions (FAQ) about CST Exam

3.1. General Questions

Which Examination level is suitable to me?

Check your eligibility as per the criteria given in Section 1.4. You can apply for the highest eligible level of CST examination.

Which Examination level should I apply?

See various levels of examinations in section 1.3. CST Examination is used as entrance examination for course admission as well as recruitment at C-DAC and other institutes.

How long are the CST scores valid?

Scores are valid for 2 years course admission purpose. **For employment, only current year CST exam scores will be valid** . See Section 1.5.4 for more information.

When will the CST examination for the year 2008 be held?

The next CST examination is likely to be held in January-February, 2008.

Can I obtain old CST question papers?

The previous CST question papers are not sold or distributed. The CST brochure gives the syllabus, recommended books and sample questions to give some idea about the examination.

Are there C-DAC authorised coaching centres for preparing students for the CST examination?

NO. C-DAC has not authorised any organisation to run any coaching classes and nor does it run any such coaching classes.

Can I take the G Level examination now and apply for employment at C-DAC, Mumbai and Electronics City, Bangalore later?

No, only current year's CST scores are valid for recruitment.

Does C-DAC, Mumbai and Electronics City, Bangalore have accommodation for those recruited for its staff positions?

It has a limited amount of bachelors' accommodation for those recruited.

Are C-DAC's Technical Associateships given based on the CST examination scores alone?

CST scores are used along with other criteria, for these positions.

If I take the E Level and qualify in papers GA and CC, but do not obtain a Standardised Score of 30 or more in paper CP, will I be considered for PGDST or FPGDST admission?

Yes. Admissions will be based on scores in papers GA and CC **only**.

If I have appeared for the CST Examination earlier, can I claim admission based on those results?

You can apply for admission to the courses that you are eligible for, based on CST-2005 or CST-2006 scores. You can apply using A-2 application form. This policy may change from next year.

3.2. Questions related to Eligibility

3.2.1. General

If I am in the final year of my degree, but have failed or not finished some of the subjects in my pre-final year, am I eligible for the CST examination?

Yes. You still have to submit attested copies of your mark lists for the last two semesters (or two years as applicable) examinations appeared for (even if you have failed in some of the subjects).

Is a candidate who is studying for the relevant qualification but not in the final year of a degree eligible for appearing in CST examination at any of the Levels?

Students must be in the final year of the respective degree/diploma in order to be eligible. Post-graduate students may apply for any level for which they are eligible.

3.2.2. D Level

Is relevant work experience acceptable in the place of 3 months full-time or 6 months part-time training for taking the D Level?

No. Work experience is not treated as equivalent to the training specified for the D Level.

Can a candidate who has done an engineering degree in disciplines such as Electronics or Mechanical Engg. appear for the D Level?

Such a candidate should have taken courses in the computer area; either as a part of his/her work for the degree, or in a training institute. Such training should meet the 3 month full-time or 6 month part-time training requirement. The candidate should satisfy himself/herself that he/she is proficient in C programming. If the training is a part of one's degree, candidates need to produce attested mark lists

showing that they have done at least a one-semester course on computer programming for the D Level.

Are candidates who are currently undergoing a part-time training course eligible to take the D Level examination?

Yes, as long as they are in a position to complete the course and meet the 6 months part-time or 3 months full-time training requirement before the CST examination.

If I am doing a computer course meeting the requirements of D Level, but have failed a module, am I eligible for the Level?

Yes, provided you meet the eligibility criterion before the examination.

Is a candidate who has done 3 year Diploma in Computer Science after the 10th standard eligible for the D Level?

Yes. Since the candidate has specialized in Computer Science, he/she will be allowed to appear for the D Level examination. Diploma holders in non-computer subjects can appear only for E Level, unless they have acquired additional training as specified in the brochure.

If I have taken the E or I Level earlier and am appearing for the D Level now, am I eligible to apply for the PGDST course?

D-level candidates are eligible to apply for the PGDST course. However, if you want to apply based on your earlier E or I level performance, you can do so by using A-2 form. Otherwise, take D level exam again using A-1 form. In this case, your rank will be computed based on your fresh D level scores in GA and CO papers.

3.2.3. G Level

Can a candidate who has done a BE in Electronics and has taken a number of computer courses such as Fortran, Pascal etc take the G Level?

Check relevant streams allowed in section 1.4.3.

Is an ME or MTech Computer Science student allowed to appear for the G Level examination?

Yes.

If a person is doing an ME/M.Tech. or a two-year Master's degree in Computer Science and the 2nd semester marks have not been declared, is he/she eligible for the G Level examination?

Yes. The candidate should submit attested copy of the first semester mark list and a proof that he/she has appeared for the 2nd semester examinations.

If I have a Computer Science degree and am eligible for the G Level, can I take the D Level?

You can take the E or D Levels instead of the G Level, if you so prefer.

If I have completed a full time 6 months diploma course that covers the papers in G level, what level of CST am I eligible for?

If you have the equivalent of a Bachelor's degree then you can appear for D level, but not the G level.

If I have completed a course in parallel with my undergraduate studies that covers all the papers in the G level, then what level of the CST am I eligible for?

If you have the equivalent of a Bachelor's degree then you can appear for D level, but not the G level.

3.3. Questions on Employment Opportunities

What are the employment opportunities in the IT industry for candidates who successfully complete any of C-DAC, Mumbai and Electronics City, Bangalore's post-graduate diploma courses?

A number of companies and organizations recruit candidates who have successfully completed our post-graduate diploma courses. However it is important to note that while any Bachelor's degree or equivalent is sufficient along with good performance in the CST entrance examination, for an entry into our diploma courses, a candidate should not assume that every one completing these courses would have the same employment opportunities.

4. Overview of C-DAC, Mumbai and Electronics City, Bangalore

C-DAC, Mumbai and Electronics City, Bangalore operates as centres of excellences in software technology, emphasizing quality over quantity. It has R & D activities at its laboratories in Mumbai, Navi Mumbai and Bangalore.

R&D groups of C-DAC, Mumbai and Electronics City, Bangalore work in the following areas:

- Computer Networks and Internet Engineering
- Educational Technology Unit
- Graphics and Computer-Aided Design
- Knowledge Based Computer Systems
- Software Engineering
- Open Source Software
- IT Systems and Solutions
- Language Technology

In addition to these groups, the IT System and Solutions Groups at Mumbai and Bangalore are responsible for all the computing infrastructure of C-DAC, Juhu, Mumbai, Kharghar, Navi Mumbai and Electronics City, Bangalore.

The primary objectives of these centres are:

- Carry out research and development in software technology
- Carry out educational and training activities
- Support industry and business in the field of computers through R&D, Education and Training, Consulting, Standards Activities, Publications, etc.

C-DAC also offers opportunities for staff members to carry out doctoral level research towards a Ph.D. degree.

The R&D profiles of the various divisions are described below. More details can be found on the websites of C-DAC, Mumbai and Bangalore. Direct URLs for each division are given on page ii.

4.1. Research and Development Activities

4.1.1. Computer Networks and Internet Engineering (CNIE)

This Division works in the areas of Computer Networks and Internet technology. Staff members of this Division have considerable experience in the areas of internetworking technologies, private networks and satellite-based data networking. Currently the Division is active in the areas of System and network security & Management, caching technologies, design and development of private networks.

The Division is an active participant of the Dept. of Electronics (DoE) project named Education and Research in computer Networking (ERNET). The Division had played a major role in the pioneering days of ERNET (1986-1994), running India's first and only Internet gateway to the world and distributing email to all participating institutions. The Division has contributed significantly to the creation of a full-fledged Wide Area Network under the ERNET.

Simultaneously with its work for ERNET, this Division took the responsibility for making widely available to Indian business and industry the know-how it had gained on setting up and operating networks using the TCP/IP family of protocols. This consultancy activity has grown over the years. Responsibilities being handled by this Division include consulting for a major, Internet Service Provider from the beginning of their project. It also includes planning, designing, and helping with the implementation of a number of all India networks for the financial services sector of the economy.

The division is spread across Mumbai and Bangalore offices and is currently involved in security projects supported by DIT. Intrusion Detection Systems has been the core area of interest in the security domain for the past few years.

4.1.2. Educational Technology Unit (ETU)

Educational Technology Unit aims to integrate various aspects of the Education and Training activities of C-DAC, Mumbai and Electronics City, Bangalore towards a better educational environment and to spearhead new models and technologies for the Centre as well as for others. It functions as a technology bridge linking the course administration, course faculty and the course students. This covers development of technologies and infrastructure for improving the educational environment and for seamless integration of these various constituents of the educational process.

The current activities of the group include: web-based environment for instructional delivery for online learning, student database system for PGDST/FPGDST, automated program grading system, Chaatra – a system for student performance monitoring and qualitative feedback generation, Sandesh – a faculty/administrator support system for responding to large volume queries by email and a tool kit for analysis of student performance and feedback. The group offers specialised courses in online learning. The areas of research in the group include personalised instruction, and assessment technologies.

4.1.3. Graphics and Computer Aided Design (G&CAD)

The Graphics & CAD Division works in the areas of computer graphics, computer-aided design, computer animation, and electronic publishing. The division has particular emphasis on Visualization, multimedia and virtual environment technology and Indian language rendering. This division has developed software such as Indo-GKS based on the International Standard GKS (collaboratively with CMC), Aalekh, a bilingual word processor (collaboratively with Hinditron Computers), Vidura, an interactive multilingual electronic publishing system, Vinyas, an interactive type font design system, Vividha, a series of multilingual text processing tools, Zeus, an interactive CAD system for modelling surface geometry, Artemis and Arcturus, systems for composite laminate architectural design, Volgrid, a system for volumetric mesh generation of space surrounding an aircraft for use in CFD analysis, Clodion, a system for mechanism design and simulation and VISPAR, a distributed system including highly parallelised algorithms for illumination computations needed for visualisation of complex 3D environments and Virtual walkthrough of Fatehpur Sikri.

Current projects are in the areas of real time terrain rendering, 3D Gaming engine, Indian language text processing and lip animation.

4.1.4. Knowledge Based Computer Systems (KBCS)

The current major areas of research interest in the KBCS division are natural language technology (including machine translation and cross lingual information retrieval), intelligent training and testing systems, planning and scheduling, data mining, neural networks and expert systems.

The projects undertaken by the group include machine translation system from English to Hindi for news stories (Matra), document access across languages, currently from English to Hindi (Setu), online testing and question banking system (Veda), generative testing add-on to Veda (Vyasa), remedial instructional system for high-school mathematics (Mathemagic), a datamining system for detection of discrepancies in customs data (Mulyaankan), a data mining tool kit, rule based expert system shell (Vidwan), scheduling systems for petroleum products, crude oil and oil pipeline pumping and an intelligent tutoring system for SQL (Acharya).

The group publishes a quarterly in Artificial Intelligence named Vivek and organises an international conference series named KBCS held every two years.

4.1.5. Open Source Software division (OSS)

Open Source Software is currently exemplified by Linux operating system along with systems such as Apache, Openoffice, Mozilla, Evolution, etc ; languages such as Perl, Python and PHP and a community based development methodology. It is today a movement that is sweeping across the globe arousing substantial interest from Government to academia, thanks to benefits such as low cost, avoiding vendor lock-in, ability to encourage local industry development, opportunity for large-scale localisation, and so on.

The Open Source Software division functions as a resource centre in this strategically important area of software technology, hosting portals and clinics, offering comprehensive educational programs,developing significant open source software and carrying out research on the methodological aspects of open source software. The division also plays a major role in a collaborative project involving IBM (India), IIT Mumbai and C-DAC.

The development activities in the group currently include a comprehensive personalised portal on open source including RSS feeds and discussion Forums, an innovation portal and speech interface to open source software. The group offers Faculty development programs in various aspects of OSS. Group members are involved in projects such as Flossworld – a European union founded multi country project on FLOSS and OSSRC – Open Source Software Resource Centre jointly initiated by IBM, C-DAC and IIT Mumbai.

4.1.6. Software Engineering (SENG)

This group is involved in researching and developing various methods, models and frameworks in areas of Software Architecture and Enterprise Integration.

Current Areas of Work:

* Software Architectures, Frameworks, Distributed Computing, Databases
* EJOSA Framework and its applicability and enhancements for domains such as E-Governance and Enterprise Applications
* CASE Tool extensions for design decision support
* Application Design and Modelling
* CASE Tools, Project Management suites
* Mobile Computing

4.1.7. IT Systems and Solutions (ITSS)

The IT Systems and Solutions Group operates at all offices of C-DAC Mumbai & Electronics City, Bangalore. ITSS is responsible for management and operations of hardware, software, LAN & WAN infrastructure at all these centres including acquisition of advanced equipment and software from time to time and keeping the computing facilities up-to-date. All the centres of C-DAC, Mumbai and Electronics City, Bangalore are equipped with state-of-art computing facilities. This includes powerful Servers, well-equipped computing laboratories, latest Desktops with best programming environment and software tools. The computing facility, maintained by ITSS, is available on a 24 x 7 basis. Additionally this group plays a significant role in maintaining the communication facilities of C-DAC, Mumbai and Electronics City, Bangalore.

