January 30, 2011

C-DAC Mumbai and Electronics City, Bengaluru

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1. About CST-2011

C-DAC, Mumbai and Electronics City, Bengaluru operates from Mumbai, Navi Mumbai and Bengaluru. The Competence in Software Technology (CST) examination was started first in September 1994.

CST-2011 like all the earlier conducted CST examinations is a multipurpose examination that offers several options to those who take it. These are described below.

1. Admission to FPGDST 2011 and FPGDIS-2011 - if you have taken CST-2010 use Form A2 or / if you are taking CST-2011 (use Form A1).

2. Admission in reputed institutions/university courses (list given below) – (Use Form A1 to apply)

3. Job opportunities at C-DAC centres – (Use Form A1 to apply)

4. Opportunity to improve the scores for those who have taken CST-2010 – (Use Form A1 to apply). The candidate has to take the entire examination and the best score in individual papers will be taken while providing score report.

5. Dissertation Project fellowships at C-DAC (use form A1 to apply).

Taking CST examination also enables one:-

6. To obtain standardised scores which can be used while applying for employment in the IT industry

7. To obtain standardised scores which can be used in seeking admission to post-graduate courses of other educational institutions

List of the Institutes who will use CST-2011 scores for admission

S.No.	Institution	Course
1.	Bharatiya Vidya Bhavan's - BCIDS, Mumbai	PPM
2.	Goa University	MCA
3.	International School of Management Excellence, Bengaluru & Navi Mumbai	PGPM-IT
4.	MPSTME, NMIMS, Mumbai	MCA
5.	Smt. Parvatibai Chowgule College, Goa University	M.Sc. (IT)

Disclaimer:

Every effort has been made by C-DAC to ensure the correctness of the information provided in this document. However, in case of a conflict in interpretation, the decision of C-DAC shall be final and binding.

CST-2011 Examination Date: Sunday, January 30, 2011

Timings of the Examination

Level	Papers (Codes)	Timing
E	General Aptitude (GA) Computer Concepts (CC)	14.30 - 15.30 15.35 - 16.35
I	General Aptitude (GA) Computer Concepts (CC) C Programming (CP)	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

Cities in which CST-2011 will be conducted

Following are the cities where examination will be held:

City	Centre**	Telephone
Ahmedabad	St. Xavier's College. P. B. No. 4168, Ahmedabad-380 009	079-26308057
Allahabad	Motilal Nehru National Institute of Technology. Allahabad-211 004	0532-2271109
Bengaluru	St. Joseph's Pre-University College, P.B. No. 25003, Field Marshal Cariappa Road (Erstwhile Residency Road), Next to St. Joseph's European School, (Residency Road), Bengaluru-560 025	080-22228844
Chennai	Stella Maris College, 17, Cathedral Road, Chennai-600 086	044-28111951
Coimbatore	PSG College of Technology, Peelamedu, Coimbatore-611 001	0422-2572177
Delhi	Gyan Mandir Public School, 'E' Block, Naraina, New Delhi-110 028	011-25892445
Goa	Don Bosco High School, Panjim, Goa-403 001	0832-2422854
Guwahati	Don Bosco College. Azara, Guwahati-781 017	0361-2842148
Hyderabad	Urdu Hall, Himayat Nagar, Hyderabad-500 029	040-23222919
Kolkata	St. Xavier's College, 30, Mother Teresa Sarani, Kolkata-700 016	033-22877278
Mumbai	Indian Education Society's, Nabar Guruji Vidyalaya, S.K. Bole Road, Dadar West, Mumbai 400028	022-24227282
Nagpur	Visvesvaraya National Institute of Technology, Nagpur-440 010	0712-2230173
Patna	Kendriya Vidyalaya, Bailey Road, Sheikhpura More P.O. B.V. College, Patna-800 014, Bihar	0612-2295595
Pune	College of Engineering, Wellesly Road, Shivaji Nagar, Pune-411 005	020-25507009
Thane	Holy Cross Convent High School, K-Villa, Thane (West)-400 601	022-25345958
Thiruvananthapuram	University College, Palayam, Trivandrum-695 001	0471-2475830

**** Depending on the response, C-DAC may add more centres in the above cities. C-DAC reserves the right to combine one or more centres for CST-2011 based on response received. This decision will be binding on all those who apply.**

A complete list of candidates will be displayed on **http://cst.cdacmumbai.in** on January 20, 2011. Candidates can check their centre allotment and CST examination roll numbers on our website.

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 20, 2011 due to postal delay, he/she may check for seat allotment in the list displayed on **http://cst.cdacmumbai.in**. If the candidate is still not able to find his/her CST-id, name and centre allotted then he/she can contact C-DAC Juhu, Mumbai by fax, email, telegram or on phone for help.

If a candidate who has paid the fees does not receive the hall ticket or any intimation by email before the day of the examination, he/she may go to any of the examination centres listed above and contact the Control room at least two hours prior to the start of the examination. (Please refer to Section *4.3 Hall* Tickets*)*

Applicable Dates related to CST-2011 Examination

Last Date for Receipt of CST application Form A-1 (Course Admission, Improvement in scores & Recruitment)	Mon, January 17, 2011
Date of CST-2011 Examination	**Sun, January 30, 2011**
Last Date for Receipt of CST application Form A-2 (Only for CST-2010 appeared candidates)	Mon, March 14, 2011

Announcement of results on website	On or before Mon, March 21, 2011
Announcement of Merit awards on website	Thu, March 24, 2011
Score reports to reach all candidates by post	Sat, April 30, 2011

Display of List of candidates eligible for recruitment	Wed, April 20, 2011
Interviews (Tentative)	May 2011

Start date for receipt of applications for admissions to FPGDST & FPGDIS courses based on CST score	Mon, April 4, 2011
Last date for seeking admission to FPGDST & FPGDIS courses based on CST score	Mon, May 9, 2011
FPGDST & FPGDIS admissions finalised for candidates based on CST score	Mon, May 16, 2011
Open Admission test for those who are unable to take CST-2011 in January 2011	Sun, July 10, 2011

Commencement of FPGDST & FPGDIS Courses	Mon, August 8, 2011

2. About C-DAC

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, Bengaluru, Hyderabad, Chennai, Mohali, and Thiruvananthapuram with the headquarters at Pune.

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.

Two decades 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 Modeling & 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 Agro-electronics; Real Time Systems, Embedded Systems and VLSI Design; Health Informatics; Geomatic; 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, agro-electronics and wireless that hold great benefit to the nation and citizens.

C-DAC, Mumbai, Navi Mumbai and Electronics City, Bengaluru 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. Further details of the research and development work and other activities of C-DAC Mumbai and Electronics City, Bengaluru can be found on **www.cdacmumbai.in**

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

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

- Computer Networks and Internet Engineering (Mumbai & Bengaluru)
- Biometric Group (Mumbai)
- Educational Technology Unit (Mumbai & Bengaluru)
- Knowledge Based Computer Systems (Mumbai)
- Software Engineering (Mumbai & Bengaluru)
- Open Source Software Division (Mumbai)
- IT Systems and Solutions (Mumbai & Bengaluru)
- Language Computing Group (Mumbai & Bengaluru)

IT System and Solutions Groups at Mumbai and Bengaluru are also responsible for all the computing infrastructure of C-DAC, Juhu, Mumbai, Kharghar, Navi Mumbai and Electronics City, Bengaluru.

The primary objectives of these centres are:

A. To carry out research and development in software technology
B. To carry out educational and training activities
C. To 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 Master's and Doctoral level research.

Library

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

Educational Activities

The educational role of C-DAC, Mumbai and Electronics City, Bengaluru is largely in the area of continuing education. C-DAC, Mumbai and Electronics City, Bengaluru conduct a well-established one-year duration diploma in the field of advanced software technology for graduates. R&D Divisions at the Centre also conduct professional education courses oriented towards professionals sponsored by their employers on request.

Distance Education Programme (DEP) in collaboration with IIT Bombay

In addition to the above courses, C-DAC Mumbai in joint collaboration with IIT Bombay conducts a Distance Education Programme (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. For more details of the remote centres, courses currently available, eligibility, registration process, etc., please refer to the website **http://www.cdeep.iitb.ac.in**.

3. Levels and papers of the Examination

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

Level	Papers (Code)	Applicability / Utility
E	General Aptitude **(GA)** Computer Concepts **(CC)**	• Admission to FPGDST & FPGDIS • Admission to BCIDS, Mumbai courses • Admission to MCA of Goa University • Admission to MCA programme of NMIMS, Mumbai
I	General Aptitude **(GA)** Computer Concepts **(CC)** C Programming **(CP)**	• Admission to FPGDST & FPGDIS • Admission to MCA of Goa University • Admission to PGPM-IT of ISME, Navi Mumbai & Bengaluru • Admission to MCA programme of NMIMS, Mumbai • Recruitment of Software Trainees
D	General Aptitude **(GA)** Computer Organisation and Operating Systems **(CO)** C Programming **(CP)** Data Structures and Algorithms **(DS)**	• Admission to FPGDST & FPGDIS • Admission to MCA of Goa University • Admission to PGPM-IT of ISME, Navi Mumbai & Bengaluru • Admission to MCA programme of NMIMS, Mumbai • Admission to M.Sc. (IT) at Parvatibai Chowgule College, Goa • Recruitment (Visiting Systems/ Software Engineer) • Project Fellowship at C-DAC Mumbai
G	General Aptitude **(GA)** Computer Organisation and Operating Systems **(CO)** Data Structures and Algorithms **(DS)** Optional Papers **(OP)** – Any two out of 1. Computer Networks 2. Database Management 3. Java Technologies 4. Object Oriented Programming and C++ 5. Software Engineering 6. Web Technology	• Admission to FPGDST & FPGDIS • Admission to MCA of Goa University • Admission to PGPM-IT of ISME, Navi Mumbai & Bengaluru • Recruitment (Staff Scientist/ Assistant Manager / Project Engineer/Visiting Systems / Software Engineer) at C-DAC • Project Fellowship at C-DAC Mumbai

3.1. Eligibility Criteria

3.1.1. E & I Levels

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 three years' formal education after the 10th standard or two 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.

3.1.2. 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 (b & 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.

3.1.3. G Level

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

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

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

Note: Any software course of less than one 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.

3.1.4. 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 / G level in order to be considered for **Project Fellowships** at C-DAC, Mumbai and Electronics City, Bengaluru during June 2011-June 2012. Please refer to sub section 6.7 on Career Opportunities.

3.1.5. Admissibility of Qualifications

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

3.2. Second Opportunity to join C-DAC courses in 2011

Those who wish to secure admission to the FPGDST-2011 or FPGDIS-2011 course but are unable to take the CST-2011 exam on January 30, 2011, may get another opportunity by way of an eligibility-cum-ranking test at the E-level on July 10, 2011, to seek admission to our FPGDST-2011 or FPGDIS-2011 course.