Consultancy: Members of ITSS Group also contribute to the bulk of consultancy services offered by C-DAC, Mumbai and Electronics City, Bangalore. They advise a number of public sector and private organizations in various IT related areas. These include setting up of Wide Area Networks, Specialized banking applications, Branch computerization of banks, campus wide Local Area Networks, computerization of Stock Exchanges etc. This group also has expertise in setting up of large heterogeneous computer networks, their design and integration.

Application Development and Maintenance: ITSS develops applications to cater to in-house needs and is also responsible for enhancement and maintenance of these applications. Technologies employed for this purpose cover a wide spectrum of languages, databases and operating systems. Development and maintenance is currently in C++, Java, Visual Basic and PHP, using MySQL and SQL 2000 for back-ends and Windows, Linux and Solaris as platforms.

Web Design and Maintenance: The ITSS team is involved in the design, maintenance and upkeep of large websites like the C-DAC, Mumbai and Electronics City, Bangalore website (http://www.cdacmumbai.in), the India Country Gateway Portal (http://www.indg.in) and the Information and Communication Technologies - Research and Training Portal (http://www.ictrt.org.in).

Educational Activities: Along with other groups ITSS is also engaged in training for the Advanced and Post-Graduate course offered at C-DAC, Mumbai and Electronics City, Bangalore.

4.1.8. Language Computing Group

The objectives of the division are:

Establish various models of multi-linguality through fusion of Information Technology, Creative Designs, Applied Linguistics and Education to enhance the effectiveness of multi-lingual information and communication channels and modules.

- R & D towards creation/processing and management of multi-lingual and multi-modal contents using Computational Linguistics, supporting, searching, indexing, retrieving, transliterations and translations.
- Developing technologies for other modes of language communication (phonetic and visual) using Computer Technology.
- Establishment of multilingual Creative Content Repository in Indian and East-Asian languages where aesthetics and humanitarian aspects will be the main criteria while using Computer Technology.
- Working towards standardization of various components of Multi-Lingual Information and Communication.

IndiX2 (to enable Indian languages at core level on GNU Linux platform) and **Janabhaaratii** (to enable wide use of Indian Languages computing with support from the community), two ongoing projects are funded by Technology Development for Indian Languages, Ministry of Communication and Information Technology, Government of India. The group wants to concentrate on building solutions in the domain of Education and E-Governance using Indian Languages and scripts.

4.2. Library

C-DAC, Juhu, Mumbai, Kharghar, Navi Mumbai and Electronics City, Bangalore together have approximately Rs.12 million worth of modern books and journals. The libraries in Mumbai, Navi Mumbai, and Bangalore make their valuable resources available to software professionals as well as to course students.

4.3. Educational Activities

The educational role of C-DAC, Mumbai and Electronics City, Bangalore is largely in the area of continuing education. C-DAC, Mumbai and Electronics City, Bangalore conducts a number of well-established one-year duration diplomas in the field of advanced software technology for post-graduates. These are described in Chapter 4. R&D Divisions at the Centre also conduct professional education courses oriented towards professionals sponsored by their employers.

In addition to the above courses, C-DAC Mumbai in joint collaboration with IIT Bombay conducts a Distance Education Program (DEP).

4.3.1. Professional Education Courses

Apart from carrying out R&D of practical relevance, C-DAC, Mumbai and Electronics City, Bangalore also make a significant contribution to high-quality education and training of professionals of the IT industry. The Professional Education (PE) courses at C-DAC, Juhu, Kharghar and Electronics City, Bangalore provide training in specialised areas and are highly valued for their balanced emphasis on core concepts as well as current technologies. PE courses are also conducted on request. The courses are typically of 1 or 2 weeks' duration.

Courses recently offered include:

- Unified Software Development Process
- Learning Management Systems
- Assessment Technologies
- Intelligent Information Retrieval: Search Engines and Beyond
- Fundamentals of Component Object Model
- Theory and Applications of Algorithms
- Artificial Neural Networks
- Graphics using OpenGL
- Computer Aided Geometric Design
- Instruction Design

More information is available on **http://www.cdacmumbai.in/education/advcourses**

4.3.2. Distance Education Program (DEP)

C-DAC, Mumbai and IIT Bombay jointly launched a distance education programme in 2002, with the aim of delivering high-quality courses to a large number of students across the country. The primary mode of instruction is live lectures broadcast through VSAT or leased line to all registered remote centres. Students have the opportunity to ask questions to the faculty and get a response in real-time. The model simulates an interactive classroom environment.

Courses offered under this programme include human computer interaction, embedded systems, signals and systems, mobile computing, distributed systems, etc. C-DAC, Kharghar, Navi Mumbai is one of the registered remote centres. Currently there are about 9 remote centres. For more details of the remote centres, courses currently available, eligibility, registration process, etc., please refer to the website http://www.dep.iitb.ac.in/.

5. Post-Graduate Diploma Courses at C-DAC, Mumbai and Electronics City, Bangalore

The curriculum proposed for various post-graduate diploma courses of C-DAC being run at Juhu, Kharghar and Electronics City, Bangalore has been specially designed to prepare software professionals who are well equipped to cope with the needs of the IT industry. Recognising today's situation in the field of Information Technology in which new developments occur at rates faster than what the average software professional can keep up with, the courses provide an excellent combination of a strong foundation in fundamentals, techniques and methodologies and extensive hands-on skills on recent high-end software development tools and environments.

The courses are aimed at graduates with some computer programming background such as that available from most B.Tech./B.E. courses or B.Sc (Computer Science) or some diploma courses of 6 months' duration or so. Professionals from industry (both software houses and user organisations) without the necessary formal education in the computer field would also benefit from the courses. The eligibility criteria and applicable conditions for courses are given in Section 2. More detailed information on each course is provided in the Course Handbook and also on the websites of C-DAC, Juhu, Mumbai and Electronics City, Bangalore at **www.cdacmumbai.in**

This chapter provides a brief overview of the various courses covering nature of course, completion requirements, subjects covered and admission procedure.

5.1. General Information

All courses are of 1-year duration. Students are expected to devote a considerable amount of time for self-study and programming assignments. There will be quizzes, tests, assignments and projects to monitor the progress of the students. Evaluation will be based on the performance in these assessments. As all courses run by C-DAC mentioned below are very intensive, students have to be highly motivated and capable of self-study and practical work.

Unless a student is able to devote a minimum of fifteen (for PGDST) / thirty (for FPGDST) hours a week for self-study and hands-on practice work, it is unlikely that he/she can successfully complete the C-DAC (formerly NCST)'s course. Students are required to attend a minimum of 70% of the contact sessions.

The timings for lectures and other contact sessions vary from location to location. Candidates must ensure that the timings for lectures at the locations of their choice are convenient to them, before indicating their preferences for particular locations at the time of seeking admission.

Textbooks prescribed for each module of the respective course will be provided to the students. In addition, handbooks containing the slides of the lecture sessions in the course will be given. Libraries at the respective locations have some additional reference books. Computing facilities will be made available to each participant during the course.

C-DAC (formerly NCST) courses have a heavy practical component associated with them. As part of the course, candidates are expected to become well versed with each topic using UNIX, Java, C, C++, SQL, etc. During the course, students will be given a number of assignments/projects, which they need to complete.

5.1.1. Qualifying Requirements

Candidates are required to complete the course requirements within **2 years** of obtaining admission to the course. If there are any changes in the modules, the students will be given some alternatives so that he/she can complete necessary requirements.

For completion of any module, a candidate must fullfill the following conditions:

- Attend at least 70% of the sessions.
- Obtain at least 50% marks in the quizzes
- Obtain at least 50% marks in the project/MGPT*
- Obtain at least 50% marks in the Internal Assessment
- Obtain at least 50% marks overall in the module

Each module of the course will have in general 2 quizzes and a project/MGPT.

* *MGPT is an online programming test, which tests the candidate's ability for problem solving, and programming. Passing these tests requires good problem solving and analytical skills and considerable practice in Java/C programming.*

Candidates who complete all the course requirements will be given a **Course Transcript** describing the course and the modules completed and a **Diploma Certificate from C-DAC, Mumbai or from Electronics City, Bangalore**.

5.1.2. Admission Procedure

Admissions to courses at C-DAC, Mumbai and Electronics City, Bangalore begin from April 9, 2007 onwards, after the CST results are announced. Any candidate eligible as per the criteria given in section 2.1 can apply for admission to the desired courses. The candidate must give his/her preference list of courses and locations (preferences may also be given online), deposit the 1st instalment of fees along with a photocopy of the degree certificate and present the original certificate for verification. Those who do not have their degree certificate at the time of admission will be given provisional admission, on submission of proof that they have taken all the examinations for their degree. They should present proof of qualifying for the degree on or before December 31, 2007. Candidates, who are admitted and are unable to produce proof of qualification, will have their admission suspended and they will not be eligible for any refund. They can apply for re-admission to a subsequent PGDST or FPGDST course and resume the course on completion of the required qualification.

The last date and time for payment of the first instalment of fees and for applying for admission is May 11, 2007, 1500 hrs.

Candidates will be considered for admission based on merit and the available seats in any location. If a candidate is not allotted a seat in the course of his/her preference, the entire fee deposited will be refunded by May 31, 2007. The first list for admission will be displayed at each of the PGDST centres by May 18, 2007. Admission lists and available seat position (FPGDST/PGDST) at each centre will be available at **http://www.cdacmumbai.in/cst/**. Vacancies, if any, in FPGDST and PGDST courses will be offered in the **open admissions** category as described in Section 5.1.4.

5.1.3. Conditions for Final Year Students

a. For all the courses, candidates who are in the final year of their qualifying degree are also eligible for admission provided they produce proof of having taken all the examinations for their degree before the course starts.
b. The deadline for producing proof of qualifying degree or equivalent engineering diploma is on or before December 31, 2007. **If a candidate is unable to do this, he/she will have to discontinue the course and no refund of fees will be made. However, the candidate can apply for re-admission, after obtaining the required qualification and then resume the C-DAC courses.**
c. Students working for a full-time Bachelor's degree are not eligible for admission to any of C-DAC's post-graduate diploma courses. Those doing a Master's or a Ph.D. are, however, allowed to seek admission for PGDST.

5.1.4. Open Admissions to PGDST/FPGDST

Candidates, who have appeared for the CST examination but could not secure admission to C-DAC's PGDST/FPGDST courses on merit based on E/D/G levels of CST examination or those who have not appeared for CST-2007 exam, can apply for available vacancies for these courses **under the open admissions program subject to their meeting any one of the following eligibility criteria**:-

1. A Bachelor's degree in any subject
2. A diploma in Engineering with a minimum of 3 years' study after the 10th standard or 2 years' after the 12th standard. The diploma should be recognised by a state government or the central government as an engineering diploma.
3. Other qualifications recognised by a state government or the central government as equivalent to a Bachelor's degree. In such cases, the candidate should produce proof of Government recognition.
4. Candidates with a valid CST score (only CST-2005, CST-2006 and CST-2007 scores are valid).

Eligible Open Admission candidates belonging to categories 1, 2 or 3 above are also required to qualify for the course through an Open admission eligibility-cum-ranking test. Choice of course and centre will be based on the performance in the test. The centre will inform prospective candidates the test date and venue. More detailed instructions regarding the test will be available from the centre on/after June 8, 2007.

Eligible Open Admission candidates belonging to category 4 may check the available seat position on **http://www.cdacmumbai.in/education/cst/** from May 18, 2007 onwards, and approach the locations, where seats are available for 'Open Admission', on or after June 8, 2007, with the 1st fee instalment of Rs. 15,000/-,

proof of qualification and valid CST score report.

5.1.5. Payment of Course Fees

The fees for the various courses are required to be paid in instalments. The course fees include the cost of books and other course material, and the computer facilities offered. The first instalment of Rs. 15,000/- (common to all courses) is to be paid at the time of taking admission. The first instalment of fees has to be paid at C–DAC, Juhu, Mumbai or at Electronics City, Bangalore by Demand Draft drawn in favour of "C-DAC, Mumbai" payable at Mumbai. Subsequent instalments should be paid at the respective locations where the student is pursuing the course. The schedule for all the instalments is given as follows: -

Last date for payment	Instalments	PGDST-Regular	PGDST-Online	FPGDST
At the time of admission	First	Rs. 15,000/-	Rs. 15,000/-	Rs. 15,000/-
August 5/6, 2007	Second	Rs. 12,000/-	Rs. 4,200/-	Rs. 18,500/-
September 19, 2007	Third	Rs. 12,000/-	Rs. 4,200/-	Rs. 18,500/-
	Total course fees	**Rs. 39,000/-**	**Rs. 23,400/-**	**Rs. 52,000/-**

5.1.6. Cancellation Charges

A candidate who has paid the first instalment fee and later decides to cancel his/her admission will be required to pay cancellation charges as follows:

Rs. 500/- until May 7, 2007
Rs. 2000/- from May 8 to June 7, 2007

There will be no refund of course fees for cancellation once the open admission process starts.

These cancellation rules are applicable to all the candidates irrespective of whether their admissions are based on CST examination scores or are through open admission.