For appearing on July 10, 2011 eligibility-cum-ranking test, candidates must fulfil E-level eligibility criteria given in the brochure.

More detailed information regarding this exam will be available on our website in June 2011.

4. Details of CST-2011 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.

4.1 General Information about the tests

Candidates should bring with them their hall ticket, Photo ID, 2B pencils, a sharpener and a good quality eraser.

Candidates may obtain their CST ID number, using their Registration number, from **http://cst.cdacmumbai.in**. The Password used by the candidate and CST ID will be used by him/her while applying for the C-DAC, Mumbai courses.

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.

a) The duration of each paper will be 1 hour.
b) All questions will be of multiple-choice type with minimum 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 to be carried** in the examination hall.

4.1.1. Negative Marking

CST examination attracts negative marks for every question that is answered wrong. Only an intelligent guess can help you score better when you are not sure of the answers and still want to attempt the question.

4.1.2. Validity of the Scores

- CST-2011 score is valid for admission to the FPGDST-2011 and FPGDIS-2011 course run by C-DAC
- CST-2010 score is not valid for any recruitment.
- CST-2011 score will be valid for course admissions in 2011 & 2012 but for recruitment only in 2011.

4.1.3. Improvement of CST Scores (Only for CST-2010 candidates)

Candidates who have appeared for the CST-2010 examination earlier have the option of improving their scores by taking CST-2011. ***Please note that all papers for the level that you are appearing must be taken***.

Candidates seeking improvement must provide their CST-2010 ID number in the current year's CST application form A-1, without which, earlier scores will not be considered for the score report.

4.1.4. 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.

4.1.5. Application Forms & Submission

Form A-1 should be filled by those candidates who wish to appear for the CST-2011 examination for the first time or for those seeking improvement of earlier CST scores by taking the entire examination once again.

Form A-2 should be filled by candidates who do not wish to appear for the current CST-2011 examination but would like to be considered for courses based on their CST-2010 score.

Please note that taking CST-2011 at any level does not guarantee interview call or selection.

Both application forms are also available on our website in PDF format for download.

4.1.6. Submission of Application

4.1.6.1 Online Mode

Candidates are advised to use on-line mode of application as this will give the candidate a chance to verify the contents filled in by him/her, obtain registration number immediately and also obtain Hall ticket.

Use manual mode of form-filling and submission only when you do not have access to internet.

C-DAC locations at Juhu-Mumbai, Kharghar-Navi Mumbai and Electronics City-Bengaluru provide the facility to apply online. Few desktops are kept at these locations for candidates to register on-line. Addresses of these locations are given in Appendix E.

The application form is available online at **http://cst.cdacmumbai.in**. Candidates must fill up all the fields online. On submission of the form in online mode, a Registration number will be assigned to the applicant by the system.

The applicant must write the level of examination he / she is appearing for, his/her name and the registration number on the reverse of the Demand Draft. The Demand draft along with three identical passport-size photographs taken on or after 01/08/2010 should be sent so as to reach C-DAC Mumbai before the last date. **Candidates must write the name on the backside of each of the photograph.**

4.1.6.2. Manual Mode

Candidates who are not in a position to apply online through our website, can fill in the A-1 form manually downloaded PDF version from the site) and submit it to C-DAC, Juhu, Mumbai with 3 photographs taken on or after 01/08/2010 and requisite fees by Demand Draft as specified in the A-1 form in this brochure.

4.1.6.3 Submission of completed forms

The last date of receiving all application forms is January 17, 2011.

Completed application form must be submitted (online or manual) on or before the last date. Applications received after the last date will not be considered. If a postal application reaches C-DAC Mumbai after the last date, the same shall not be considered and returned to the candidate.

We suggest that you do not wait till the last date for submission as the examination centre you opt for 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 centre will be at the discretion of C-DAC Mumbai.

The information submitted by the candidates is 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/testimonials. 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-2011 Coordinator
Centre for Development of Advanced Computing (C-DAC)
Gulmohar Cross Road No. 9, Juhu, Mumbai-400 049

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

4.2 Instructions for filling Application forms

The instructions for online registration are different from submitting the manual application. Please refer to our website for more information.

The instructions below are applicable only to manual application process.

4.2.1 Guidelines for filling up 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 as it will have to be used while sending the mail.

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 of minimum of 5 characters and can have 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 always be remembered.** The password will be required for the following activities

   a. Checking application status
   b. Querying for your CST Roll number.
   c. Printing your hall ticket from the website
   d. Viewing CST result.
   e. Applying for C-DAC, Mumbai and Electronics City, Bengaluru courses.

   Please note down the password and keep it in a safe place. In case you forget the password it will be sent to you by e-mail on request. In case the e-mail id is not mentioned, you have to come personally at C-DAC, Mumbai / Bengaluru and collect the password after giving Photo ID proof.

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 treated 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 all the examination related communication will be sent on this email address. It is advised that you provide correct and valid e-mail ID.**

5. Provide your Mobile number, 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 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**.**

9. Mark your gender in the box provided (Male/Female).

10. Indicate the category to which you belong (GEN/SC/ST/OBC).

11. Indicate the 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 *4.2.5 CST-2011 Examination* City Codes of the brochure.

13. G level candidates may please indicate if they are interested in being considered for possible recruitment at C-DAC Bengaluru, Mumbai and other centres. **Those who do not exercise this option of filling the appropriate choices in A-1 application form will not be considered for any recruitment by C-DAC.**

14. D/G level candidates may please indicate whether they are interested in dissertation project at C-DAC, Mumbai and Electronics City, Bengaluru. Please check eligibility criteria before marking this item.

15. If you are interested in applying for any of the courses offered by other institutes on the basis of CST-2011 (listed on page 1 of the brochure) then tick the appropriate boxes in the form.

16. If you have taken the CST examination in 2010, fill in your previous CST-ID.

17. If you are already a PGDST/PGDIT/FPGDST/APGDST student, you have to write your student-id number 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 (if you are currently appearing for any), **excluding** C-DAC courses. Also mention the discipline, current semester (in figures, e.g. “7” for 7th semester) and likely year of completion of your degree/diploma in MM/YYYY format.

20. Mention the name of the University that your college is affiliated to. **Please note that for recruitment eligibility it is necessary that the college/university is UGC/AICTE approved.**

21. Examination Fee Details – Candidates taking the examination or Candidates re-appearing for the 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 and submission is higher than that for filling up the form through online registration at the web-site.**

22. Provide the payment details here.

    Mention the DD Number, Date and Bank Name, Bank Code, Bank Branch Name and Bank City.

23. Sign the form in the place provided and write the date on the declaration. Application forms submitted without signature will be rejected outright.

4.2.2 Guidelines for form A-2

Please read the guidelines given above for filling up the following fields

1	Fill the CST ID and year (only CST-2010 score is valid) from where you want your score carried forward to this year.
2	Fill in the level of examination that you want the scores to be carried from.
3 to 17	Refer the Guidelines for the A-1 form.

4.2.3 Manual application Checklist

1. Provide **three** identical copies of your **recent** colour passport-size photographs taken on or after 01/08/2010. 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-2011 Coordinator
   Centre for Development of Advanced Computing (C-DAC)
   Gulmohar Cross Road No. 9, Juhu, Mumbai-400 049

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

4.2.4 Online application Checklist

Please follow the instructions on the website for online registration.

4.2.5 CST-2011 Examination City Codes

S.No.	City	Codes
1.	Ahmedabad	0079
2.	Allahabad	0532
3.	Bengaluru	0800
4.	Chennai	0440
5.	Coimbatore	0422
6.	Delhi	0110
7.	Goa	0832
8.	Guwahati	0361
9.	Hyderabad	0400
10.	Kolkata	0330
11.	Mumbai	0220
12.	Nagpur	0712
13.	Patna	0612
14.	Pune	0200
15.	Thane	0221
16.	Thiruvananthapuram	0471

4.2.6 Fees for Examination

The examination fees for different levels are as follows:

On-line Application & Registration	
Level	**Examination fees**
E	Rs. 600
I	Rs. 700
D	Rs. 800
G	Rs. 900

Manual Application	
Level	**Examination fees**
E	Rs. 650
I	Rs. 750
D	Rs. 850
G	Rs. 950

Those applying for the course admission on the basis of their CST-2010 score (i.e. *not appearing for CST-2011)* must submit **application form A-2**, given in this brochure. A processing charge of Rs. 400/- must be paid with form A-2.

Fees must be paid in full through a Demand Draft crossed account payee drawn in favour of "C-DAC, Mumbai", **payable at Mumbai**.

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

4.3 Hall Tickets

All candidates should have a hall-ticket for appearing for the examination.

- **On-line submission**

1. Those who are using this mode of submission will be provided registration number, centre allocation etc by the system online.

2. They will also be provided the Hall ticket (Admit card) by the system online.

3. Candidates are required to download / print the hall-ticket from the C-DAC, Mumbai web-site **http://cst.cdacmumbai.in** any day after **January 20, 2011.**

4. If there is a problem in downloading the hall-ticket, you are advised to send an email to **entrance@cdacmumbai.in** in which case the hall-ticket will be mailed to you or you can collect the hall-ticket at the examination centre by producing photo ID.

5. Paste your recent passport size photograph (taken on or after 01/08/2010) in the space provided.

6. Candidates who are unable to print their hall-ticket online are advised to download the format of the hall-ticket from the web-site, manually fill in the details and go to the examination centre along with Photo ID proof such as driving licence, passport, PAN card, voters id card, credit card with photo, two recent passport size photographs (taken on or after 01/08/2010) and photocopy of DD sent to C-DAC as proof of CST fee payment, **two hours before** the time of the examination specified in the brochure.

- **Manual submission**

1. For those who apply using manual mode, C-DAC takes the responsibility of sending the hall-ticket under Certificate of Posting to the address specified in the application.

2. In normal case, C-DAC will ensure that hall-tickets are mailed to the candidates within three working days of receipt of the application form. If there is any discrepancy in hall ticket, the candidate should intimate C-DAC by email / fax.

3. Refer to the web-site **http://cst.cdacmumbai.in** for the registration number.

4. Those who do not receive their hall-tickets on or before January 20, 2011 may check for their seat allotments in the list displayed at **http://cst.cdacmumbai.in**.

5. If the candidate is still not able to find his/her CST-id, name and centre allotted then he/she can contact C-DAC Juhu, Mumbai by fax, email, telegram or on phone.

6. If a candidate who has paid the fees does not receive the hall ticket or intimation by email before the day of the examination, he/she should go to at any of the examination centres listed in the brochure and contact the Control room, **2 hours before** the start of the examination. He/she must carry a photo id proof such as driving licence, passport, PAN card, voter's id card, credit card with photo, two recent passport size photographs (taken on or after 01/08/2010) and photocopy of DD sent to C-DAC as proof of CST fee payment.

4.4 Announcement of Results

The CST results will be declared at all C-DAC, Mumbai offices, and on our website at **http://cst.cdacmumbai.in** on or before March 21, 2011. All candidates will receive their score reports by speed-post or registered post. The relevant dates are given in the brochure (*ref page 6*). **If any candidate does not receive his/her score report by April 30, 2011, he/she should contact C-DAC, Juhu, Mumbai.**

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

4.5 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.

4.6 Re-evaluation

Candidate may apply for re-evaluation if he/she is not satisfied with the result. Those seeking re-evaluation must submit a written request along with their score report and a Demand Draft of Rs. 400/- drawn in favour of "C-DAC, Mumbai" payable at Mumbai by May 3, 2011. 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.

4.7 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% candidate for each level of examination.

S. No.	Level	Cash award
1.	E	Rs. 2000
2.	I	Rs. 2000
3.	D	Rs. 3000
4.	G	Rs. 4000

Awards will be given only to those who appear for all papers for a level in the CST-2011 examination and obtain 60 percentile or more in each paper. Scores obtained in the CST-2011 examination only will be considered for award. Scores carried forward from previous CST examinations will not be considered for these awards.

Any candidate, who has taken any CST examination in the past (any level) and has won the award of merit, is not eligible for any award of merit for CST-2011.

4.8 About the CST Brochure

The brochure is available for online download on **http://cst.cdacmumbai.in**.

C-DAC has discontinued the printing of brochures.

5. Educational Opportunities

This section provides a brief overview of various diploma / degree programmes and specifies their eligibility criteria.

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

The Full-Time Post-Graduate Diploma in Advanced Software Technology (FPGDST) is a one-year full time programme which imparts rigorous training in the complete software development process. The programme has been designed to provide proficiency in the fundamental aspects of software technology along with in-depth hands-on experience, thus enabling the participants to have a valuable profile in the IT industry for many years to come. The programme has a special focus on the various aspects of the Software Development process so that the participants are conversant with the entire process chain and contribute and relate to any aspect of it. The course is also well aligned with the IEEE CSDA certification syllabus (http://www2.computer.org/portal/web/csda) to prepare the student to get certification from prestigious bodies like IEEE. The programme will broadly cover the following topics.

1. **Programming Fundamentals (PRGF)** covering procedural programming with C, Object Oriented Programming with Java and Data Structures and Algorithms.
2. **Mathematical Foundations of Computer Science (MFCS)** module introduces mathematical concepts relevant to computer science. It is designed to focus not only on learning of mathematical concepts, but also on applying them in programming tasks
3. **Systems and Networks (SNET)** module covers operating system components and basic networking and network programming concepts. Operating system, network and information security are also covered in this module
4. **Application Development using Database Systems and Web Technologies (ADWE)** covering relational model, SQL, normalisation, query processing, transaction processing, database connectivity, HTML, client and server side scripting, Ajax, enterprise application architecture, etc.
5. **Object Oriented Analysis and Design and Software Engineering, with Project (OOSP)**. This module includes requirements specification and analysis, UML, software design, software construction, testing, software quality, measurement and metrics, maintenance and SCM. An industry style project is included which will be executed following these concepts and processes.
6. **Soft Skills (SSKL)** apart from technical expertise, professionals should also excel in soft skills, hence this module will focus on student's Communication Skills, Problem Solving, Time Management, Stress Management, Personal Effectiveness, Team Building, Conflict Resolution etc.

Note : C-DAC reserves the right to add / alter / delete topics above.

The topics taught at a centre may vary from batch to batch; and will be announced before /during the course.

The FPGDST programme will be conducted at the Kharghar and Bengaluru centres of C-DAC. The duration of the course will be 52 weeks. The lectures will normally be held 5-days a week (Monday through Friday) from 1000 hrs to 1700 hrs. The total fee for this course is Rs. 65,000/- (plus service tax as applicable at the time of making payment). Service tax currently applicable is 10.3 % of the fees payable

Since the participants of FPGDST are required to attend all the lectures and also do hands-on assignments throughout the week, **employed participants are not eligible for the course.** The participants' performance will be evaluated on a regular basis by way of quizzes, projects and assignments. Credit system will be followed. Participants' performance in individual modules will be evaluated as Grade Points (GP) and these will be used to calculate the Grade Point Average (GPA), for the entire course. Participants will be required to earn at least a “D” grade in each of the modules in order to successfully complete the course.

The exact schedule of lectures, evaluations, assignments, project submissions, credit structure and other details including the GPA calculations will be given in the course handbook, to be distributed at the beginning of the course.

Unless a student is able to devote a minimum of thirty hours a week for self-study and hands-on practice work, it is unlikely that he/she can successfully complete the course. Students are required to attend a minimum of 70% of the lectures.

Highlights of the Course

Objective of the course:

- To create strong theoretical foundation in basic software concepts ranging from algorithms, data structures, mathematical foundations, programming languages, network foundations, operating systems, databases, etc to advanced concepts such as Enterprise computing, Advanced Web Concepts, etc.
- To give the candidate hands-on experience in practical application & implementation of the above concepts
- To develop and enhance candidates' soft skills

Salient Features:

- Flagship fulltime course of C-DAC Mumbai, operational since last 12 years
- Each module associated with lecture sessions, practical sessions & periodic contact sessions for doubt solving
- Practical based approach to teaching software concepts - All the modules associated with rigorous & significant practical component requiring the student to implement the related software concepts E.g.
    - In "Programming Fundamentals module", students need to solve practical problems by implementing data structures concepts like linked lists, trees, multiway trees, graphs & implementing relevant algorithms
    - In "SNET module"
        - In "Networking" subtopic- Students need to do group projects involving simulation of Transport layer simulation, routing protocol implementation, Data link layer simulation, etc
        - In "Operating Systems" subtopic – Students need to do group projects involving simulation of concurrency control, implementation of CPU scheduling algorithms, Virtual Memory Simulation, scheduling algorithms, file system simulation, etc.
- Soft skills module based on completely hands-on – based on real life scenarios
- Evaluation includes testing various aspects of the candidate such as theoretical knowledge, practical skills, working in a team, presentation & communication skills, etc
- Theory evaluations focused on application of concepts learnt in the course as opposed to memorizing facts
- C-DAC Mumbai's inhouse automated program grading tool is used for evaluating & generating immediate feedback for Programming Assignments & Programming Tests
- Faculty for the course are scientists & engineers already working in various R&D areas of C-DAC Mumbai – their work involves research in specific areas, working on live projects corresponding to their area of research, etc
- 24X7 access to web resources, student lab
- All the course resources are available on the student web portal which can be accessed anytime from anywhere

5.1.1. Eligibility

In order to enrol for the FPGDST programme, the candidates have to appear for E-Level (or any higher level) of the CST examination or should have successfully completed PGDST course of C-DAC Mumbai.

A percentile score of 50 or more in the GA and CC (or CO) papers of CST-2011 or CST-2010 is required to be eligible to join FPGDST.

5.1.2. Completion Requirements

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

Candidates who are successful will be given a **Course Transcript** describing the course and the modules completed and a **Diploma Certificate from C-DAC.**

5.1.3. Admission Procedure

Admissions to courses at C-DAC, Mumbai and Electronics City, Bengaluru begin from April 4, 2011 onwards, after the CST results are announced. Any candidate eligible can apply for admission. The candidate must give his/her preference list and locations (preferences may also be given using the on-line form), deposit the 1st instalment of fees along with a photocopy of the degree certificate and present the original certificate for verification.

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 June 1, 2011. Admission lists and available seat position at each centre will be available at **http://cst.cdacmumbai.in**. Vacancies, if any, will be offered through eligibility-cum-ranking test likely to be conducted on July 10, 2011.

5.1.4. Eligibility requirement for final year students

a. Candidates who are in the final year of their qualifying degree are also eligible for admission provided they submit proof of having completed their degree requirements before the start of the course.

b. The deadline for submitting proof of qualifying degree or equivalent engineering diploma is on or before December 31, 2011. **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 course.**

c. Students working for a full-time Bachelor's degree are not eligible for admission to any of C-DAC's courses. Those doing a Master's or a Ph.D. are, however, eligible to seek admission to C-DAC courses, subject to their meeting other eligibility criteria.

5.1.5. Available seats

S.No.	Location	Seats
1	Kharghar	100
2	Bengaluru	180

5.1.6. Payment of Course Fees

The fees are required to be paid in two instalments. The course fees include the cost of books and other course material, and the computer facilities offered. The fees have to be paid by Demand Draft drawn in favour of "C-DAC, Mumbai or Bengaluru", as applicable. The first instalment has to be paid at C-DAC, Mumbai and subsequent instalments should be paid at the respective locations where the student is pursuing the course.

The schedule for FPGDST instalments is given as below: -

FPGDST fee Rs. 65,000/-

Last date for payment	Instalments	FPGDST
At the time of admission	First	Rs. 40,000/-
July 31, 2011	Second	Rs 25,000/-
	Total course fees	**Rs. 65,000/-**

Note: Service tax of 10.3 % on the above course fee is payable by the student.

Service tax is currently 10.3%. However at the time of making payment the same will charged as applicable based on Government revision if any.

5.1.7. Cancellation Charges

Cancellation of admission by candidate will attract following charges

Rs. 500/- up to May 9, 2011
Rs. 2000/- for cancellation between May 10, 2011 - June 7, 2011

There will be no refund of course fees after June 7, 2011.

5.1.8. Auditing FPGDST Modules

As a response to several enquiries from industry, working professionals may now register for select modules for FPGDST 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 and the fees payable for each FPGDST module with Course Administration at C-DAC, Juhu, Mumbai or at Electronics City, Bengaluru (email: **entrance@cdacmumbai.in**)

5.1.9 Facilities for students of C-DAC

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

- Both the centres have modern computing and networking facilities with state-of-art infrastructure, informative library with reading facilities and a canteen.

Cancellation of a 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, the full fee will be refunded to the candidate.

5.2. Full-Time Post-Graduate Diploma in Information Security (FPGDIS)

FPGDIS is a unique course that provides a comprehensive coverage of Network and System Security encompassing aspects related to development & programming of secure solutions, setup and administration of systems and configuration of network devices. The course has been designed to provide proficiency in the fundamental aspects of software technology and information security along with in-depth hands-on experience, thus enabling the participants to have a valuable profile in the IT industry for many years to come. The course aims at providing a solid conceptual foundation coupled with hands-on experience to set up a trustworthy network environment.

The modules of this program are tailored to orient the participant towards essential aspects of software development and information security. Detailed Programming Fundamentals, Operating Systems & Computer Networks, Cryptography, Network Security, Network & System Administration and High Speed traffic analysis will be covered in detail. In addition to this, the course also offers practical insights in each module that would enable the participant to apply and experience the real-world security challenges in specific sub-domains.

Course Objectives:

- To groom experts in the field of Information Security for taking up responsibilities such as Security Professional/ Security Analyst/ Network & System Administrator/ Security Auditor/Ethical hackers.
- To provide a solid foundation for developing Security Solutions.
- To equip the candidates to take widely recognized certification exams.