5.1.7. Cancellation of Course

C-DAC, Mumbai reserves the right to cancel a course, if conducting the course becomes infeasible for any reason. In the event of a course being cancelled at a particular centre, C-DAC, Juhu, Mumbai will offer an alternative centre to the candidate, subject to availability of seats and cut-off scores. If the offer is not acceptable, the candidate must send a written intimation to C-DAC, Juhu, Mumbai, not later than June 7, 2007. On receiving this communication, the full fee will be refunded to the candidate. If no intimation is received in writing, the entire course fee will be forfeited. Telephonic requests/e-mails, etc in this regard will not be accepted. Only written and signed cancellation requests will be accepted as valid.

5.1.8. Auditing Diploma Modules

As a response to several enquiries from industry, working professionals may now register for PGDST modules, subject to availability of seats. Such students will be given a certificate of participation on completion of the module and will not get any credit towards any diploma programme of C-DAC. Please check the procedure for registration with Course Administration at C-DAC, Juhu, Mumbai or at Electronics City, Bangalore (email: **entrance@cdacmumbai.in**)

5.2. Post-Graduate Diploma in Software Technology (PGDST)

5.2.1. Overview

The Post-Graduate Diploma in Software Technology is an intensive first-level course in computing which provides a comprehensive introduction to software technology. This course is designed for:

- those working in the industry who would like to get acquainted with computing, or switch to the area of computing
- students who have earned their degrees and would like to specialize in the area of software technology

The course provides a strong foundation for work in the area of software technology. Students who complete the course would be able to contribute significantly to development work in this area within any IT organization.

The PGDST course is offered at C-DAC, Juhu, Mumbai; Kharghar, Navi Mumbai and Electronics City, Bangalore.

The duration of the course is 52 weeks. It includes approximately 150 lecture hours. Lectures are normally held once a week usually on Saturdays or Sundays, but centres may schedule some lectures on weekday evenings if required. Lectures, tutorials, consultancies, written tests and online evaluations will be held as part of the course in each of the locations. The timings for the lecture sessions of the PGDST course at different centres are given in Appendix B.

PGDST also available in online format
A maximum of 50 PGDST seats will be available in online format this year.

The online course is primarily meant for those who have access to their own computing facilities (including internet), find it inconvenient to attend lectures and other contact sessions on a regular basis, are well motivated, and can visit one of our course locations about once a month (for exams etc.). The fee for online students will be approximately 60% of the fee applicable to regular students. The fee includes cost of hard copy of course material, access to online course material, computing facilities for assessment, etc. For more details, please refer to the PGDST portal (http://www.cdacmumbai.in/education/pgdst/).

This is a powerful and effective learning model when understood and exploited properly. Candidates are advised to read the detailed write-up on the web carefully before deciding their preferences.

5.2.2. Course Contents

The course covers the following major topics:

- GNU / LINUX Operating System
- Programming Techniques
- Object-Oriented Programming
- Data Structures and Algorithms
- Java/C/C++ Programming Languages
- Computer Organization
- Operating Systems
- Database Management
- Computer Networks

The exact schedule of lectures, evaluations, assignments, quizzes, project submissions, etc. will be provided in the course handbook distributed at the beginning of the course.

5.3. Full-Time Post-Graduate Diploma in Advanced Software Technology (FPGDST)

5.3.1. Overview

The Full-Time Post-Graduate Diploma in Advanced Software Technology (FPGDST) course is offered at the C-DAC Centres at Electronics City, Bangalore and Kharghar, Navi Mumbai. The duration of the course is 50 weeks. It includes approximately four hundred lecture hours. Lectures are normally held five days a week. The timings of the course will be 1000 hours to 1700 hours, Monday to Friday.

Since FPGDST students are expected to attend lectures and carry out hands-on assignments through out the week, those employed are not eligible for admission to FPGDST. Students are expected to devote a considerable amount of time for self-study and programming assignments. There will be quizzes, tests, assignments, projects and dissertation project to monitor the progress of the students. Evaluation will be based on the performance in these.

5.3.2. Course Contents

The course covers the following topics in depth:

- Object-Oriented programming in Java
- Data Structures and Algorithms in Java
- Programming in C and C++
- Computer Organisation and Operating Systems
- Database Management
- Object-Oriented Analysis and Design
- Computer Networks
- Enterprise Computing
- Software Engineering
- Technical Communication
- Mathematical Foundation of Computer Science.
- Project of near industry-strength complexity

The exact schedule of lectures, evaluations, assignments, quizzes, project submissions, course texts and other details of the conduct of this course will be given in the course handbook to be distributed at the start of the course. The course provides a strong foundation for work in the area of software technology. The curriculum has been tightly customized so as to include all the essential components of software technology, as well as the emerging technologies in which any software professional should be competent. The rigour of this programme gives the candidate a flavour of working in the industry.

5.4. Facilities for students

C-DAC, Kharghar, Navi Mumbai and C-DAC, Electronics City, Bangalore has excellent campus and hostel facilities. Hostel accommodation is available to FPGDST students, subject to availability on first-come-first-serve basis.

Both the centres have modern computing and networking facilities with state-of-art infrastructure, informative library with reading facilities from 8 a.m. to 8 p.m. everyday and a canteen.

Appendix A: PGDST / FPGDST Courses – Information at a Glance

Course	Prerequisite	Qualifying requirements (per module)	Fees and duration	Total seats at[+] each location
PGDST	Valid E, past I, D or G level CST score	• 70% attendance in course sessions • 50% marks in quizzes • 50% marks in project/MGPT • 50% marks in Internal Assessment • 50% marks overall in module	Total fee Rs. 39,000/- Duration: 52 weeks Part-Time	CDACB 75 CDACJ 120 CDACK 120
PGDST online	As for PGDST	Same as for PGDST	Total fee Rs. 23,400/- Duration: 52 weeks	50
FPGDST	As for PGDST	• 70% attendance in course sessions • 50% marks in quizzes • 50% marks in project/MGPT • 50% marks in Internal Assessment • 50% marks overall in module	Total fee Rs. 52,000/- Duration: 50 weeks Full-Time	CDACB 180 CDACK 100

Note: This list is tentative. Candidates must opt for locations based on the list included in the admission booklet.

[+]Legend

Code	Location
CDACB	Electronics City Centre, C-DAC, Bangalore
CDACJ	Juhu Centre, C-DAC, Mumbai
CDACK	Kharghar Centre, C-DAC, Mumbai

Appendix B: Contact Details of C-DAC Centres

1) Juhu Centre, C-DAC, Mumbai (formerly NCST)

Contact persons	Anuradha Subramanian / Sudha Iyer	***Courses offered***	PGDST
		No of seats	PGDST: 120
Address	Gulmohar Cross Road No. 9, Juhu, Mumbai-400049	***Batch timings***	PGDST: Sunday mornings
		Facilities	◆ 24 hours computer facilities ◆ Internet access ◆ Library ◆ Canteen
Tel	2670 3251/ 2620 1606/ 2620 1488		
Fax	2621 0139 / 2623 2195		
E-mail	entrance@cdacumbai.in	***Brochure sale timings***	9.30 a.m. to 4.30 p.m. Monday to Saturday
Nearest station	Andheri (West) Rly. Stn.		

2) Nariman Point Centre, C-DAC, Mumbai (formerly NCST)

Contact persons	S.P. Adarkar / V.P. Sonawani	***Brochure sale timings***	9.30 a.m. to 4.30 p.m. Monday to Saturday
Address	8th Floor, Air-India Building Nariman Point, Mumbai-400 021		
Tel	2202 4641 / 2283 6924		
Fax	2204 9573		
E-mail	entrance@cdacmumbai.in		
Nearest station	Churchgate Railway Station		

3) Kharghar Centre, C-DAC, Navi Mumbai (formerly NCST)

Contact persons	Ramakant Yeware / Rekha Nair	***Courses offered***	FPGDST, PGDST
Address	Sector 7, Rain Tree Marg, Near Bharti Vidyapeeth, Opp. Kharghar Railway Station, CBD Belapur, Navi Mumbai-400614.	***No of seats***	FPGDST: 100; PGDST: 120
		Batch timings	FPGDST: Full-time, Mon-Fri PGDST: Sunday mornings
		Facilities	◆ 24 hours computer facilities ◆ Internet access ◆ Library ◆ Canteen ◆ On-campus hostel facilities
Tel	2756 5303, 2756 5304, 2756 5305, 2756 5306, 2756 0013		
Fax	2756 0004		
E-mail	course_kh@cdacmumbai.in	***Brochure sale timings***	9.30 a.m. to 5 p.m. Monday to Saturday
Nearest station	Kharghar Railway Station		

4a) Electronics City Centre, C-DAC, Bangalore (formerly NCST)

Contact persons	K.S. Krishnakumar / Uma Prasad	***Courses offered***	FPGDST, PGDST
Address	68, Electronics City, Hosur Road, Bangalore, Karnataka-560100	***No of seats***	FPGDST: 180 ; PGDST: 75
		Batch timings	FPGDST: Full-time Mon - Fri PGDST : Saturday mornings
Tel	(080) 28523300		
Fax	(080) 28522590	***Facilities***	◆24 hours computer facilities ◆Internet access ◆Library ◆Canteen ◆On-campus hostel facilities
E-mail	cst@ncb.ernet.in		
Nearest station	Bangalore City		
		Brochure sale timings	10 a.m. to 5 p.m. Monday to Friday

4b) Bangalore Centre, C-DAC, Bangalore (formerly NCST)

Address	6th Floor, Main Tower, Visvesvaraya Centre, Dr. Ambedkar Veedhi Bangalore-560 001	***Brochure sale timings***	10 a.m. to 5 p.m. Monday to Friday
Tel	(080) 22863100 / 22862486		
Fax	(080) 22862531		
E-mail	cst@ncb.ernet.in		
Nearest station	Bangalore City		

Appendix C: Addresses of locations for buying CST Brochures

City	Name	Address	Telephone
Alappuzha	Vidyarambham Book Depot	Mullakkal, Alappuzha Kerala – 688 001	0477 2265338
Bangalore	Alliance Business Academy	19th Cross, 7th Main BTM 2nd Stage,N.S. Palya Bangalore 560 076	26681444, 26680324
	Higginbothams Pvt. Ltd.	68, Mahatma Gandhi Road Bangalore 560 001	2558 6574 / 2558 7359
	Surya Infotainment Products Pvt. Ltd.	90- 91 Mahatma Gandhi Road, Bangalore 560001	080 25587621 / 25587302
Bhubaneshwar	Jyoti Book Depot	Plot No. 4009 Ashok Nagar Janapath Tower Lane Bhubaneswar – 751 009	0674 – 2530807
Chennai	Higginbothams Ltd.	116, Anna Salai Chennai – 600 002	28522420
Coimbatore	Higginbothams Ltd.	192, Big Bazaar Street Post Box No. 326 Coimbatore - 641 001	2390431
Cuttack	Jyoti Book Depot	Sagarmal Giridharlal Building Sreejee Complex, Nayasarak Cuttack – 753 002, Orissa.	0671 - 2619 648, 2619 644
Delhi	Jyoti Book Depot	2/28, Ground floor, Ansari Road, Daryaganj New Delhi- 110 002	011 – 23268121 / 8122
Goa	Golden Heart Emporium	Confidant House Abade Faria Road Post Box No. 249, Margao Goa – 403 601	272 5208/ 273 2450
	Smt. Parvatibai Chowgule Cultural Foundation's College of Arts & Science	Gogol, Fatorda Margao, Goa – 403 601	0832 - 275 9062/ 275 9504
	Suraj Book Stall	Opp. Municipal Garden Mapusa, Goa - 403 507	2250167
Hyderabad	Jyoti Book Depot	3-5-121/A - 8, Sainath Complex, Shalimar Theatre Road, Ramkote, Hyderabad - 500001	040 - 24758606 / 8730
	Jyoti Book Depot	M/s. Pages Shop. No. 203/204 Babukhan Mall,Somajiguda Hyderabad – 500 016	98662 39153
Kanpur	The Universal Book Stall	Gumti No.5, 118/163-B, Bamba Road, Kanpur - 208 012	0512-2219602
	The Universal Book Stall	Parade, Behind Ursula Hospital, Kanpur - 208 001	0512-2365560
	The Universal Book Stall	Regal Building, 129, The Mall, Kanpur - 208 004	2305793 / 799
Kochi/ Ernakulam	COSMOBOOKS	Press Club Road Ernakulam, Kochi 682 011	0484 – 2353818
	Higginbothams Ltd.	ACEL Estate, Iyattil Junction Chittoor Road, Ernakulam Kochi - 682 011	0484 - 2368834
Kolkata	The Book People	FII, CIT Market, Jadavpur Kolkata – 700 032.	033 – 24724799/ 2412 8575