The programme will broadly cover the following topics.

- Programming Fundamentals covering procedural programming with C, Object Oriented Programming with Java and Data Structures and Algorithms.
- Computer Organisation, Operating Systems and Computer Networks
- Cryptography & Network Security
- Security Administration

- High Speed Network Security

Note : C-DAC reserves the right to add / alter / delete topics from those given above.

The FPGDIS is a 6-month full-time programme. It will be conducted at the Kharghar and Bengaluru centres of C-DAC. The duration of the course will be 26 weeks (6 months). The lectures will normally be held 5-days a week (Monday through Friday). The total fee for this course is Rs. 35,000/- (plus service tax as applicable at the time of making payment). Service tax currently applicable is 10.3 % of the fees payable

The participants' performance will be evaluated on a regular basis by way of quizzes, projects and assignments. The credit system will be followed. Participants' performance in individual modules will be evaluated as Grade Points (GP) and these will be used to calculate the Grade Point Average (GPA), for the entire course. Performance will be required to earn at least a "D" grade in each of the modules in order to successfully complete the course.

The exact schedule of lectures, evaluations, assignments, project submissions, credit structure and other details including the GPA calculations will be given in the course handbook, to be distributed at the beginning of the course.

Unless a student is able to devote a minimum of thirty hours a week for self-study and hands-on practice work, it is unlikely that he/she can successfully complete the course. Students are required to attend a minimum of 70% of the lectures.

5.2.1. Eligibility

i) Bachelor's degree in Computer Science*****/Electrical Sciences***** or equivalent (for e.g. AMIE/AIETE)
ii) Diploma in Computer Science/IT /Computer Engineering recognised by any Indian State Board of Technical Education
iii) B.Sc. /M.Sc. in Computer Science/IT/Electronics and B.C.A./M.C.A.

***** Degrees under Computer Science:
Computer Science/IT/Information Science
***** Degrees under Electrical Sciences:
Electrical/Electronics/Telecommunication/Instrumentation &
Control Systems

5.2.2. Completion Requirements

Candidates are required to complete the course requirements within **6-months** of obtaining admission to the course. If there are any major changes in the modules, the students will be offered alternatives so that he/she can complete the necessary requirements.

Candidates who successfully pass all the course modules will be given a **Course Transcript** describing the course and the modules completed and a **Diploma Certificate from C-DAC.**

5.2.3. Admission Procedure

Admissions to courses at C-DAC, Mumbai and C-DAC, Electronics City, Bengaluru begin from April 4, 2011 onwards, after the CST results are announced. Any candidate eligible can apply for admission. The candidate must give his/her preferences and locations (using the on-line form or on the manual application form), deposit the 1st instalment of fees along with an attested photocopy of the degree certificate and present the original certificate for verification.

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 June 1, 2011. Admission lists and available seat position at each centre will be available at **http://cst.cdacmumbai.in**. Vacancies, if any, will be offered through the eligibility-cum-ranking test which is likely to be conducted on July 10, 2011.

5.2.4. Eligibility requirement for final year students

- Candidates who are in the final year of their qualifying degree are also eligible for admission provided they submit proof of having completed their degree requirements before the start of the course.

- The deadline for submitting proof of the qualifying degree (or equivalent) or engineering diploma is on or before December 31, 2011. **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 course.**

- Students working for a full-time Bachelor's degree are not eligible for admission to any of C-DAC's courses. Those doing a Master's or a Ph.D. are, however, eligible to seek admission to C-DAC courses, subject to their meeting other eligibility criteria.

5.2.5. Available seats

S.No.	Location	Seats
1	Kharghar	50
2	Bengaluru	50

5.2.6. Payment of Course Fees

The fees are required to be paid in two instalments. The course fees include the cost of books and other course material, and the computer facilities offered. The fees have to be paid by a Demand Draft drawn in favour of "C-DAC, Mumbai or Bengaluru", as applicable. The first instalment has to be paid at C-DAC, Mumbai and subsequent instalments should be paid at the respective locations where the student is pursuing the course.

The schedule for FPGDIS instalments is given below: -

FPGDIS fees : Rs. 35,000/-

Last date for payment	Instalments	FPGDIS
At the time of admission	First	Rs. 20,000/-
July 31, 2011	Second	Rs. 15,000/-
	Total course fees	**Rs. 35,000/-**

Note: Service tax of 10.3 % on the above course fee is payable by the student.

Service tax is currently 10.3%. However at the time of making payment the same will charged as applicable, based on Government revision if any.

5.2.7. Cancellation Charges

Cancellation of admission by candidate will attract following charges

Rs. 500/- up to May 9, 2011
Rs. 2000/- for cancellation between May 10, 2011 - June 7, 2011

There will be no refund of course fees after June 7, 2011. For Candidates who appear for the eligibility-cum-ranking test and pay their course fees, if eligible to join whatsoever the course, there will be no fee refund.

5.2.8. Auditing FPGDIS Modules

As a response to several enquiries from industry, working professionals may now register for select modules for FPGDIS 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 and the fees payable for each FPGDIS module with Course Administration at C-DAC, Kharghar, Navi Mumbai or at Electronics City, Bengaluru (email: **entrance@cdacmumbai.in**)

5.2.9 Facilities for students of C-DAC

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

- Both the centres have modern computing and networking facilities with state-of-art infrastructure, informative library with reading facilities and a canteen.

5.3. Educational Opportunities at other Institutions

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

5.3.1. Admissions to Bharatiya Vidya Bhavan's – BCIDS, Mumbai

Contact Person	Ms. Megha Gawde, Project & Facilities Head
Contact Details	Bharatiya Vidya Bhavan's Bhavan's Centre for Inter-Disciplinary Studies (BCIDS) Under Academic Guidance of S.P.Jain Institute of Management & Research Bhavan's Campus, Munshi Nagar Dadabhai Road , Andheri (West), Mumbai-400 058 **24 hr helpline 09223221759, 09223548540** E-mail: info@bcids.org Website: www.bcids.org
Course Offered	**1) Advanced Professional Program in Management – 11 months** **Specializations** (For Graduates) • Retail • Financial Services • Marketing **2) Certificate Program in Management Skills – Part Time** (For Degree College Students) **Objectives** • To acquire & enhance soft skills • To build confidence • To acquire essential functional skills in finance, marketing, HR • To apply economic fundamentals to decision making • To bridge the academia career gap
Details of the Course	All are skills enhancement and advance placement programs. We also feel that by launching these courses we will make relevant education possible for the general graduates who are otherwise misguided into other non professional post graduation programs.
Admission Procedure	Test-Group Discussions-Interview
Eligibility Criteria	E level of CST-2011 (GA and CC papers) Students with aggregates of 60-70% in their graduation and/or 50 % in graduation with excellent extra-curricular records.

5.3.2. Admissions to MCA of Goa University

Contact Person	The Co-ordinator-MCA Admissions 2011-2012
Contact Details	Department of Computer Science and Technology Goa University Taleigao Plateau, Goa-403 206 Phone: 0832-6519272 (Office), 0832-6519072 (Admission Co-ordinator), 0832-6519087, 0832-6519323 (Head of Department) Fax: 0832-2451184, 2452889 E-mail: dcst@unigoa.ac.in, vvkamat@unigoa.ac.in Website: www.unigoa.ac.in
Course Offered	Master of Computer Applications (M.C.A.)
Details of the Course	Goa University will be admitting candidates to its Master of Computer Applications (MCA) programme for the academic year 2011-2012 based on performance in the General Aptitude paper of E/I/D/G-levels of CST examination.

No. of Seats Available	▪ 30 ▪ 24 seats-reserved for candidates graduating with first degree from colleges affiliated to Goa University, distributed into General category, OBC and SC/ST/PH/FF as per reservation policy of Government of Goa. ▪ 6 seats-open to candidates graduating with a first degree from a university outside Goa. ▪ If there are insufficient applicants in any of the above categories, vacancies will be open to those from other categories.
Admission Procedure	▪ Admission process for the academic year 2011-2012 will start in the month of April 2011. 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 news paper inviting the applications**. The prospectus along with the application form giving the details of the course will be available from 15th April, 2011 to 3rd June, 2011 and can be obtained in person from the office of Department of Computer Science & Technology by paying Rs.300/- or by writing to the Co-ordinator, Admission 2011-2012 along with the 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 the prospectus and application form should be superscribed "Admission to MCA". Last date for receiving completed application forms is 3rd June, 2011. ▪ All the admission related information will be hosted on the Goa University website. The 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 Admission Co-ordinator at the department address. Downloaded application forms will not be accepted without the Demand Draft.
Eligibility Criteria	• A score of 50 percentile or more in the General Aptitude paper of the E/I/D/G-levels of CST examination. The CST examination should have been taken within 29 months of the last date announced by the University for the receipt of application forms. • Graduate in any discipline with at least 55% aggregate marks at the first degree examination (50% for candidates in reserved category-OBC, ST, SC, PH, FF). or Minimum CPI must be 6.00 in the scale of 1 to 10 at the first degree examination (minimum CPI must be 5.5 in the scale of 1 to 10 for candidates in reserved category –OBC, ST, SC, PH, FF). or For any other method of declaration of the result, the equivalent percentage of the above cases will be decided by the University as and when such applications are received. • Candidate must have taken mathematics as one of the subjects at HSSCE (10+2) level or at a higher level (documentary proof 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.

5.3.3. Admissions to PGPM of International School of Management Excellence (ISME), Bengaluru and Navi Mumbai

Contact Person	Ms. Pallavi Jain Director, Admission
Contact Details	CAP-1, EOIZ, Export Promotion Industrial Park, Near ITPL, Whitefield, Bengaluru-560 066 Phone: 080-65606200/ 65343539 Fax: 080-2841 6767 E-mail: admissions@isme.in / contact@isme.in Website: www.isme.in
About the Institution	International School of Management Excellence (ISME) is one of the top business schools in India located at Bengaluru and Navi Mumbai. ISME offers full-time Post-Graduate Programme in Management (PGPM) accredited by National Accreditation Board for Education and Training, Ministry of Industry and Commerce, Government of India. The curriculum for the PGPM programme has been designed after extensive research and discussions with the International Advisors and National Advisory Board, who are graduates of some of the best business schools like MIT-USA, Wharton Business School-USA, Carnegie Mellon University-USA, Purdue University-USA, INSEAD-France, IIMs and other leading schools. The functional and industry specific knowledge that the students gain at ISME helps the students to get prepared and become valuable contributors to the industry. As a result, the graduated students of ISME are employed in top multi-nationals in India and abroad.
Course Offered	**PGPM-Post-Graduate Programme in Management** Major Specialization: Information Technology Minor Specialization: Marketing
Details of the Course	• The PGPM-IT programme is a full-time techno-managerial programme that imparts strong technical and managerial knowledge and develops managerial skills required for management roles in the IT industry. • With a holistic view of technical knowledge and sound personality development, the programme's aim is to ensure that the participants in the programme will have a valuable profile in the IT industry in techno-managerial roles. • Students undertake courses designed and offered at some of the top business schools leading to value-added certifications. • On successful completion, students receive a certificate of "Academic Achievement" by Prof. David Lamont, Carnegie Mellon University, USA. In addition, students receive certification for Business Strategy Game by Prof. Arthur Thompson, University of Alabama, USA. Six Sigma Green Belt and Black Belt course work certifications are an integral part of the programme, and these certifications are highly sought after by the industry.
No. of Seats Available	60 nos. (The course will be offered at the ISME campuses at Bengaluru and Navi Mumbai.)
Admission Procedure	▪ The Admission Office reviews applications on an individual basis looking at both quantitative and qualitative aspects of each applicant's professional, academic background and previous exposure to IT subjects. ▪ Short-listed candidates are called for an interview with a panel of experts from ISME. Based on the review of the application and the recommendation of the interview panel, the Admission Committee would invite selected students for admission to the programme. ▪ Candidates can download Application Forms by registering at the ISME website or through post by writing to the Admission Coordinator with a cheque/ DD for Rs. 1000/- payable to "International School of Management Excellence" or purchase the application form from centres of IMS, Career Launcher, PT India, Career Forum and Cerebral Heights.
Eligibility Criteria	The Candidate seeking admission to the PGPM-IT programme should have passed the Bachelor's Degree in Engineering in any discipline OR Computer Science graduation OR experience in IT AND good performance in the CST examination (I, D or G levels) or in one of the All-India Management Aptitude tests.

5.3.4. Admissions to Master of Computer Application (MCA) at MPSTME (NMIMS) Mumbai

Contact Person	Dr. D.J. Shah Dean-MPSTME
Contact Details	MPSTME (NMIMS) V.L. Mehta Road, Vile Parle (West) Mumbai-400 056 Phone: (022)-26717970/1, 64513236 (Direct) Fax: (022)-26114512 E-mail: nmims@nmims.edu, djshah@mpstme_nmims.org Website: www.nmims.edu, www.mpstme_nmims.org
Course Offered	Master of Computer Applications (M.C.A.)
Details of the Course	To meet the increasing demand of trained manpower in the field of Computer Applications, NMIMS is running a 3-year Post-Graduate M.C.A. Programme.
No. of Seats Available	60 (Distribution: 51-open merit, 9-management quota)
Admission Procedure	• Will be based on the score in the General Aptitude (GA) papers (E, I or D levels of CST) followed by a personal interview at NMIMS premises in Mumbai. • Process for academic year 2011-13 will start from January 2011. Interested candidates need to apply in the prescribed application form (available at the institute and notified centres) for being considered for admission to the M.C.A. Programme.
Eligibility Criteria	The Candidate must have a Bachelors degree with 50% marks in aggregate in Arts, Science, Commerce, Management or any other discipline from recognized Institutions/Universities. Those awaiting their final examination results also are eligible to apply.

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

Contact Person	The Principal
Contact Details	The Principal, Smt. Parvatibai Chowgule Cultural Foundation's College of Arts & Science P.O. Fatorda, Margao, Goa-403 602 Phone: (0832)-2759504 Fax: (0832)-2759067 E-mail: principal@chowgules.ac.in Website: www.chowgules.ac.in
Course Offered	Master of Science (Information Technology) [M.Sc. (IT)]
Details of the Course	The Post-Graduate Department of Computer Science in this college has initiated this course from August 2003. Our students have been well placed in industry as well as academic institutions.
No. of Seats Available	20
Admission Procedure	▪ Candidates interested in pursuing the above course for the academic year 2011-2012 should submit their applications on-line by visiting the college web-site i.e. www.chowgules.ac.in. The prospectus and admission procedure will be displayed on the college web site from 1st May 2011. ▪ Last date for acceptance of applications will be 18th June 2011.
Eligibility Criteria	▪ B.Sc. (Computer Science) or B.C.A. or B.Sc.(Mathematics) or B.Sc. (Statistics) with at least 50% at the graduate level examination **AND** ▪ Must have secured minimum 50 percentile at the D level of the CST examination (the D level scores are valid for 29 months since the date of examination). ▪ Admission will be based on merit as per the "D" level scores.

Please Note:

The information given in this brochure on the courses offered by institutions other than that of C-DAC is based on the information given by the respective Institutions. Candidates may, if they choose to do so, enquire with the concerned institutions directly about the information or visit their web site to check the details.

6. Career Opportunities

C-DAC offers employment opportunities at its various centres in Mumbai, Navi Mumbai, Bengaluru and other selected C-DAC centres through the CST Examination 2011 to those candidates who successfully pass out CST 2011 examination subject to their fulfilling the qualification and age requirements as per the recruitment rules of C-DAC. C-DAC shall be recruiting Scientific & Technical (S & T) Staff in various positions / grades /scales at its Centres through this examination. The recruitment takes place in the following grades for technical staff:

S. No.	Grade	Pay-scale/ Consolidated Salary
1	Staff Scientists/ Member Technical Staff (MTS)	Pay band 3– Rs. 15,600-39,100 + Grade Pay Rs. 5,400/
2	Assistant Managers ,ITSS	Pay band 3– Rs. 15,600-39,100 + Grade Pay Rs. 5,400/-
3	Project Engineers	Consolidated salary Rs. 22,500/- and above
4	Visiting System/Software Engineers	Consolidated salary Rs. 15,600/- and above
5	Software Trainees	Consolidated salary of Rs. 11,300/-

Depending on availability of vacancies, requirements and the performance of the candidates in the G level and D level examinations of CST 2011, C-DAC intends to invite qualifying candidates who have expressed interest in employment / assignment with C-DAC. Short-listing of candidates will be based on the merit list of the relevant level of CST scores. **Those candidates who are desirous of being considered for recruitment should necessarily fill in column no. 13 in A-1 form of CST application. Candidates can opt for more than one C-DAC Centres. Those who do not exercise the option of filling column no. 13 in A-1 application form will not be, in normal case, considered for any recruitment with C-DAC.** Names of the short-listed candidates will be displayed on our website as per the schedule, announced separately, on page (ii) of the brochure. The short-listed candidates will be called to appear for interviews through “Call Letters”.

C-DAC reimburses second sleeper class return train fare (non Air-Conditioned) to those candidates 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 (NOC) at the time of the interview. They can, however, appear for the CST examination without the NOC certificate.

6.1. Staff Scientist / Assistant Manager

a) Must have valid G level score of CST-2011.

b) Must have First Class in B.E. /B. Tech. in Relevant Discipline * / First class MCA or equivalent.
OR
Must have Post-graduation in Engineering/Technology in Relevant Discipline *.
OR
Must have First Class in Post-graduate degree in Relevant Discipline *.
OR
Must have Ph.D. in Relevant Discipline *.

* Relevant Discipline: IT / Computer Science / Electronics / Telecommunication / Electricals / Instrumentation

c) Age: 30 years as on April 1, 2011 (relaxation as per Govt. of India orders shall apply).

d) Salary band 3– Rs. 15,600-39,100 + Grade Pay Rs. 5,400/-

e) Starting basic : Pay of the candidates will be fixed taking into consideration their qualifications and their prior experience. Candidates who are offered employment in grades will also be eligible for other benefits as per rules such as:-

Dearness Allowance (DA)
Transport Allowance (TA)
House Rent Allowance (HRA)

The other benefits and facilities include Leave Travel Concession (LTC), Medical Reimbursement, Contributory Provident Fund, Gratuity, Group Insurance and communication expenses etc. The initial appointment will be either against a Regular Vacancy available at the centre or on contract basis against project vacancies covering a period of 5 years at a time and renewable for further periods based on project needs.
C-DAC follows the reservation policy for SC/ST/OBC candidates as per Government of India rules.

6.2. Project Engineer (PE)

a) Must have valid G level score of CST-2011.

b) Must have First Class in B.E. /B. Tech in Relevant Discipline * / First class MCA or equivalent.
OR
Must have 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 with additional qualification of FPGDST / APGDST / PGDST / DAC of C-DAC.

* **Relevant Discipline : IT / Computer Science / Electronics / Telecommunication / Electricals / Instrumentation**

c) Should be able to complete all requirements for the qualifying degree as per the following conditions :-

- Proof of having taken the examination covering all the subjects for the qualifying degree must be produced at the time of interview, if called for the interview, on successful passing of CST-2011 examination.
- However, it is mandatory that all selected candidates (after the interview), shall have to produce sufficient documentary evidence of successfully passing the stipulated qualification (in the required percentage, as applicable to that post) to enable C-DAC to issue the appointment letter and in any case not later than December 31, 2011. No appointment letter will be issued before the production of the stipulated documentary evidence.

d) Age: 30 years as on April 1, 2011.

e) Project Engineers are paid a consolidated salary from Rs. 22,500/- and above per month, depending upon the qualifications and experience. In addition, benefits and facilities such as medical reimbursement, subsidised canteen etc. are also available as per rules.

Appointment of Project Engineers would be on contractual terms, period not exceeding 5 years at a time.

6.3. Visiting Systems / Software Engineer

a) Must have valid D or G level score of CST-2011.

b) Must be Bachelor of Engineering / Technology in any discipline.
OR
Must be a Graduate in Relevant Discipline* with a First Class and additional qualification of PGDST/ FPGDST/APGDST/DAC of C-DAC.

*** Relevant Discipline: IT / Computer Science / Electronics / Telecommunication / Electricals / Instrumentation**

c) Age: 30 years as on April 1, 2011.
d) Visiting Systems / Software Engineers are paid a consolidated salary from Rs. 15,600/- and above per month depending on their qualification and experience. In addition, medical reimbursement facility will be available as per rules.

Conditions for final-year students to join as Project Engineers/Visiting Software Engineers

Based on the requirements of the Centre, final year students awaiting results in the year 2011 and with a valid D or G level (as appropriate) CST-2011 score, shall be eligible for applying for the post of Project Engineer/Visiting Software Engineer. These final year students can appear for the CST-2011 exam and also the interview.

Documentary evidence to be produced by these final year students, are as follows :-

- Proof of having taken the examination covering all the subjects for the qualifying degree must be produced at the time of interview, if called for the interview, on successful passing of CST 2011 examination.
- However, it is mandatory that all selected candidates (after the interview), shall have to produce sufficient documentary evidence of successfully passing the stipulated qualification (in the required percentage, as applicable to that post) to enable C-DAC to issue the appointment letter and in any case not later than December 31, 2011. No appointment letter will be issued before the production of the stipulated documentary evidence.