	Sarat Book House	18B, Shyama Charan De Street Kolkata- 700 073.	033-2241 8389/ 2241 8060
	Shankar's Book Agency Pvt.Ltd.	133,Lenin Sarani, Calcutta-700013, West Bengal	033 22463257/55253997 9830113643
Kozhikode (Calicut)	COSMOBOOKS	Al – Ameen Building Rly. Station Link Road Kozhikode 673 002	0495 – 2703487
Madurai	Higginbothams Ltd.	21, Goods Shed Street Madurai – 625 001	2340528
Mangalore	Higginbothams Ltd.	Hampankatta MCC Bank Building Light House Hill Road Mangalore - 575 001	2427585
Mumbai	Computer Bookshop (India) Pvt. Ltd.	190, Dr. D.N. Road Fort,Mumbai – 400 001	2207 6356 / 2207 0989, 5631 7922 / 23 / 24
	Sanganak Prakashan	5 & 6, Shanti Niwas Sant Ramdas Road Near Ganesh Theatre, Mulund (East), Mumbai 400 081	2568 8682 / 2568 1650
	Pradakshina Circulating Library	Shop No. 20, Sai Plaza, Sector No. 15-A, Opp. IPCL Colony, New Panvel, Navi Mumbai - 410206.	32983633. 9819342139
Mysore	Centre for Information Science & Technology (CIST)	Senate Bhavan, Manasagangotri Mysore – 570 006	2415 836
Nagpur	M/s MVM General Stores & Stationery	Shop No. 9,Pawde Complex Opp. Dutta Complex Duttawadi, Amravati Road Nagpur 440 023	07104 – 222237
Pondicherry	Higginbothams Ltd.	JVS Building, 34, Ambour Salai Pondicherry 605 001	2333836
Pune	Crystalline Infotek Pvt. Ltd	Crystal House, 235 Navi Peth, Off LBS Marg Pune – 411 030	2433 9634/ 2433 9635 ext.21
Tiruchirapalli	Higginbothams Ltd.	25, Nandhi Koil Street Tiruchirappalli 620 002	2704418
Tirunelveli	Higginbothams Ltd.	261/3, Thiruchendur Road Palayamkottai Tirunelveli - 627 002	574801
Thiruvananthapuram	Higginbothams Ltd.	25/2339-42, Mahatma Gandhi Road Thiruvananthapuram - 695 001	2331 622
	Modern Book Centre	Gandhari Amman Kovil Road, Thiruvananthapuram – 695 001	0471 - 2331 816 / 826
Thrissur	Current Books	Round West Thrissur 680 001, Kerala	0487 - 2335660
	COSMOBOOKS	Round West Thrissur 680 001, Kerala	0487 – 2335292 / 2335570
Uthagamandalam (Ooty)	Higginbothams Ltd.	Oriental Buildings Udhagamandalam - 643 001	2442546, 2443736
Vijayavada	Jyoti Book Depot	Balaji Softech G – 2, Sree Girisai Towers Rukhmini Rice Mill Road Opp. Andhra Jyoti Labbipet, Vijayawada – 520 110	0866 – 25511165 / 22489691
Visakhapatanam	Jyoti Book Depot	D.No.30-15-138, Dabagardens Visakhapatnam – 530 020, AP	0891 – 6645858/6645757
	Pages The Book Shop	Old Jail Road Junction Visakhapatnam - 530 002	0891 – 6450555/ 6450999

Appendix D: Syllabus for E Level

D.1. General Aptitude (GA)

The main objective of this paper is to assess the general aptitude of the candidate to pursue a technical profession.

D.1.1. Topics

The questions in this paper will cover: logical reasoning, quantitative reasoning, visuo-spatial reasoning, high school mathematics, vocabulary, English comprehension and verbal ability. The test looks for a sound understanding of concepts and their applications rather than for rote memory and routine arithmetic skills. A good grasp of the following topics of high school mathematics (up to the 12th standard) will be useful:
Arithmetic: ratios and proportions, problems on time-work, distance-speed, percentage, etc.
Basic Set Theory and Functions: Set, relations and mappings.
Algebra: fundamental operations in algebra, expansion, factorization, simultaneous linear/quadratic equations, indices, logarithms, permutations and combinations.
Geometry: angles at a point and parallel lines, triangles, polygons, circles, geometric transformations (particularly similarity, rotation and reflection), areas.
Trigonometry: trigonometric ratios, problems on heights and distances.
Coordinate Geometry: rectangular Cartesian coordinates, equations of a line, mid-point, intersections etc., equations of a circle, distance formulae, simple geometric transformations such as translation, rotation, scaling.
Mensuration: areas, triangles and quadrilaterals, area and circumference of circles, volumes and surface areas of simple solids such as cubes, spheres, cylinders and cones.

D.1.2. Recommended Books

There is no particular book that can be specifically recommended for preparation for this paper of the test. Any text that covers the above may be used for preparation.

D.1.3. Sample Questions

Five example questions are given below to apprise candidates of the type of questions they may expect in the exam. Give yourself on an average two and a half minutes to answer each question.

1) Stock options for employees are the latest step in progression from management ownership to employee ownership. Employee ownership can save loss-making companies.
From the following statements, choose that one, which if true, does NOT provide support for the claim above.

(a) Employee owned companies generally have higher productivity
(b) Employee participation in management raises morale
(c) Employee ownership tends to drive up salaries
(d) Employee ownership enables workers to share in company profits

2) If $log_8 3 = 0.5283$ and $log_8 5 = 0.7740$, then what is the value of $log_8 45$?

(a) 1.6553 (b) 1.8306 (c) 3.8066 (d) 0.8178

3) The following represents the summation of two numbers where X, Y and Z represent distinct digits among 0, 1, 2, …, 9.

```
  X Y Z
  Z Y X
-------
Y Y Z Y
-------
```

What does X represent?
(a) 6 (b) 7 (c) 8 (d) 9

4) Four places A, B, C and D are situated in a city as follows:
B is situated due east of A at a distance of 6 km.
C can be reached from B by travelling 2 km due east and then 4 km due north.
D is situated due west of C and is at equal distance from A and B.

What is the distance between A and D?
(a) 3.5 km (b) 4 km (c) 4.5 km (d) 5 km

5) Any government officer who allows bribery to flourish must be subject to _____ .

(a) stringency (b) stricture (c) vagary (d) mockery

D.1.4. Answers to Sample Questions

1) (c) 2) (b) 3) (c) 4) (d) 5) (b)

D.2. Computer Concepts (CC)

D.2.1. Topics

Computer basics: organization of a computer, characteristics of a computer, Central Processing Unit (CPU), types of instructions in CPU, input/output devices, computer memory, primary memory and secondary memory, memory organization, backup devices.
Data representation: representation of characters, integers and fractions, binary and hexadecimal representations.
Binary arithmetic: addition, subtraction, division, multiplication, signed arithmetic and two's complement arithmetic, floating point representation of numbers, normalized floating point representations.
Foundations: Boolean algebra, truth tables and Venn diagrams.
Computer architecture: block structure of computers, communication between processor and memory, communication between processor and I/O devices, interrupts, multiprogramming, and virtual memory.
Computer languages: assembly language and characteristics of high-level languages.
Operating System basics: Multiprogramming and timesharing operating systems.
Programming using a subset of C: The candidate will **not** be required to write programs and there will **not** be any questions on syntax. But candidates should be able to read and understand programs involving the following: the assignment statement, blocks, the input-output statements (**scanf** and **printf**), relational and arithmetic operators, conditional statements and iterations.

D.2.2. Recommended Books

- *Fundamentals of Computers* by V Rajaraman, Prentice Hall of India, is one book that covers most of these topics.
- The Programming topics are covered in several books, one of them being: *Programming in ANSI C* by Ram Kumar and Rakesh Agrawal, Tata McGraw-Hill,1993, Chapters 1 - 6.

We strongly recommend that candidates read one or two more books other than the ones specified here. This will help widen the candidate's perspective.

D.2.3. Sample Questions

1) Floating point numbers in a computer are represented using a 10-bit mantissa (including a sign bit) and a 6-bit exponent (including a sign bit). What is the approximate value of the maximum number, which can be represented? Assume that the mantissa is stored in the normalised form, that is, without leading zeroes.
(a) 2^{64} (b) 2^{63} (c) 2^{32} (d) 2^{31}

2) Which one of the following statements is **always** true?

(a) A compiled program uses more memory than an interpreted program.
(b) A compiler converts a program to a lower level language for execution.
(c) A compiler for a high level language takes less memory than its interpreter.
(d) Compiled programs take more time to execute than interpreted programs.

3) Suppose a system has been evolved, called the ternary system, by creatures having only 3 fingers. Numbers in this system are written down, using the digits 0, 1, and 2, with 2>1>0.

What will be the binary equivalent of 222 in this system?
(a) 101010 (b) 11000 (c) 10110 (d) 11010

4) What will be the value of the C expression?
4 + 6 / 3 * 2 - 2 ?

(a) 3 (b) 4 (c) 5 (d) 6

5) Consider the following program segment:

```
i = 6720; j = 4;
while ( (i % j) = = 0){
   i = i / j;
   j = j + 1;
 }
```

What will be the value of j on termination of the segment?

a) 4 (b) 8 (c) 9 (d) 6720

D.2.4. Answers to Sample Questions

1) (d) 2) (b) 3) (d) 4) (d) 5) (c)

D.3. Computer Programming in C (CP)

D.3.1. Topics

Data types, expression evaluation, precedence rules, type conversions, sequential structure, selective structure, repetitive structure, functions (including recursion), arrays, pointers, structures and unions, operations on bits, file processing, pre-processor. The syntax assumed will be that of ANSI C. Approximately 20% of the questions will test the candidate's knowledge of the syntactical structure of 'C'. The remaining questions will test the candidate's working knowledge and understanding of the 'C'.

D.3.2. Recommended Books

Programming in ANSI C by Ram Kumar and Rakesh Agrawal, Tata McGraw-Hill, 1993 covers these topics.

D.3.3. Sample Questions

1) What will be the output of the following program segment? (Given that ASCII codes are used and that the codes for the lowercase letters are greater than that of the uppercase letters).

```
char c;
c = 'C' + 'a' - 'A' + 1;
printf("%c", c);
```

(a) a (b) p (c) d (d) r

2) The following code segment is supposed to print out letters from 'a' to 'z'. What is the smallest piece of code possible to substitute for XXX so that the program does this?

```
char c = 'a';
while(c++ <= 'z') putchar(XXX);
```

(a) c-- (b) c (c) c - 1 (d) c++

3) The following program segment is supposed to find the number of lowercase letters in the input. There is a bug in one of the lines in the program.

```
lower = 0;
while ((c = getchar()) != EOF){
   if((c >= 'a') || (c <= 'z'))
   lower++;
 }
```

Which of the choices below is the correct version of the line?

(a) lower = 1; (b) if((c >= 'a') && (c < 'z'))

(c) ++lower; (d) if((c >= 'a') && (c <= 'z'))

4) In the following segment of 'C' code, which of the lines has a syntax error?

```
char *a, *b, c[100], d[100];
a = b;  (1)
b = d;  (2)
c = a;  (3)
a = c;  (4)
```

(a) 1 (b) 2 (c) 3 (d) 4

5) What does the following program print?

```
void max(int x, int y, int m)
{
     if (x > y) m = x;
    else m = y;
}
int main(void)
{
    int i, j, k;
    i = 20; j = 5; k = 0;
    max(i, j, k);
    printf("%d\n", k);
}
```

(a) 5 (b) 20 (c) 0 (d) None of these

D.3.4. Answers to Sample Questions

1) (c) 2) (c) 3) (d) 4) (c) 5) (c)

Appendix E: Syllabus for D Level

E.1. General Aptitude (GA)

Same as that for E Level (*see* Appendix D)

E.2. Computer Programming in C (CP)

Same as for E Level (*see* Appendix E).

E.3. Computer Organization and Operating Systems (CO)

E.3.1. Topics

Basic concepts in Computer organization:
Boolean algebra, number systems – binary, octal and hexadecimal, fixed point and floating point number representations.
Computer structure – Von Neumann architecture, system bus, CPU instruction cycle, programmed I/O, interrupts and DMA, CPU registers, instruction formats and addressing modes.
Memory organisation – types and hierarchy, model level organization, cache memory performance and design issues such as mapping, replacement and write policies.
CPU Performance Enhancement – Basic idea of RISC and pipelined architectures.
Fundamentals of operating systems – OS services and components, multitasking, multiprogramming, timesharing, buffering, spooling.
Process and thread management – concept of process and threads, process states, process management, context switching, user and kernel mode switching, interaction between processes and OS, multithreading, user and kernel level threads.
Concurrency control – concurrency and race conditions, mutual exclusion requirements, software and hardware solutions, semaphores, monitors, classical IPC problems and solutions,
deadlocks - characterization, detection, recovery, avoidance and prevention.
Memory management – memory partitioning, swapping, paging, segmentation, virtual memory, page replacement algorithms.
I/O – interrupt handlers, device drivers, device independent software subsystem.
File systems – file storage, access methods and free space management.
Distributed systems – Basics of parallel, networked and distributed systems.
Security – Need and strategies for security in standalone and networked systems, concept of access control list and capabilities, password and encryption schemes.
Unix Operating System – basic design principles, concepts of kernel and shell, fundamentals of file system, process models and IPC mechanisms.