6.4. Software Trainee (ST)

a) Must have a valid I level score of CST-2011.

b) Must have B.Tech / B.E. / BCA / BCS / BSc. degree or 3 yr. Diploma in Computers/Electronics or related field of Engineering and must have taken at least one Mathematics paper at the diploma/degree level (those with post-graduate qualifications shall not be eligible in normal case).

c) Should be able to complete all requirements for the qualifying degree as per the following conditions :-

- Proof of having taken examination covering all the subjects for the qualifying degree must be produced at the time of interview, if called for the interview, on successful passing of CST 2011 examination.

- However, it is mandatory that all selected candidates (after the interview), shall have to produce sufficient documentary evidence of successfully passing the stipulated qualification (in the required percentage, as applicable to that post) to enable C-DAC to issue the appointment letter and in any case not later than December 31, 2011. No appointment letter will be issued before the production of the stipulated documentary evidence.

d) Age: 27 years on April 1, 2011

e) Software Trainee will be paid a consolidated salary of Rs. 11,300/- per month.

Software Trainee positions carry a consolidated salary and do not carry any allowances except medical reimbursement.

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.

6.5. Senior Technical Associate

Admissions to FPGDST at C-DAC are based on the performance of candidates in the CST 2011 examination. The Mumbai and Electronics City, Bengaluru Centres of C-DAC offer Senior Technical Associate positions to a few of the FPGDST students who complete the course in the batch 2011-2012. These are purely temporary assignments limited to a maximum of two years. Senior Technical Associates are assigned to work full-time at C-DAC, Juhu/Kharghar, Mumbai / Navi Mumbai or at Electronics City, Bengaluru and would be paid a monthly remuneration of Rs. 15,600/-. These positions will be offered initially for a period of one year and are

extendable for a further period of maximum one more year, based on the performance review and project exigencies of the Centre. A notice inviting applications from students shall be put up on the notice boards. Short-listed candidates will be called for an interview.

6.6. Project Associate

Admissions to FPGDST at C-DAC are based on the performance of candidates in the CST 2011 examination. Those students who have successfully completed and passed the FPGDST course in the batch 2011-2012 would qualify for consideration for Project Associate initially for a period of one year and extendable for a further period based on the performance review and project exigencies of the Centre, but limited to a maximum of three years. These are purely temporary assignments. Project Associates would be paid a monthly remuneration of Rs. 19,200/-. Applications would be invited and short-listed candidates will be called for an interview.

6.7. Project Fellowship

Students from the field of Computer Science, Computer Engineering or Information Technology studying for MCA, M.E., M.Sc. or M.Tech. will be considered for doing their dissertation projects at C-DAC, Juhu, Mumbai, C-DAC, Kharghar, Navi Mumbai or at Electronics City, Bengaluru. A few project fellowships will be awarded, based on performance in the D/G level of the CST 2011 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. 4,000/- per month (being revised). Only those students who are formally required to complete their project during the academic year June 2011 to June 2012 will be considered for the project fellowships. Note that the project must be a part of the respective degree requirements and the candidates will be required to produce a letter from their college to this effect at the time of joining. The candidates must tick the appropriate field in the A-1 form if they want to be considered for Project Fellowships.

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. The industry needs to identify candidates who have the potential for computer-related training. The CST examination is aimed at helping companies identify such candidates. Companies also use the CST Score Reports to select candidates who are technically good and call these candidates directly for interviews for jobs. The interviews, in such cases, focus on other important aspects such as career plans, motivation, choice of posting etc.

7. Frequently Asked Questions (FAQ) about CST Exam

1. **Which Examination level should I apply?**
   See various levels of examinations in Section *Levels and papers of the Examination*. CST Examination is used as entrance examination for course admission at C-DAC and other institutes. It is also used for recruitment at C-DAC.

2. **How long are the CST scores valid?**
   CST-2011 Scores are valid for 2011 and 2012 for FPGDST course admission purpose. For employment, CST-2011 scores are valid for recruitment in 2011 ONLY.

3. **When will the CST examination for the year 2012 be held?**
   The next CST examination is likely to be held in January/February 2012.

4. **Can I get 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.

5. **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.

6. **Can I take the G Level examination now and apply for employment at C-DAC, Mumbai and Electronics City, Bengaluru later?**
   No, only current year's CST scores are valid for recruitment. CST 2011 scores are valid for recruitment in 2011 ONLY.

7. **Does C-DAC, Mumbai and Electronics City, Bengaluru have accommodation for those recruited for its staff positions?**
   It has a limited number of bachelors' accommodation for those recruited.

8. **If I take the I 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 FPGDST admission?**
   Yes. Admissions will be based on scores in papers GA and CC only.

9. **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-2010 scores, use A-2 application form.

10. **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 to appear in for the CST examination?**
    Yes. You still have to submit attested copies of your mark lists for all the semesters (two / three years as applicable) examinations appeared for (even if you have failed in some of the subjects).

11. **Is a candidate studying for the relevant qualification (degree) but not in the final year of a degree, eligible for appearing in CST examination at any of the Levels?**
    No. You should 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.

12. **Is relevant work experience acceptable in lieu of 3 months full-time or 6 months part-time training for appearing in D Level?**
    No. Work experience is not treated as equivalent to the training specified for the D Level.

13. **Can a candidate who has engineering degree in disciplines such as Electronics or Mechanical Engg. appear for the D Level?**
    Such candidate should have taken courses in the Computer Science; either as a part of his/her work towards the degree, or in a training institute. Such training should meet the 3 months' full-time or 6 months' part-time training eligibility criteria. The candidate should also satisfy himself/herself that he/she is proficient in C programming. If the training is a part of his/her degree, candidates will have to produce attested mark sheets indicating that they have taken at least a one-semester course on computer programming for the D Level.

14. **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.

15. **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.

16. **Is a candidate having 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.

17. **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 FPGDST course?**
    D-level candidates are eligible to apply for the FPGDST 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. Those taking D level examination using A-1 will have their rank based on fresh D level scores in GA and CO papers.

18. **Is an ME (Computer Science) / M.Tech student allowed to appear for the G Level examination?**
    Yes.

19. **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 final examinations.

20. **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 / I or D Levels instead of the G Level, if you so prefer.

21. **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?**
    You are eligible for E, I or D level but not 'G' level.
22. **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.

23. **What are the employment opportunities in the IT industry for candidates who successfully complete any of C-DAC, Mumbai and Electronics City, Bengaluru'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 admission into our diploma courses, a candidate should not assume that every one completing these courses would have the same employment opportunities.

Appendix A: Syllabus for E Level

A.1. General Aptitude (GA)

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

A.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.

A.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.

A.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

A.1.4. Answers to Sample Questions

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

A.2. Computer Concepts (CC)

A.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 programmes and there will **not** be any questions on syntax. But candidates should be able to read and understand programmes involving the following: the assignment statement, blocks, the input-output statements (**scanf** and **printf**), relational and arithmetic operators, conditional statements and iterations.

A.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.

A.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

A.2.4. Answers to Sample Questions

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

Appendix B: Syllabus for I Level

B.1. General Aptitude (GA)

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

B.2. Computer Concepts (CC)

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

B.3. Computer Programming in C (CP)

B.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'.

B.3.2. Recommended Books

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

B.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

B.3.4. Answers to Sample Questions

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

Appendix C: Syllabus for D Level

C.1. General Aptitude (GA)

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

C.2. Computer Programming in C (CP)

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

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

C.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.

C.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.

C.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

C.3.4. Answers to Sample Questions

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

C.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.

C.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).

C.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

C.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

C.4.4. Answers to Sample Questions

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

Appendix D: Syllabus for G Level

D.1. General Aptitude (GA)

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

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

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

D.3. Data Structures and Algorithms (DS)

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

D.4. Computer Networks

D.4.1. 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.

D.4.2. Recommended Books

- *Computer Networks* (4th ed.) by Andrew S. Tanenbaum, Prentice Hall of India, 2006.
- *Data and Computer Communications* (5th ed.) by William Stallings, Prentice Hall of India, 1997.

D.4.3. 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 uniquely identifies a connection (when viewed from Network)?
   a) Sender IP, Receiver IP
   b) Sender Port, Receiver Port
   c) Sender IP, Sender Port, Receiver IP, Receiver Port
   d) Sender IP, Sender MAC, Receiver IP, Receiver MAC

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

D.4.4. Answers to Sample Questions

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

D.5. Database Management

D.5.1. 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.

D.5.2. Recommended Books

- Database System Concepts (5th ed.) by Abraham Silberschatz, Henry F Korth and S. Sudarshan, McGraw-Hill International Edition
- Fundamentals of Database Systems (4th ed.) by Ramez Elmasri and Shamkant Navathe, Addison Wesley, 2004

D.5.3. 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.

D.5.4. Answers to Sample Questions
1) (d) 2) (c) 3) (d) 4) (b) 5) (d)

D.6. Java Technologies

D.6.1. Topics
Language Fundamentals: Data representation, Operators and Expressions, Control Flow and Looping Constructs, Classes and Objects, Interfaces, Inheritance, Polymorphism, Exception handling, Packages.
Core API Packages (As specified in Java 2 Standard Edition 5.0): lang, util, io, math, awt, applet.
Concepts: Swings (JFC), Thread Management, Serialization, Remote Method Invocation, Java Beans, Security Model, Collections, JDBC, Enterprise Java Beans 3.x

D.6.2. Recommended Books
- *Thinking in Java,* 4th Edition by Bruce Eckel
- The Complete Reference Java J2SE 5 Edition By Herbert Schildt
- *Enterprise JavaBeans 3.0,* 5th Edition, by Richard Monson-Haefel, Bill Burke

or any other book with similar contents.

D.6.3. 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

D.6.4. Answers to Sample Questions

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

D.7. Object-Oriented Programming and C++

D.7.1. 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, initialisation, 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.

D.7.2. 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

D.7.3. 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.

D.7.4. Answers to Sample Questions
1) (d) 2 (b) 3 (c) 4 (a) 5 (b)

D.8. Software Engineering

D.8.1. 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.

D.8.2. Recommended Books
- *Software Engineering - A Practitioner's Approach* (6th ed.) by Roger S Pressman, McGraw-Hill Intl. 2001

D.8.3. 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

D.8.4. Answers to Sample Questions

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

D.9. Web Technology

D.9.1. 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.

D.9.2. 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.

D.9.3. 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 directly implement the javax.servlet.Servlet interface.
(c) An HTTPServlet is required to override the service() method of the HTTPServlet class.
(d) An HTTPServlet 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">

D.9.4. Answers to Sample Questions

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

Appendix E: Contact Details of C-DAC Centres

1) Juhu Centre, C-DAC, Mumbai

Contact persons	Course Co-ordinator
Address	Gulmohar Cross Road No. 9, Juhu, Mumbai-400049
Tel	2670 3251/ 2620 1606/ 2620 1488
Fax	2621 0139 / 2623 2195
E-mail	entrance@cdacumbai.in
Nearest station	Andheri (West) Railway Station

2) Nariman Point Centre, C-DAC, Mumbai

Contact persons	Course Co-ordinator
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

Contact persons	Course Co-ordinator
Address	Sector 7, Rain Tree Marg, Near Bharti Vidyapeeth, Opp. Kharghar Railway Station, CBD Belapur, Navi Mumbai-400614.
Tel	2756 5303, 2756 5304, 2756 5305, 2756 5306, 2756 0013
Fax	2756 0004
E-mail	course_kh@cdacmumbai.in
Nearest station	Kharghar Railway Station

4a) Electronics City Centre, C-DAC, Bengaluru

Contact persons	Course Co-ordinator
Address	68, Electronics City, Hosur Road, Bengaluru, Karnataka-560100
Tel	(080) 28523300
Fax	(080) 28522590
E-mail	cst@ncb.ernet.in
Nearest station	Bengaluru City

4b) Bengaluru Centre, C-DAC, Bengaluru

Address	6th Floor, Main Tower, Visvesvaraya Centre, Dr. Ambedkar Veedhi Bengaluru-560 001
Tel	(080) 22863100 / 22862486
Fax	(080) 22862531
E-mail	cst@ncb.ernet.in
Nearest station	Bengaluru City

Appendix F: Instruction to Candidates

F.1 Instructions to the Candidates - E Level

Please do not start answering the paper until you have finished reading these instructions.

- The E level examination consists of 2 papers: General Aptitude (GA) and Computer Concepts (CC). The duration of the E level examination is 2 hours **(1430-1530 hrs for GA and 1535-1635 hrs for CC)**. Each paper has 25 questions and is expected to be answered in one hour.

- At the start of the examination, you will be given an Optical Mark Reader (OMR) **answer sheet**. You have to mark your answers in this sheet and give it to the invigilator at the end of the examination. The OMR sheet provided has six answer blocks (A1 - A6). Each answer block has 26 rows for marking answers of upto 26 questions of a paper. Please ignore the 26th row in each block.

- **It is mandatory to fill up the following information** in the OMR answer sheet. Without this information, the answer sheet is liable for rejection. Fill in corresponding ovals carefully with a **HB or 2B pencil**. The answer sheet will be machine evaluated. Make sure that the ovals are exactly filled and properly darkened.

Information	Remarks
Roll Number	This is printed on your hall ticket. Ignore first four digits (2011) while marking the roll number on the answer sheet.
Level	Mark the E level.
Name of candidate	Mark your name in this block. Leave a block to separate the components of your name. The same name will be used in your score report.
Paper Number	This must be marked for **each of the question papers**. The question paper number (4 Digit) can be found on the right hand top corner of each page of the question paper. Different question papers will have different numbers.
Number of attem-pted questions	Indicate the number of attempted questions for each of the question papers. Mark 00, for unused blocks out of A1 - A6.
Candidate's Signature	Please sign in the space provided, with a pen.

Please do not forget to fill up your **ROLL NUMBER** on the answer sheet. It is mandatory to fill up your **QUESTION PAPER NUMBER** for each paper attempted by you.

- You can use all the blank space in the question paper for your rough work. No additional sheets will be provided for rough work.

- We recommend that you mark your answers first on the question paper itself. You can later transfer them to the answer sheet. In case you make a mistake while filling in a choice, erase the wrongly marked choice properly and then fill in the substitute choice.

- All questions are to be answered by choosing the most suitable from the given alternatives. If you feel that the exact answer is not given, choose the best available answer. **Do not seek any clarifications from the invigilator or any one else during the examination.**

- Each correct answer will carry 3 marks. Each wrong answer will carry 1 negative mark. Unanswered questions will carry zero marks.

- The question paper **MUST** be returned with all the sheets intact. Failure to return these will result in your being disqualified from the examination.

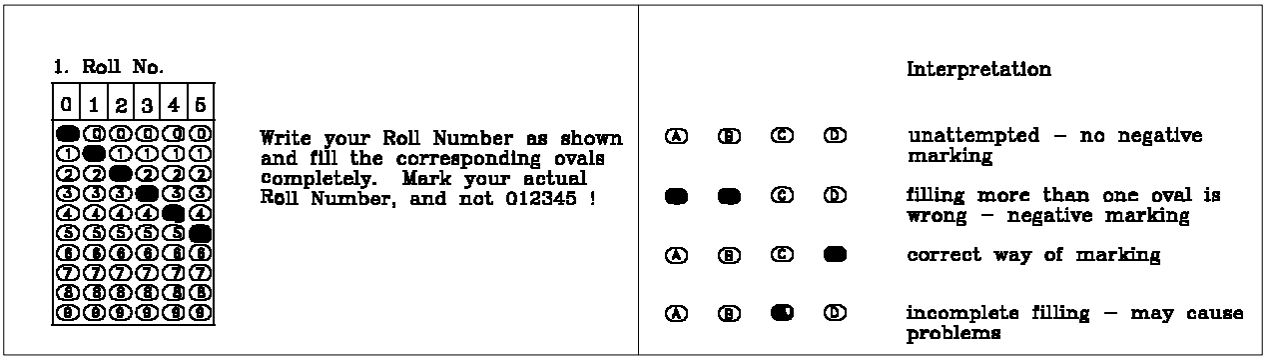
- Use of calculators, slide rules, log tables or other such arithmetic aids and cellular phone, pager etc. is not allowed. Instructions sent to you with the application receipt, books, notes etc. are also not allowed. If you have brought any of these, please leave them with the invigilator.

Important Timings

1415 hrs	Answer sheet and this instruction sheet will be distributed. **Fill all the information asked for, on the answer sheet.**
1425 hrs	GA Question paper distributed. **Write your roll number on the question paper.**
1430 hrs	Examination begins. Check all pages of the question paper for readability and completeness. **Write the paper number on the answer sheet in the space provided.**
Between 1430 and 1500 hrs	The invigilator will come and sign on your answer sheet. Please hand over the hall ticket to the invigilator, **otherwise you will not be sent your score report.**
1530 hrs	GA paper ends. **Return the GA question paper to the invigilator.** CC Question paper distributed. **Write your roll number on the question paper**.
1535 hrs	CC paper begins. Check all pages of the question paper for readability and completeness. **Write the paper number on the same answer sheet in the space provided.**
1635 hrs	Examination ends. **Return the answer sheet and CC question paper to the invigilator.**

Marking the Answer Sheet

The following are examples of some correct and incorrect ways of filling in the answer sheet.



NOTE: Please do not leave your seat without the invigilator's consent.

F.2 Instructions to the Candidates - I Level

Please do not start answering the paper until you have finished reading these instructions.

- The I level (with CP) examination consists of 3 papers: General Aptitude (GA), Computer Concepts (CC) and Computer Programming in C (CP). The duration of the examination is 3 hours **(1430-1530 hrs for GA, 1535-1635 hrs for CC and 1645-1745 hrs for CP)**. Each paper has 25 questions and is expected to be answered in one hour.

- At the start of the examination, you will be given an Optical Mark Reader (OMR) **answer sheet.** You have to mark your answers in this sheet and give it to the invigilator at the end of the examination. The OMR sheet provided has six answer blocks (A1 - A6). Each answer block has 26 rows for marking answers of upto 26 questions of a paper. Please ignore the 26th row in each block.

- **It is mandatory to fill up the following information** in the OMR answer sheet. Without this information, the answer sheet is liable for rejection. Fill in corresponding ovals carefully with a **HB or 2B pencil**. The answer sheet will be machine evaluated. Make sure that the ovals are exactly filled and properly darkened.

Information	Remarks
Roll Number	This is printed on your hall ticket. Ignore first four digits (2011) while marking the roll number on the answer sheet.
Level	Mark the I level.
Name of candidate	Mark your name in this block. Leave a block to separate the components of your name. The same name will be used in your score report.
Paper Number	This must be marked for **each of the question papers**. The question paper number (4 Digit) can be found on the right hand top corner of each page of the question paper. Different question papers will have different numbers.
Number of attem-pted questions	Indicate the number of attempted questions for each of the question papers. Mark 00, for unused blocks out of A1-A6.
Candidate's Signature	Please sign in the space provided, with a pen.

Please do not forget to fill up your **ROLL NUMBER** on the answer sheet. It is mandatory to fill up your **QUESTION PAPER NUMBER** for each paper attempted by you.

- You can use all the blank space in the question paper for your rough work. No additional sheets will be provided for rough work.

- We recommend that you mark your answers first on the question paper itself. You can later transfer them to the answer sheet. In case you make a mistake while filling in a choice, erase the wrongly marked choice properly and then fill in the substitute choice.

- All questions are to be answered by choosing the most suitable from the given alternatives. If you feel that the exact answer is not given, choose the best available answer. **Do not seek any clarifications from the invigilator or any one else during the examination.**

- Each correct answer will carry 3 marks. Each wrong answer will carry 1 negative mark. Unanswered questions will carry zero marks.

- The question paper **MUST** be returned with all the sheets intact. Failure to return these will result in your being disqualified from the examination.

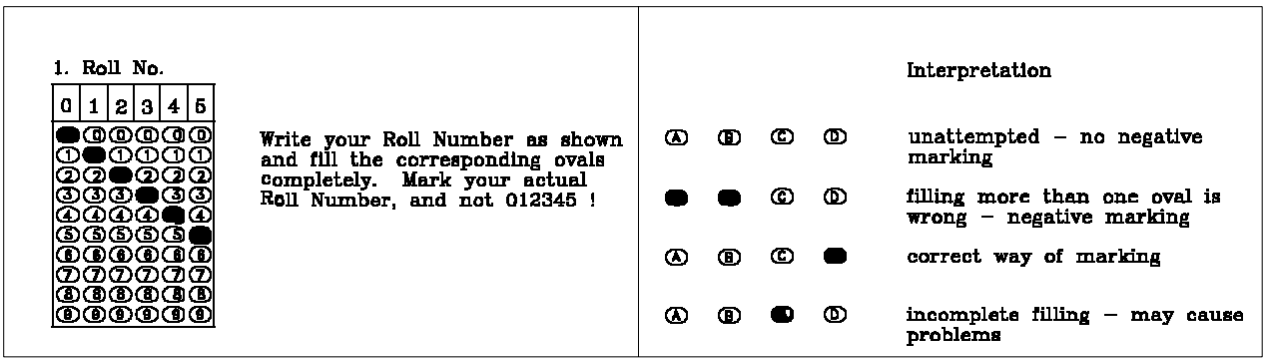
- Use of calculators, slide rules, log tables or other such arithmetic aids and cellular phone, pager etc. is not allowed. Instructions sent to you with the application receipt, books, notes etc. are also not allowed. If you have brought any of these, please leave them with the invigilator.