E.3.2. Recommended Books

- *Operating System Concepts (5th Ed)* by Silberschatz and Galvin, Wiley, 2000.
- *Operating Systems (4th Ed) – Internals and Design Principles* by William Stallings, Prentice Hall, 2000.
- *Computer Organization and Architecture (4th Ed)* by William Stallings, Prentice Hall India, 1996.
- *Modern Operating Systems (2nd Edition)* by Andrew S Tanenbaum, Prentice Hall India, 2001.

E.3.3. Sample Questions

1) Which of the following fields **must** occur explicitly as a part of machine instruction?

(a) Operation Code
(b) Source operand reference
(c) Result operand reference
(d) Next instruction reference

2) Which of the following is **not** a feature of RISC architecture?

(a) Large number of registers
(b) Pipelining
(c) Instruction set close to a high-level language
(d) Simple instruction format

3) Which of the following services is **least** likely to be provided by an Operating System?

(a) Accounting of resource usage
(b) Database Management System
(c) Memory allocation
(d) Protection modes for files

4) The advantage of Round Robin (RR) CPU scheduling over Shortest Job First (SJF) scheduling is:
(a) better average turnaround time
(b) better average response time
(c) both (a) and (b)
(d) neither (a) nor (b)

5) Which of the following is an advantage of *interrupt-driven* I/O over *programmed* I/O?
(a) Faster completion of the data transfer
(b) Higher bandwidth availability
(c) Better CPU utilization
(d) Smaller memory requirement

E.3.4. Answers to Sample Questions

1) (a) 2) (c) 3) (b) 4) (b) 5) (c)

E.4. Data Structures and Algorithms (DS)

This paper does not assume an in-depth knowledge of any particular programming language. If and when code segments are required to be given in questions, we will use a pseudo-language based on C/Java.

E.4.1. Topics

Abstract data types: Notion of abstract data types and data structures, simple data structures including arrays, stacks, queues and linked lists (linear, circular and doubly-linked).
Trees: Different types of trees including binary trees, complete binary trees, almost complete binary trees, binary search trees, balanced binary trees including AVL trees, heaps, multi-way search trees and B-trees; insertion and deletion of nodes and traversal in each of these types of trees.
Graphs: Representations, directed and undirected graphs, notion of path, path finding algorithms, Dijkstra's shortest-path algorithm, traversals and spanning trees, minimum spanning tree (algorithms of Kruskal and Prim), applications of graphs such as network flow problem and topological sort.
Algorithms: Order notation; notions of P, NP and NP-complete problems, basics of algorithms design, different classes of algorithms; the following algorithms and their complexity measures: bubble sort, quick sort, selection sort, insertion sort, shell sort, heap sort and merge sort; searching algorithms including sequential search, ordered table search, binary search and binary tree search; hashing (hash collision, primary and secondary clustering, open addressing and chaining techniques, hash functions).

E.4.2. Recommended Books

- *Data Structures and Algorithms in Java* by Adam Drozdek, Thomson Learning, 2001.
- *Data Structures and Algorithm Analysis in Java (2nd Edition)* by Mark Allen Weiss, Addison Wesley, 2006
- *Data Structures using C* by AM Tanenbaum, Y Langsam and MJ Augenstein, Prentice-Hall, India, 1991.
- *Data Structures and Program Design in C* by RL Kruse, BP Leung and CL Tondo, Prentice Hall, 1991.
- *Data Structures, Algorithms and Applications in Java,* 2nd edition by Sartaj Sahni, Universities Press, 2005

E.4.3. Sample Questions

1) In an algorithm, the first few steps are of complexity O (N), the next few steps are of complexity O(N^4) and the last few steps are of complexity O(N^2). What is the complexity of the algorithm as a whole?

(a)O(N^2) (b) O(N^3) (c) O(N^4) (d) O(N^7)

2) Consider generating binary search trees using a given set of numbers in the given order. The tree is to be constructed by inserting the numbers into the current partial tree such that at any node, the following condition is satisfied: value of left child < value of node < value of right child. Which of the following sequence of numbers will result in a tree that is strictly binary, i.e., every node has either two children or no children?

(a) 4 5 2 1 3 (b) 4 6 5 7 3 2 (c) 4 6 2 1 3 5 (d) 4 5 3 2 6

3) Which of the following represents the minimum order of time required to interchange the mth and nth elements of a singly linked list? Assume m and n are very large so that the time for pointer manipulations may be ignored compared to the traversal time.

(a) max(m,n) (b) min(m,n)
(c) m+n (d) m+min(m,n)

4) Which of the following is TRUE in the context of comparing breadth first search (BFS) and depth first search (DFS) of a graph?

(a)BFS does not generate a minimum spanning tree.
(b)BFS uses less space compared to DFS
(c)BFS as well as DFS generates spanning tree of the graph.
(d)BFS takes O(log N) time compared to O(N) for DFS, where N is the number of nodes

5) Construct a min-heap from the following sequence of integer elements.

120 140 40 50 80 70 60 90 20 100

After deleting the root element from the heap, what will be the post order traversal of the heap?

a) 140 100 90 80 50 120 70 60 40
b) 140 100 90 80 120 70 50 60 40
c) 140 100 80 90 120 70 50 60 40
d) 140 90 100 50 80 40 120 60 70

E.4.4. Answers to Sample Questions

1) (c) 2) (a) 3) (a) 4) (c) 5) (a)

Appendix F: Syllabus for G Level

F.1. General Aptitude (GA)

Same as for E Level (*see* Appendix D)

F.2. Computer Organization and Operating Systems (CO)

Same as that for D-Level (*see* Appendix F)

F.3. Data Structures and Algorithms (DS)

Same as that for D-Level (*see* Appendix F)

F.4. Web Technology

F.4.1. Topics

General

HTTP:
Overview - HTTP Basics, Client request, Server response; HTTP Headers;
Session Management - Persistent connections, Cookies.
General concepts on web server:
Apache Configuration & Administration; Virtual hosting
General concepts of Caching Proxy Server
Web Security
SSL; Digital Signatures; Authentication.

Client side technologies

HTML:
Structure of HTML Document - Meta tags, Links, Text, Lists, Tables, Inclusions (Objects, Images, and Multimedia contents);
Presentation of HTML Document - Style Sheets, Alignment, Fonts, Frames;
Interactive HTML Document - Forms, Scripts.
XML:
Overview; Schemas-DTD (Document Type Definitions), XML Data, Namespaces; Document Object Model, XSLT.
Java Applets:
Lifecycle of Applets; Applet context; Limitations of Applets
Client Side JavaScript:
Object Reference - Objects, Methods and Properties, Event Handlers;
Language constructs - Statements and Operators.

Server side technologies

CGI
Java Servlets:
HTTP Servlet Basics, Servlet Life Cycle, Session Tracking, Interservlet Communication
Overview of ASP & JSP
SSI:
SSI Directives; SSI Environment Variables; SSI Formats.

F.4.2. Recommended Books

- *HTML & XHTML: The Definitive Guide*, 5th Edition by Chuck Musciano & Bill Kennedy, O'Reilly and Associates.
- *Learning XML, 2nd Edition b*y Eric T. Ray & Christopher R. Maken, O'Reilly and Associates.
- *Webmaster in a Nutshell, 3rd Edition* by Stephen Spainhour, O'Reilly and Associates.
- *Java Servlet Programming, 2nd Edition b*y Jason Hunter with William Crawford, O'Reilly and Associates.
- *JavaScript: The Definitive Guide, 4th Edition b*y David Flanagan, O'Reilly and Associates.
- *Professional JSP, 2nd Edition b*y Karl Avedal et al., Wrox Publications.
- *ASP in a Nutshell, 2*nd Edition by Keyton Wessinger, O'Reilly and Associates.

F.4.3. Sample Questions

1) With respect to the security implementation in applets, which of the following statements is **FALSE**?
   (a) Applets cannot load libraries or define native methods.
   (b) Applets cannot read or write files in the host machine.
   (c) Applets cannot make network connections other than to the server from which it came.
   (d) Applets cannot call public methods of the other applets in the same page.

2) What function does HTTP Keep-Alive perform?
   (a) Reduce the bandwidth requirements needed by caching (keeping alive) commonly used scripts and web pages in the web server's memory.
   (b) Maintain a connection to the browser so the web server can more quickly respond to multiple requests
   (c) Keep the Active Server Pages alive in the server's memory so they don't have to be retrieved from disk
   (d) Reduce the amount of memory needed on the server by keeping alive the Scripting engine on the web browser

3) Which of the following cannot be configured for a web server?
   (a) The port number where the web server listens.
   (b) IP address on which request for a virtual host name will be received.
   (c) Acceptable content types.
   (d) System model (like single-thread model, cascade model, pool model, etc.) in which web server will run.

4) Which of the following statement is **TRUE**?
   (a) GET request passes all its data, of unlimited length, directly over the socket connection as part of its HTTP request body.
   (b) Every servlet must implement the javax.servlet.Servlet interface.
   (c) An HTTP Servlet is required to override the service() method of the HTTPServlet class.
   (d) An HTTP Servlet which implements the doGet() method does not support HEAD requests.

5) Write a one-line code for refreshing the same page dynamically after every 10 seconds.
   (a) <META HTTP-EQUIV="Refresh" CONTENT="10;URL= sameurl.html">
   (b) <LINK HTTP-EQUIV="Reload" SRC="10;URL= sameurl.html">
   (c) <META HTTP-EQUIV="Refresh" TIME=10 HREF="URL= sameurl.html">
   (d) <META HTTP-EQUIV = ”Refresh” COUNT = ”10; URL = sameurl.html”>

F.4.4. Answers to Sample Questions

1) (a) 2) (b) 3) (d) 4) (b) 5) (a)

F.5. Computer Networks

F.5.1. Topics

TCP/IP: reference model and concepts of networking protocols.
Physical layer: Theoretical concepts in data communication (Fourier Analysis, bandwidth, baud rate, bit rate, error rate, transmission delays), Transmission Media ,Communication Satellites, PSTN, Trunks and Multiplexing, Switching, Modems, xDSL, Mobile Telephone System, Internet Over Cable.
Data Link Layer: Design issues,Error Detection and Correction, Elementary Data Link Protocols, Sliding Window Protocols, Example Data Link Protocols
Medium Access Control Sublayer: The channel allocation problem, multiple access protocols, Ethernet, Wireless LANs, Broadband Wireless, Data Link Layer switching
Network layer: Design issues, routing algorithms, congestion control algorithms, Quality of Service, Internetworking, Network Layer in the Internet.
Transport layer: Theoretical Aspects of Transport Protocols, UDP, TCP
Common networking applications: E-mail, The World Wide Web, and DNS
Network Security: Symmetric-Key Algorithms, Public-Key Algorithms, Digital Signatures, Digital Certificates, IPsec, Firewalls, Virtual Private Networks, Wireless Security, Authentication Protocols.

F.5.2. Recommended Books

- *Computer Networks* (4th ed.) by Andrew S. Tanenbaum, Prentice Hall of India, 1996.
- *Data and Computer Communications* (5th ed.) by William Stallings, Prentice Hall of India, 1997.

F.5.3. Sample Questions

1) Error detection at the data link level is achieved by?
   a) Bit stuffing (b) Cyclic redundancy codes (c) Hamming codes (d) Equalization

2) A subnet mask is used to
   a) Identify different subnets within an intranet
   b) Identify different subnets within an internet
   c) Identify the number of bits to be used as the network portion in the IP address
   d) Mask the IP address of a machine from hackers

3) Which of the following statements about the IEEE 802 standard Local Area Networks is **TRUE**?
   a) All IEEE 802 LANs use the same physical layer but different MAC layers
   b) All IEEE 802 LANs use the same MAC layer but different LLC layers
   c) All IEEE 802 LANs use the same LLC layer but different MAC layers
   d) All IEEE 802 LANs use the same physical layer but different LLC layers

4) Assuming that, for a given network layer implementation, connection establishment overheads are 100 bytes and disconnection overheads are 28 bytes, what would be the minimum size of a packet the transport layer needs to keep if it wishes to implement a datagram service above the network layer and needs to keep its overhead to a maximum of 12.5%. Ignore transport layer overheads.

   a) 512 bytes (b) 768 bytes (c) 1152 bytes (d) 1024 bytes

5) End-to-end connectivity is provided from host-to-host in:
   a) the network layer
   b) the transport layer
   c) the session layer
   d) it is a combined functionality of the network and the data link layers

F.5.4. Answers to Sample Questions

1) (b) 2 (c) 3 (c) 4 (d) 5 (b)

F.6. Database Management

F.6.1. Topics

Database Systems - Basic Concepts: data, database, database systems, database management system; data models, data abstraction, data independence, three level architecture, data definition language, data manipulation language, overall system architecture of DBMS, data dictionary, schema processor, query processor, three classical data models (hierarchical, network and relational)
Relational Data Model: relational structure - tables (relations), rows (tuples), domains, attributes, keys, candidate keys, primary key, entity integrity constraints, referential integrity constraints;
Query languages - relational algebra, relational calculus, SQL
Database Design: relational database design, normalization based on functional dependencies and multi-valued dependencies, Normal forms 1, 2, 3, BCNF, 4 and 5, conceptual design, entity-relationship model, translation of E-R schemes to relational schemes (logical design), physical design
DBMS storage structures and access methods: hash, ISAM, B-Tree and B-Tree variants, dynamic hashing, primary index, secondary index.
Query Processing: query expression trees, equivalence, query expression, tree optimization, cost estimation, implementation of relational algebra operations.
Transaction Processing: recovery techniques, WAL based recovery, check pointing, concurrency control, serializability, lock-based concurrency control, strict two-phase locking, multiple granularity locking, time-stamp based concurrency control.
Other Issues: security & integrity, authorization and views, security specification in SQL, types of integrity constraints, triggers in SQL, declarative constraints in SQL.

F.6.2. Recommended Books

- Database System Concepts (3rd ed.) by Abraham Silberschatz, Henry F Korth and S. Sudarshan, McGraw-Hill International Edition, 1996
- Fundamentals of Database Systems (3rd ed.) by Ramez Elmasri and Shamkant Navathe, Addison Wesley, 1997

F.6.3. Sample Questions

1) With respect to the three classical data models namely, hierarchical, network and relational, select the statement that is most appropriate:

a) It can be observed that hierarchical model is most restrictive in data abstraction primitives while relational model is least restrictive.
b) Hierarchical model is based on sequential access to the storage device, while relational and network models are not based on such a model for the physical storage device.
c) Recursive relationships cannot be expressed in the network model using sets and records.
d) In the traditional hierarchical model, it is impossible to represent m:n relationships. This limitation can be overcome by providing virtual records.

2) Choose the most appropriate statement with respect to data independence

a) Data independence means data is defined separately and not included in programs
b) Hierarchical and network DBMS's do not support any kind of data independence as no arbitrary changes in the structure are supported.
c) Data independence means that the application programs are resilient to changes in data - its structure and storage organization.
d) In RDBMS, both physical and logical data independence is guaranteed.

3) Checkpointing when used in conjunction with incremental log reduces the actual recovery time. However, for proper recovery the system must ensure that (choose the correct one) :

a) At the time of checkpointing there is no incomplete transaction.
b) If the updates are deferred, at the time of checkpointing there is no incomplete transaction.
c) If updates are immediate, at the time of checkpointing there is no incomplete transaction
d) None of the above

4) Given the functional dependencies:
$X \rightarrow W$, $X \rightarrow Y$, $Y \rightarrow Z$ and $Z \rightarrow PQ$
Which one of the following **does not** hold?

a) $X \rightarrow Z$ b) $W \rightarrow Z$ c) $Z \rightarrow Q$ d) $X \rightarrow WY$

5) Choose the most appropriate choice with respect to conceptual design.

a) Conceptual design is a documentation technique. Once the relation schemes are defined one can draw E-R diagrams from the relation schemes for documentation.
b) Conceptual design needs data volume and processing frequencies to determine the size of the database.
c) Output of any conceptual design is an E-R diagram.
d) Conceptual design involves modelling the data requirements independent of the DBMS, OS and the hardware.

F.6.4. Answers to Sample Questions

1) (d) 2) (c) 3) (d) 4) (b) 5) (d)

F.7. Software Engineering

F.7.1. Topics

Software Engineering Principles: how is software engineering an `engineering' discipline?, information system characteristics, software development process models, life cycle concepts, software phases and deliverables, software development strategies.
Technical Development: structured systems analysis and design, risk analysis and management, requirements collection and specification, dataflow and logical data modelling, cost benefit analysis, feasibility study, architectural and detailed design, process, data, network, control and user interface designs, physical data design, dynamic modelling for real-time systems.
Software Project Management: principles of software project management, organisational and team structure, project planning, project initiation and project termination; technical, quality, and management plans, project controls, cost estimation methods - function points and COCOMO, tools.
Software Quality Management: quality control, quality assurance, quality standards, software metrics, verification and validation, testing, quality plans, tools.
Configuration Management
Software Development Methods & CASE: formal, semi-formal and informal methods, data, function, and event-based modelling, some of the popular methodologies such as Yourdon's SAD, SSADM etc, CASE tools,

CASE standards.
Implementation: in 3GL environments, in 4GL environments, in client-server environments, coding styles, Documentation, Software Maintenance.

F.7.2. Recommended Books

Software Engineering - A Practitioner's Approach (6th ed.) by Roger S Pressman, McGraw-Hill Intl. 2001

F.7.3. Sample Questions

1) Data Flow Model of an application mainly shows
   a) The underlying data and the relationships among them.
   b) Processing requirements and the flow of data.
   c) Decision and control information.
   d) Communication network structure.

2) Configuration management is not concerned with:
   a) controlling changes to the source code.
   b) choice of hardware configuration for an application.
   c) controlling documentation changes.
   d) maintaining versions of software.

3) The Railway Reservation System currently operational in India is best classified as a:
   a) Batch system (b) Real-time system (c) Online system (d) Expert system

4) Which of the following testing methods is normally used as the acceptance test for a software system?
   a) Functional testing (b) Unit testing (c) Integration testing (d) Regression testing

5) Which of the following types of maintenance takes the maximum chunk of the total maintenance effort in typical commercial application environment?
   a) Adaptive maintenance (b) Corrective maintenance (c) Preventive maintenance (d) Perfective maintenance

F.7.4. Answers to Sample Questions

1) (b) 2) (b) 3) (c) 4) (a) 5) (d)

F.8. Java Technologies

F.8.1. Topics

Language Fundamentals: Data representation, Operators and Expressions, Control Flow and Looping Constructs, Classes and Objects, Interfaces, Inheritance, Exception handling, Packages.
Core API Packages (As specified in Java 2 Standard Edition v 1.4.x): lang, util, io, math, awt, applet.
Concepts: Swings (JFC), Thread Management, Serialization, Remote Method Invocation, Java Beans, Security Model, Collections, JDBC, Enterprise Java Beans 2.1

F.8.2. Recommended Books

- *Core Java (TM)2, Volume I (6th Edition) and Volume II* (5th Edition) by Cay Horstmann, Gary Cornell
- *Mastering Enterprise JavaBeans ,* 3rd Edition by Ed Roman, Rima Patel Sriganesh, Gerald Brose
  or any other book with similar contents.
- The Complete Reference Java 2, Fifth Edition By Herbert Schildt

F.8.3. Sample Questions

1) `java.lang.Long` class is needed in spite of long primitive data type because
   a) It can handle infinite precision numbers
   b) It can be passed by reference
   c) It can handle large arrays of numbers
   d) It can convert base of number

2) Which of the following gives Java its platform independence?
   a) same language across all platforms
   b) byte code
   c) compilers on all platforms
   d) object-oriented programming language

3) Which of the following technologies is used by java to allow an application to access a database?
   a) jdbc
   b) odbc
   c) servlets
   d) java.db package

4) The size of the `long` data type is guaranteed to be :
   a) 32 bits
   b) 64 bits
   c) 96 bits
   d) 128 bits

5) Which of the following keywords has to be used by a subclass constructor to invoke a superclass constructor
   a) super
   b) superclass
   c) construct
   d) init

F.8.4. Answers to Sample Questions

1) (b) 2) (b) 3) (a) 4) (b) 5) (a)

F.9. Object-Oriented Programming and C++

F.9.1. Topics

OO Concepts: Objects, classes, messages, inheritance, dynamic binding, polymorphism, OO paradigm, reusability and extensibility, abstract data types, encapsulation, information hiding, genericity.
Data Abstraction in C++: Classes, ADT implementation, interface and implementation, members, methods, static member and member functions, initialization, constructors and destructors, operator and function overloading, parameter passing by value and by reference, function signatures and name mangling, dynamic memory allocation and new and delete operators, assignment operator overloading, shallow and deep copies, copy constructor, friend functions and classes, template functions and classes.
Container classes, iterators, iostream class library, error handling and exceptions in C++.
Inheritance and C++: Base and derived classes, public, private and protected derivations, control of access and visibility using public/private/protected keywords, type compatibility among super- and sub-types, value/pointer/reference assignment semantics, virtual functions, multiple inheritance and repeated inheritance, virtual derived classes.
Object oriented design and programming using classes and inheritance.

F.9.2. Recommended Books

- *The C++ Programming Language (3rd ed.)* by Bjarne Stroustrup, Addison-Wesley, 1991.
- *An Introduction to Object-oriented Programming* by Timothy Budd, Addison-Wesley, 1991.
- *C++ Primer (3rd ed.)* by Stanley Lippman, Addison-Wesley

F.9.3. Sample Questions

1) Consider the following interface for a C++ class Stack:

```
typedef char Item;
const int MAXSIZE=100;
class Stack {
private:
   Item sArray[MAXSIZE];
   Item *sTop=sArray-1;
public:
   int isEmpty();
   void push(Item);
   Item pop();
   Item &peek() {return *sTop;}
};
```

Given that the variable s and sp are of types Stack and Stack* respectively, which of the following

statements will lead to compile time errors due to access violation?

a) s.push('a')
b) sp->push('a')
c) s.peek() = 'a'
d) sp->sArray[0] = 'a'

2) Inheritance is often used to model
   a) the commonality among a number of objects.
   b) the commonality among a number of object classes.
   c) the commonality among a number of functions.
   d) the commonality among a number of programs

3) In C++,
   a) dynamic binding is used for all methods.
   b) dynamic binding is used for public methods only.
   c) dynamic binding is used for virtual methods only.
   d) static binding is used for all methods.

4) The default copy semantics for objects of a class for which no copy constructor is defined, is
   a) member-wise memory copy
   b) deep copy
   c) undefined
   d) none of the above.

5) Choose the correct statement regarding the overloading of the selection operator -> in C++.
   a) It is overloaded as a non-member function.
   b) While it looks like a binary operator, it cannot be overloaded as a member function with one argument.
   c) Once overloaded in a class C, the operator can be used on any pointer variable pointing to the object of type C.
   d) none of the above.

F.9.4. Answers to Sample Questions

1) (d) 2 (b) 3 (c) 4 (a) 5 (b)

F.10. Power Electronics

(To be introduced from CST-2008)

F.11. Embedded Technology

(To be introduced from CST-2008)

Appendix G: Instructions for filling the Application forms (A-1 or A-2)

This appendix contains instructions for filling up form A-1 and form A-2. Please read the instructions carefully before filling up the form.

Form A-1 should be filled in only by those who wish to appear for the CST-2007 examination.
Form A-2 should be filled in only by those candidates who DO NOT WISH TO APPEAR FOR THE CST-2007 EXAM but are seeking course admissions based on past valid CST scores (only CST-2005 and CST-2006 scores are valid).

It is recommended that candidates fill in the application form online at the CST web site: http://www.cdacmumbai.in/education/cst/. **The instructions for online registration are different from the manual application. Please refer to our website for more information.**

The instructions below are applicable only to manual application process.

G.1. Help information for items to be filled in the form A-1

Fill in all fields in capital letters (BLOCK LETTERS). The e-mail and the password field should be filled in exactly in the way they are typed (capital or small letters as these are case sensitive).

1. Fill in your name the way you want it to appear on the CST score report.
2. Fill in the password. The password should be minimum of 5 characters and maximum of 10 characters. Make sure that others cannot easily guess the password. Do not use your name, date of birth, etc. as passwords. The password **must be always remembered.** Password is required for the following activities
   a. Checking application status
   b. Querying for the respective CST roll no.
   c. Viewing CST result.
   d. Applying for C-DAC, Mumbai and Electronics City, Bangalore courses.

   Please make a note of the password in a safe place. In case you forget the password it will be sent to you by e-mail. In case the e-mail id is not mentioned, you have to come personally at C-DAC, Mumbai and Bangalore and collect the password after showing proper identification.
3. Fill in the address to which your score report and all communications should be sent. **Please note that it is mandatory to provide the PIN Code.** Address without PIN code will be termed as incomplete.
4. Fill in your personal e-mail ID, usually of your e-mail account on Web-based Email providers such as Gmail, Yahoo, Rediff etc. **Please note that examination related communication will be sent on this email address. It is advised that you provide correct and valid e-mail ID.**
5. Fill in your Mobile no., if available
6. Fill in your office phone number, if available, including the STD code. The format for writing the phone number should be 022-26201606 where 022 is code for Mumbai and 26201606 is the office telephone number. Include the extension number, if any, at the end example: 022-26201606-304 where 304 is the extension.
7. Fill in your residential phone number, if available, including your STD code. The format is the same as for the office number.
8. Fill in your **date of birth in DD-MM-YYYY format.** Please do not specify current date.
9. Mark your gender in the box provided (Male/Female).
10. Indicate the category to which you belong (GEN/SC/ST/OBC).
11. Indicate which level of the examination you are appearing for (please tick **ONLY ONE** box).
12. Fill in the city code and city name where you would like to take the CST examination. Please see the code list given in the section G.5 of the brochure.
13. G level candidates may please indicate if they are interested in being considered for recruitment at C-DAC centres in Mumbai, Bangalore, Kolkata, Pune, Chennai, Hyderabad and Delhi. **Those who do not exercise this option of filling the appropriate choices in A-1 application form will not be considered for any recruitment with C-DAC.**
14. D/G level candidates may please indicate whether they are interested in dissertation project at C-DAC, Mumbai and Electronics City, Bangalore. Please check eligibility criteria in section 2.4 before marking this.
15. If you are interested in applying for any of the PGDSM-MIT/MCA/M.Sc. (IT) courses listed then tick the boxes in this form.
16. If you have taken the CST examination within the last 2 years, fill in your previous CST-ID and year here (only CST-2005 and CST-2006 scores are valid, CST scores before these years will not be considered).