Important Timings

1415 hrs	Answer sheet and this instruction sheet will be distributed. **Fill all the information asked for, on the answer sheet.**
1425 hrs	GA Question paper distributed. **Write your roll number on the question paper.**
1430 hrs	Examination begins. Check all pages of the question paper for readability and completeness. **Write the paper number on the answer sheet in the space provided.**
Between 1430 and 1500 hrs	The invigilator will come and sign on your answer sheet. Please hand over the hall ticket to the invigilator, **otherwise you will not be sent your score report.**
1530 hrs	GA paper ends. **Return the GA question paper to the invigilator.** CC Question paper distributed. **Write your roll number on the question paper**.
1535 hrs	CC paper begins. Check all pages of the question paper for readability and completeness. **Write the paper number on the answer sheet in the space provided.**
1635 hrs	CC paper ends. **Return the CC question paper to the invigilator.**
1640 hrs	CP question paper distributed. **Write your roll number on this question paper.**
1645 hrs	CP paper begins. Check all pages of the question paper for readability and completeness. **Write the paper number on the answer sheet in the space provided.**
1745 hrs	Examination ends. **Return answer sheet and CP question paper to the invigilator.**

Marking the Answer Sheet

The following are examples of some correct and incorrect ways of filling in the answer sheet.



NOTE: Please do not leave your seat without the invigilator's consent.

F.3 Instructions to the Candidates (Morning Session) –D Level

Please do not start answering the paper until you have finished reading these instructions.

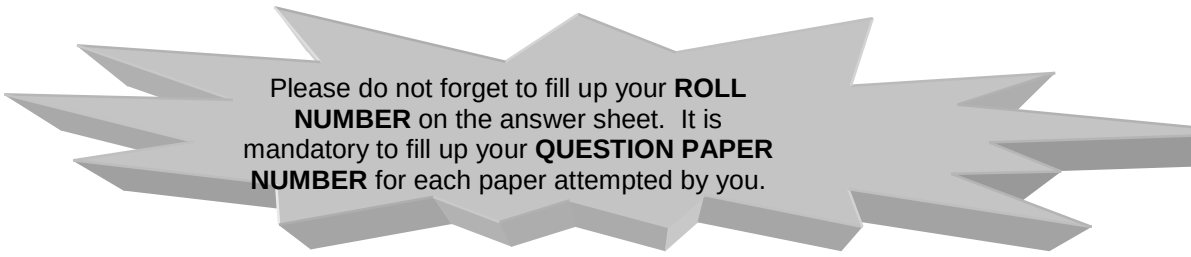
- The D level examination is conducted in two sessions. The morning session **(1215 – 1315 hrs)** has the Data Structures and Algorithms (DS) paper. The afternoon session **(1430 – 1745 hrs)** has three papers. General Aptitude (GA) **(1430 - 1530 hrs**), Computer Organisation and Operating Systems (CO) **(1535 - 1635 hrs)**, and Computer Programming in C (CP) **(1645 - 1745 hrs)**. Each paper has 25 questions and is expected to be answered in one hour.

- Please show your hall ticket to the invigilator when the invigilator comes to you and signs on your answer sheet. Retain the hall ticket and hand it over during the afternoon session. **Please note that C-DAC, Mumbai must have your hall ticket for sending you your score report.**

- At the start of the examination, you will be given an Optical Mark Reader (OMR) **answer sheet.** You have to mark your answers in this sheet and give it to the invigilator at the end of the examination. The OMR sheet provided has six answer blocks (A1 - A6). Each answer block has 26 rows for marking answers of up to 26 questions of a paper. Please ignore the 26th row in each block.

- **It is mandatory to fill up the following information** in the OMR answer sheet. Without this information, the answer sheet is liable for rejection. Fill in corresponding ovals carefully with a **HB or 2B pencil**. The answer sheet will be machine evaluated. Make sure that the ovals are exactly filled and properly darkened.

Information	Remarks
Roll Number	This is printed on your hall ticket. Ignore first four digits (2011) while marking the roll number on the answer sheet.
Level	Mark the D level.
Name of candidate	Mark your name in this block. Leave a block to separate the components of your name. The same name will be used in your score report.
Paper Number	This must be marked for **each of the question papers**. The question paper number (4 Digit) can be found on the right hand top corner of each page of the question paper. Different question papers will have different numbers.
Number of attem-pted questions	Indicate the number of attempted questions for each of the question papers. Mark 00, for unused blocks out of A1-A6.
Candidate's Signature	Please sign in the space provided, with a pen.



- You can use all the blank space in the question paper for your rough work. No additional sheets will be provided for rough work.

- We recommend that you mark your answers first on the question paper itself. You can later transfer them to the answer sheet. In case you make a mistake while filling in a choice, erase the wrongly marked choice properly and then fill in the substitute choice.

- All questions are to be answered by choosing the most suitable from the given alternatives. If you feel that the exact answer is not given, choose the best available answer. **Do not seek**

any clarifications from the invigilator or anyone else during the examination.

- Each correct answer will carry 3 marks. Each wrong answer will carry 1 negative mark. Unanswered questions will carry zero marks.

- The question paper **MUST** be returned with all the sheets intact. Failure to return these will result in your being disqualified from the examination.

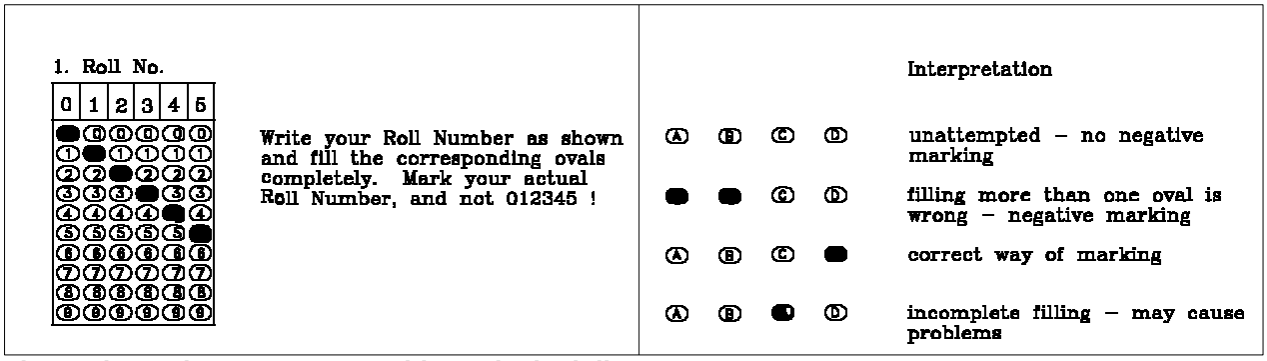
- Use of calculators, slide rules, log tables or other such arithmetic aids and cellular phone, pager etc. is not allowed. Instructions sent to you with the application receipt, books, notes etc. are also not allowed. If you have brought any of these, please leave them with the invigilator.

Important Timings

1205 hrs	Answer sheet and this instruction sheet will be distributed. **Fill all the information asked for, on the answer sheet.**
1210 hrs	DS Question paper distributed. **Write your roll number on the question paper.**
1215 hrs	Examination begins. Check all pages of the question paper for readability and completeness. **Write the paper number on the answer sheet in the space provided.**
Between 1230 and 1300 hrs	The invigilator will come and sign on your answer sheet.
1315 hrs	Morning Session ends. **Return answer sheet and the question paper to the invigilator.**
1415 hrs.	***The afternoon session will start.***

Marking the Answer Sheet

The following are examples of some correct and incorrect ways of filling in the answer sheet.



NOTE: Please do not leave your seat without the invigilator's consent

F.4 Instructions to the Candidates (Afternoon Session) –D Level

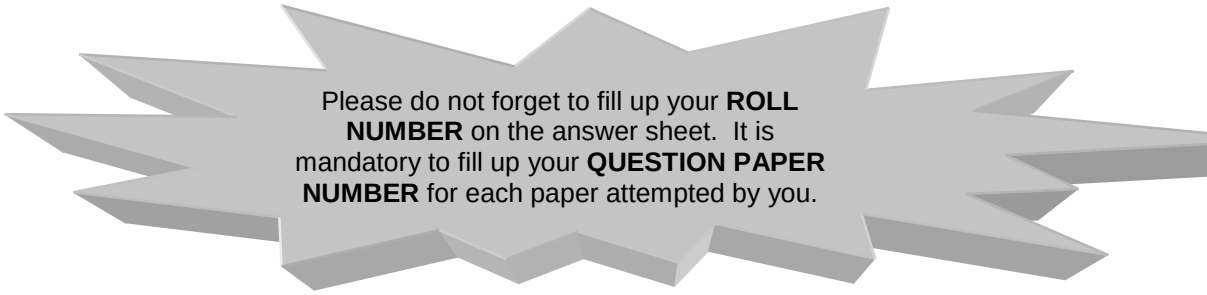
Please do not start answering the paper until you have finished reading these instructions.

- The D level afternoon session consists of 3 papers: General Aptitude (GA), Computer Organisation and Operating Systems (CO) and Computer Programming in C (CP). The duration of the D level afternoon session is 3 hours: General Aptitude (GA) **(1430-1530 hrs)**, Computer Organisation and Operating Systems (CO) **(1535-1635 hrs)** and Computer Programming in C (CP) **(1645-1745 hrs)**. Each paper has 25 questions and is expected to be answered in one hour.

- At the start of the examination, you will be given an Optical Mark Reader (OMR) **answer sheet**. You have to mark your answers in this sheet and give it back to the invigilator at the end of the examination. The OMR sheet provided has six answer blocks (A1 – A6). Each answer block has 26 rows for marking answers of up to 26 questions of a paper. Please ignore the 26th row in each block.

- **It is mandatory to fill up the following information** in the OMR answer sheet. Without this information, the answer sheet is liable for rejection. Fill in corresponding ovals carefully with a **HB or 2B pencil**. The answer sheet will be machine evaluated. Make sure that the ovals are exactly filled and properly darkened.

Information	**Remarks**
Roll Number	This is printed on your hall ticket. Ignore first four digits (2011) while marking the roll number on the answer sheet.
Level	Mark the D level.
Name of candidate	Mark your name in this block. Leave a block to separate the components of your name. The same name will be used in your score report.
Paper Number	This must be marked for **each of the question papers**. The question paper number (4 Digit) can be found on the right hand top corner of each page of the question paper. Different question papers will have different numbers.
Number of attem-pted questions	Indicate the number of attempted questions for each of the question papers. Mark 00, for unused blocks out of A1-A6.
Candidate's Signature	Please sign in the space provided, with a pen.



- You can use all the blank space in the question paper for your rough work. No additional sheets will be provided for rough work.

- We recommend that you mark your answers first on the question paper itself. You can later transfer them to the answer sheet. In case you make a mistake while filling in a choice, erase the wrongly marked choice properly and then fill in the substitute choice.

- All questions are to be answered by choosing the most suitable from the given alternatives. If you feel that the exact answer is not given, choose the best available answer. **Do not seek any clarifications from the invigilator or any one else during the examination.**

- Each correct answer will carry 3 marks. Each wrong answer will carry 1 negative mark. Unanswered questions will carry zero marks.

- The question paper **MUST** be returned with all the sheets intact. Failure to return these will result in your being disqualified from the examination.