17. If you are already a PGDST/PGDIT/FPGDST/APGDST student, you have to write your student-id no. here.
18. Mention your highest acquired degree/diploma (completed), **excluding** C-DAC courses. Also mention the discipline, year of passing, marks obtained and division/class. In case your results are in the form of GPA, then give GPA. For percentage marks, specify up to 2 decimals (i.e write 74.56% as 7456.) Use following short form for divisions: DIST=Distinction, FIRST=First, SECON=Second, PASS=Pass Class.
19. Mention your degree/diploma (appearing for), **excluding** C-DAC courses. Also mention the discipline, current semester (in figures, e.g. "7" for 7th semester) and likely year of completion (YYYY format).
20. Mention the University Code and the name of the University that your college is affiliated to. The names of the Universities and their codes can be found in section G.6. University Names and Codes**If your university does not figure in this list, check if it falls in the category of other Deemed Universities or Foreign University and use the appropriate code which stands for these as given in G.6.**
21. Examination Fee Details – Fresh Candidates taking the full examination or Candidates re-appearing in the whole examination, should mark the fee details appropriately as per the level they are appearing for, as per the fee details given in table A. **Please note that the exam fees for manually filling up the application form is higher than that for filling up the form through online registration at the web-site.**

s

Candidates who cannot apply online through our website www.cdacmumbai.in can fill in the A-1 form manually (either from the CST-2007 brochure or the PDF version downloaded from the site) and submit this to C-DAC, Juhu, Mumbai with the 3 photographs and requisite fee D.D. as specified in the A-1 form.

22. Mark the mode of payment here. You can pay across the counter by Demand Draft at C-DAC, Juhu, Mumbai during working days and office hours. Please note the following regarding Demand Draft details:

a. D.D. should be crossed "account payee" and should be drawn in favour of "**C-DAC, Mumbai"** *payable at Mumbai***.**
b. Please write your name and level of the CST examination you are appearing for on the reverse side of the DD.
c. Mention the DD Number, Date and Bank Name, Bank Code, Bank Branch Name and Bank City.

23. Put your signature and date on the declaration. Application forms submitted without signature will be rejected outright.

G.2. Help information for items to be filled in the form A-2

1	Fill the CST ID and year from where you want your score carried forward to this year.
2	Fill in the level of examination that you want the scores carried from.
3 to 17	Refer the help information provided for in the A-1 form.

G.3. Manual application Checklist

1. Candidates must provide 3 identical copies of their RECENT colour passport-size (2.5cm x 2.5cm) photographs. Write your name on the reverse of the photographs. One photograph must be PASTED and the other two photographs must be STAPLED in the place provided on the form. Application forms submitted without photographs will be rejected outright.
2. The crossed DD should be made account payee and has to be drawn in favour of "**C-DAC, Mumbai**" *payable at Mumbai***.**
3. The DD along with the filled form should be sent by post (registered/speed-post/courier) to

   The CST-2007 Examination Desk
   Centre for Development of Advanced Computing (C-DAC)
   (formerly National Centre for Software Technology) (NCST)
   Gulmohar Cross Road No. 9, Juhu, Mumbai-400 049

4. Please mention your name and type of form (A-1 or A-2) clearly on the left top side on the front of the envelope.

G.4. Online application Checklist

Please follow the instructions on the website for online registration.

G.5. CST-2007 Examination City Codes

Examination City	Codes
Allahabad	0532
Bangalore	0800
Chennai	0440
Coimbatore	0422
Delhi	0110
Goa	0832
Hyderabad	0400
Kolkata	0330
Mumbai	0220
Nagpur	0712
Pune	0200
Thane	0221
Thiruvananthapuram	0471
Visakhapatnam	0891

G.6. University Names and Codes

University Name	Code
Acharya N.G. Ranga Agricultural University, Hyderabad	AP01
Agra University, Agra	UP01
Agricultural Sciences University, Bangalore	KN01
Alagappa University, Karaikudi	TN01
Aligarh Muslim University, Aligarh	UP02
All India Institute of Medical Sciences, New Delhi	DL01
Allahabad University, Allahabad	UP03
Amravati University, Amravati	MH01
Andhra Pradesh Agricultural University, Andhra Pradesh	AP02
Andhra University, Visakhapatnam	AP03
Anna University, Chennai	TN02
Annamalai University, Chidambaram	TN03
Arunachal University, Itanagar	AR01
Assam Agricultural University, Jorhat	AS01
Assam University, Silchar	AS02
Avadh University, Faizabad	UP04
Awadhesh Pratap Singh University, Rewa	MP01
Baba Farid University of Health Sciences, Faridkot	PU01
Baba Ghulam Shah Badshah University, Jammu	JK01
Babasaheb Bhimrao Ambedkar Bihar University, Muzaffarpur	BH01
Babasaheb Bhimrao Ambedkar University, Lucknow	UP05
Banaras Hindu University, Varanasi	UP06
Bangalore University, Bangalore	KN02
Barkatullah University, Bhopal	MP02
Berhampur University, Berhampur	OR01
Bhagalpur University, Bhagalpur	BH02
Bharathiar University, Tamil Nadu	TN04
Bharatidasan University, Tiruchirapalli	TN05
Bhavnagar University, Bhavnagar	GT01
Bhupendra Narayan Mandal University, Madhepura	BH03
Bidhan Chandra Krishi Vishwavidyalaya, Nadia	WB01
Bihar University, Muzaffarpur	BH04

Biju Patnaik University of Technology, Rourkela	OR02
University, Bikaner	RJ01
titute of Technology and Science, Pilani	RJ02
Birla Institute of Technology, Ranchi	BH05
Birsa Agricultural University, Ranchi	JH01
Bundelkhand University, Jhansi	UP07
Burdwan University, Burdwan	WB02
Calcutta University, Calcutta	WB03
Calicut University, Kerala	KL01
Central Agricultural University, Imphal	MN01
Ch. Charan Singh Haryana Agricultural University, Hissar	HA01
Chandra Shekhar Azad University of Agriculture & Technology, Kanpur	UP08
Charan Singh University, Meerut	UP09
Chaudhary Devi Lal University, Sirsa	HA02
Chhattisgarh Swami Vivekanand Technical University, Bhilai,	Ch01
Cochin University of Science and Technology, Cochin	KL02
Dakshina Bharti Hindi Prachar Sabha, Chennai	TN06
Deendayal Upadhyaya Gorakhpur University, Gorakhpur	UP10
Delhi University, New Delhi	DL02
Dev Sanskriti Vishwavidyalaya, Uttaranchal	UT01
Devi Ahilya University, Indore	MP03
Dharmsinh Desai University, Nadiad	GT02
Dharwad University, Dharwad	KN03
Dhirubhai Ambani Institute of Information & Communication Technology, Gandhinagar	GT03
Dibrugarh University, Dibrugarh	AS03
Dnyaneshwar Vidyapeeth, Pune	MH02
Dr. Ambedkar Technological University, Raigad	MH03
Dr. Ambedkar University, Agra	UP11
Dr. B.R. Ambedkar Open University, Hyderabad	AP04
Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	MH04
Dr. Babasaheb Ambedkar Open University, Ahmedabad	GT04
Dr. Harisingh Gour Vishwavidyalaya, Sagar	MP04
Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Maharashtra	MH05
Dr. Ram Manohar Lohia Avadh University, Faizabad	UP12
Dr. Y.S. Parmar University of Horticulture & Forestry, Solan	HP01
Dravidian University, Chitoor	AP05
Fakir Mohan University, Balasore	OR03
Garhwal University, Garhwal	UP13
Goa Technical Board, Goa	GO01
Goa University, Goa	GO02
Gorakhpur University, Gorakhpur	UP14
Govind Ballabh Pant University of Agricluture & Technology, Pantnagar	UT02
Govind Ballabh Pant University of Agricluture & Technology, Pantnagar Uttaranchal	UP15
Govind Ballabh Pant University, Uttar Pradesh	UP16
Gujarat Agricultural University, Gujarat	GT05
Gujarat Ayurved University, Jamnagar	GT06
Gujarat University, Ahmedabad	GT07
Gulbarga University, Gulbarga	KN04
Guru Ghasidas University, Bilaspur	MP05
Guru Govind Singh Indraprastha Vishwavidyalaya, Delhi	DL03
Guru Jambeshwar University, Hisar	HA03
Guru Nanak Dev University, Amritsar	PU02
Gurukul Kangri University, Hardwar	UP17

Guwahati University, Guwahati	AS04
Harisingh Gour University, Sagar	MP06
Hemchandracharya North Gujarat University, Patan	GT08
Hemwati Nandan Bahuguna Garhwal University, Garhwal	UT03
Hidayatullah National Law University, Chhattisgarh	Ch02
Himachal Pradesh Agriculture University, Palampur	HP02
Himachal Pradesh University, Himachal Pradesh	HP03
Hyderabad University, Hyderabad	AP06
Indian Institute of Science, Bangalore	KN05
Indian Institute of Technology Guwahati, Guwahati	AP07
Indian Institute of Technology, Chennai	TN07
Indian Institute of Technology, Kanpur	UP18
Indian Institute of Technology, Kharagpur	WB04
Indian Institute of Technology, Mumbai	MH06
Indian Institute of Technology, New Delhi	DL04
Indian Institute of Technology, Roorkee	UT04
Indian Statistical Institute, Calcutta	WB05
Indira Gandhi Institute of Medical Sciences, Patna	BH06
Indira Gandhi Krishi Vishwavidyalaya, Raipur	Ch03
Indira Gandhi Open University, New Delhi	DL05
Indira Kala Sangeet Vishwavidyalya, Chhattisgarh	Ch04
Institute of Cost and Works Accountants of India	NA01
Integral University, Kursi Road, Lucknow	UP19
Jadavpur University, Calcutta	WB06
Jagadguru Rambhadracharya Handicapped University, UP	UP20
Jai Narain Vyas University, Jodhpur	RJ03
Jai Prakash Vishwavidyalaya, Chapra	BH07
Jamia Millia Islamia, Delhi	DL06
Jammu University, Jammu and Kashmir	JK02
Jawaharlal Nehru Krishi Vishwavidyalaya, Jabalpur	MP07
Jawaharlal Nehru Technological University, Hyderabad	AP08
Jawaharlal Nehru University, New Delhi	DL07
Jaypee University of Information Technology, Solan	HP04
Jiwaji University, Madhya Pradesh	MP08
Jodhpur University, Jodhpur	RJ04
Kakatiya University, Warangal	AP09
Kalyani University, Nadia	WB07
Kameshwar Singh Darbhanga Sanskrit University, Darbhnaga	BH08
Kannada University, Bellary	KN06
Kannur University, Kannur	KL03
Kanpur University, Kanpur	UP21
Karnataka State Open University, Mysore	KN07
Karnataka State Women University, Bijapur	KN08
Karnataka University, Karnataka	KN09
Kashmir University, Jammu and Kashmir	JK03
Kavikulguru Kalidas Sanskrit Vishwavidyalaya, Ramtek	MH07
Kerala Agricultural University, Kerala	KL04
Kerala University, Trivandrum	KL05
King George's Medical University, Lucknow	UP22
Konkan Krishi Vidyapeeth, Dapoli	MH08
Kota Open Univesity, Kota	RJ05
Krantiguru Shyamji Krishna Verma Kachchh University, Kachchh	GT09
Kumaon University, Nainital	UP23
Kurukshetra University, Kurukshetra	HA04

Kushabhau Thakre Patrkarita Avam Jansanchar Vishwavidyalaya, Raipur	Ch05
Kuvempu University, Shimoga	KN10
Lalit Narayan Mithila University, Darbhanga	BH09
Lucknow University, Lucknow	UP24
Madhya Pradesh Bhoj (Open) University, Bhopal	MP09
Madras University, Chennai	TN08
Madurai Kamaraj University, Tamil Nadu	TN09
Magadh University, Gaya	BH10
Maharaja Sayajirao University, Baroda	GT10
Maharana Pratap University of Agrilcuture & Technology, Udaipur	RJ06
Maharana Pratap University of Agrilcuture & Technology, Udaipur	RJ07
Maharashtra Animal & Fishery Sciences University, Nagpur	MH09
Maharashtra University of Health Sciences, Nashik	MH10
Maharishi Mahesh Yogi Vedic Vishwavidyalaya, Jabalpur	MP10
Maharshi Dayanand Saraswati University, Ajmer	RJ08
Maharshi Dayanand University, Rohtak	HA05
Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya, Wardha	MH11
Mahatma Gandhi Chitrakoot Gramoday Vishwavidyalaya, Chitrakoot	MP11
Mahatma Gandhi Kashi Vidyapeeth, Varanasi	UT05
Mahatma Gandhi Kashi Vidyapeeth, Varanasi	UP25
Mahatma Gandhi University, Kottayam	KL06
Mahatma Phule Agricultural University, Maharashtra	MH12
Mahatma Phule Krishi Vidyapeeth, Ahmednagar	MH13
Makhanlal Chaturvedi Rashtriya Patrakarita Vishwavidyalaya, Bhopal	MP12
Mangalore University, Mangalore	KN11
Manipur University, Canchipur	MN02
Manonmaniam Sundaranar University, Tirunelveli	TN10
Marathwada Agricultural University, Parbhani	MH14
Marathwada Agricultural University, Parbhani	MH15
Marathwada University, Nanded	MH16
Maulana Azad National Urdu Univesity, Hyderabad	AP10
Maulana Mazharul Haque Arabic & Persian University, Patna	BH11
Meerut University, Meerut	UP26
Mithila University, Darbhanga	BH12
Mizoram University, Aizwal	MZ01
Mohanlal Sukhadia University, Udaipur	RJ09
Mother Teresa Women's University, Kodiakanal	TN11
Mumbai University, Mumbai	MH17
Mysore University, Mysore	KN12
Nagaland University, Nagaland	NA02
Nagarjuna University, Guntur	AP11
Nagpur University, Nagpur	MH18
Nalanda Open University, Patna	BH13
Narendra Deva University of Agriclture & Technology, Faizabad	UP27
National Academy of Legal Studies and Research University, Hyderabad	AP12
National Institute of Pharmaceutical Education and Research, Mohali	PU03
National Institute of Technology, Allahabad	UP29
National Institute of Technology, Calicut	KL07
National Institute of Technology, Kurukshetra	HA06
National Institute of Technology, Surat	GT13
National Institute of Technology, Surathkal	KN15
National Institute of Technology, Tiruchirapalli	TN13
National Institute of Technology, Warangal	AP16
National Law Institute University, Bhopal	MP13
National Law School of India University, Bangalore	KN13

National Law University, Jodhpur	RJ10
National Productivity Council	NA03
Netaji Subhas Open University, Kolkata	WB08
Nirma University of Science & Technology, Ahmedabad	GT11
Nizam's Institute of Medical Sciences, Hyderabad	AS05
North Bengal University, Darjeeling	WB09
North Eastern Hill University, Shillong	MG01
North Gujarat University, Patan	GT12
North Maharashtra University, Maharashtra	MH19
North Orissa University, Mayurbhanj	OR04
Orissa University of Agriculture and Technology, Bhubaneswar	OR05
Orissa University, Orissa	OR06
Osmania University, Hyderabad	AP13
Padmavathi University, Andhra Pradesh	AP14
Pandit Sundarlal Sharma (Open) University, Bilaspur	Ch06
Patna University, Patna	BH14
Periyar University, Salem	TN12
Pondicherry University, Pondicherry	PO01
Postgraduate Institute of Medical Education and Research, Chandigadh	PU04
Potti Sreeramulu Telugu University, Hyderabad	AP15
Pune University, Pune	MH20
Punjab Agricultural University, Ludhiana	PU05
Punjab Technical University, Jalandhar	PU06
Punjab University, Chandigarh	PU07
Punjabi University, Patiala	PU08
Purvanchal University, Jaunpur	UP28
Rabindra Bharati University, Culcutta	WB10
Rajasthan Agricultural University, Bikaner	RJ11
Rajasthan Ayurveda University, Rajasthan	RJ12
Rajasthan Sanskrit University, Jaipur	RJ13
Rajasthan University, Jaipur	RJ14
Rajendra Agricultural University, Samastipur	BH15
Rajiv Gandhi Proudyogiki Vishwavidyalaya, Bhopal	MP14
Rajiv Gandhi University of Health Sciences, Bangalore	KN14
Ranchi University, Ranchi	BH16
Rani Durgavati University, Jabalpur	MP15
Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur	MH21
Ravishankar University, Raipur	MP16
Rohilkhand University, Bareilly	UP30
Roorkee University, Roorkee	UP31
Sambalpur University, Sambalpur	OR07
Sampurnanand Sanskrit Vishwavidyalaya, Varanasi	UP32
Sampurnanand Sanskrit Vishwavidyalaya, Varanasi	UP33
Sanjay Gandhi Postgraduate Institue of Medical Sciences, Lucknow	UP34
Sant Gadge Baba Amravati University, Amravati	MH22
Sardar Patel University, Gujarat	GT14
Sardar Vallabh Bhai Patel University of Agriculture & Technology, Meerut	UP35
Saurashtra University, Saurashtra	GT15
Sher-e-Kashmir Institute of Medical Sciences, Srinagar	JK04
Sher-e-Kashmir University of Agricultural Sciences And Technology, Srinagar	JK05
Shivaji University, Maharashtra	MH23
Shree Somnath Sanskrit University, Junagarh	GT16
Shri Jagannath Sanskrit Vishvavidyalaya, Puri	OR08
Shri Mata Vaishno Devi University, Gandhinagar	JK06

Shri Venkateswara University, Tirupati	AP17
Sido-Kanhu Murmu University, Dumka	JH02
Sikkim-Manipal University of Health Medical & Technological Sciences, Tadong	SK01
SNDT, Mumbai	MH24
Solapur University, Solapur	MH25
South Gujarat University, Surat	GT17
Sree Chitra Tirunal Institute For Medical Sciences and Technology, Thirunvananthapuram	KL08
Sree Sankaracharya University of Sanskrit, Ernakulam	KL09
Sri Krishnadevaraya University, Anantapur	AP18
Sri Venkateswara Institute of Medical Sciences, Tirupati	AP19
State Board of Technical Education	NA04
Tamil Nadu Agricultural University, Tamil Nadu	TN14
Tamil Nadu Dr. M G R Medical University, Chennai	TN15
Tamil Nadu Open University, Directorate of Technical Education Campus, Chennai	TN16
Tamil University, Thanjavur	TN17
Tamilnadu Veterinary And Animal Sciences University, Chennai	TN18
Tezpur University, Tezpur	AS06
Thapar Institute of Engineering and Technology, Punjab	PU09
The Bengal Engineering & Science University, Howrah	WB11
The Institute of Chartered Financial Analysts of India (ICFAI) University, Dehradun	UT06
The Institute of Engineers	NA05
The Tamilnadu Dr. Ambedkar Law University, Chennai	TN19
The West Bengal National University of Juridical Science, Kolkata	WB12
The West Bengal University of Health Sciences, Kolkata	WB13
Thiruvalluvar University, Vellore	TN20
Tripura University, Tripura	TR01
Tumkur University, Tumkur	KN16
U.P. King George's University of Dental Science, Lucknow	UP36
U.P.Rajrarshi Tandon Open University, Allahabad	UP37
University of Agricultural Sciences, Dharwad	KN17
University of Petroleum and Energy Studies, Dehradun	UP38
University of Rajasthan, Rajasthan	RJ15
Utkal University of Culture, Bhubaneswar	OR09
Utkal University, Bhubaneshwar	OR10
Uttar Banga Krishi Vishwavidyalaya, Behar	WB14
Uttar Pradesh Technical University, Lucknow	UP39
Veer Kunwar Singh University, Arrah	BH17
Veer Narmad South Gujarat University, Surat	GT18
Veermata Jijabai Technological Institute (VJTI), Mumbai	MH26
Vidyasagar University, Midnapore	WB15
Vikram University, Madhya Pradesh	MP17
Vinoba Bhave University, Hazaribagh	BH18
Visva Bharti, Santiniketan, West Bengal	WB16
Visvesvaraya Technological University, Belgaum	KN18
West Bengal University of Animal & Fishery Sciences, Kolkata	WB17
West Bengal University of Technology, Kolkata	WB18
Yashwantrao Chavan Maharashtra Open University, Nashik	MH27

Other Deemed Universities	DU01
Foreign Universities	FU01

A-1 Application form for

CST-2007 Examination

(for appearing in the CST-2007 exam)

Staple two photos Here with your Name written on the reverse. Do not paste	For Office Use Only:	Paste one Passport-size photograph here. Do Not Staple
	Degree/Diploma Qualification: Completed/ (strike out as appropriate) Not Completed	
	Fees Paid:	
	CST ID:	

FORM TO BE FILLED IN CAPITAL LETTERS ONLY (refer section G.1 for help information)

For Applicants to fill in: (Provide one space after each initial)

1. Name of Applicant
2. Password min 5 and max 10 characters
3. Address for communication:

   City:

   State: Pin Code:
4. E-Mail: 5. Mobile:
6. Office Phone with STD-Code:
7. Residential Phone with STD-Code:
8. Date of Birth: D D M M Y Y Y Y 9. Gender: M F
10. Category: General SC ST OBC
11. Level of exam (Tick One) E(**with GA & CC papers**) appearing for E (**with GA,CC & CP Papers**) D G
12. Examination City Information (Refer Section G.5 of the brochure)

    City Code City Name
13. If interested in employment, please tick your choice(s)

    In C-DAC Centres: Mumbai Bangalore Kolkata

    Pune Chennai Hyderabad Delhi
14. Applying for dissertation project at C-DAC, Mumbai and Electronics City, Bangalore

    For D/G Level Candidates only (MCA/ME/M.Sc/M.Tech. Projects)
15. If interested in admission to courses offered by other institutes as follows, please tick your choice(s)

    Goa University : MCA

    ABA : MCA

    VirginiaTech(USA)-SPJIMR : PGDSM-MIT

    Goa University : M. Sc. (IT)
16. If you have taken CST examination earlier, provide the examination details

    Year: CST ID

17. If completed / doing PGDST/PGDIT/FGPDST/APGDST

Mention your Login ID

18. Completed Degree/Diploma (excluding C-DAC courses)

Discipline:

Year of Passing Marks (%/GPA) Division

19. Appearing Degree/Diploma (excluding C-DAC courses)

Discipline:

Current Sem. Likely year of completion

20. University Code: (Refer section G.6 of the brochure)

University Name

21. Fee Details (for fresh candidates as well as improvement)

Level	Total Examination fees		Your Choice (Tick one)
	Manual	Online	
E (with GA & CC)	550	500	□
E (with GA,CC & CP)	650	600	□
D	750	700	□
G	850	800	□

22. Payment Details: Cash DD

DD should be drawn in favour of: ***"C-DAC, Mumbai"*** *payable at* ***Mumbai***

DD Date: D D M M Y Y Y Y DD Number:

Bank Code (9 digit number on the DD):

Bank Name:

Bank Branch:

Bank City:

23. **Declaration:** I declare that all the information provided by me in the A-1 application form is true and correct to the best of my knowledge and belief.
I understand that my PGDST/FPGDST course admission will be cancelled/C-DAC recruitment will be terminated, if I am unable to submit proof of successful completion of the qualifying degree or equivalent engineering diploma on or before December 31, 2007.

Signature:

Place: Date:

A-2 Application form for Courses based on previous CST Score

(To be filled in only for course admissions based on CST-2005 and CST-2006 valid scores. This form is not to be used for appearing in the CST-2007 examination)

Staple 2 photos here with your name written on the reverse. Do not paste	For Office Use Only: Degree/Diploma Qualification: Completed/ (strike out as appropriate) Not Completed Fees Paid: CST ID:	**Paste 1 Passport-size photo here. Do not staple**

FORM TO BE FILLED IN CAPITAL LETTERS ONLY (refer section G.2 for help information)

For Applicants to fill in: (Please provide one space after each initial)

1. Details of CST Exam appeared.

   Year: CST ID

2. Level appeared for: E I D G

3. Name of Applicant

4. Password min 5 and max 10 characters

5. Address for Communication:

   City:

   State: Pin Code:

6. E-Mail:

   7. Mobile:

8. Office Phone with STD-Code:

9. Residential Phone with STD-Code:

10. Date of Birth: D D M M Y Y Y Y 11.Gender: M F

12. Category: General SC ST OBC

13. Completed Degree/Diploma (excluding C-DAC courses)

    Discipline:

    Year of Passing Marks (%/GPA) Division

14. Appearing Degree/Diploma (excluding C-DAC courses)

    Discipline:

    Current Sem. Likely year of completion

15. University Code: | | | | | (Refer section G.5 of the brochure)

University Name

16. Processing fee: **Rs. 300**/- (must be paid while submitting the A-2 form)

Payment Details: Cash ☐ DD ☐

*DD should be Drawn in favor of: **"C-DAC, Mumbai"** payable at **Mumbai.***

DD Date: | | | | | | | | DD Number: | | | | | | |

Bank Code (9 digit number on the DD): | | | | | | | | | |

Bank Name:																									

Bank Branch: | | | | | | | | | | | | | | | | | | | | | | | | | |

Bank City: | | | | | | | | | | | | | | | | | | | | | | | | | |

17. **Declaration:** I declare that all the information provided by me in the A-2 application form is true and correct to the best of my knowledge and belief.
I understand that my admission will be cancelled, if I am unable to submit proof of successful completion of the qualifying degree on or before December 31, 2007.

Signature:

Place: Date:

Notes:

Notes: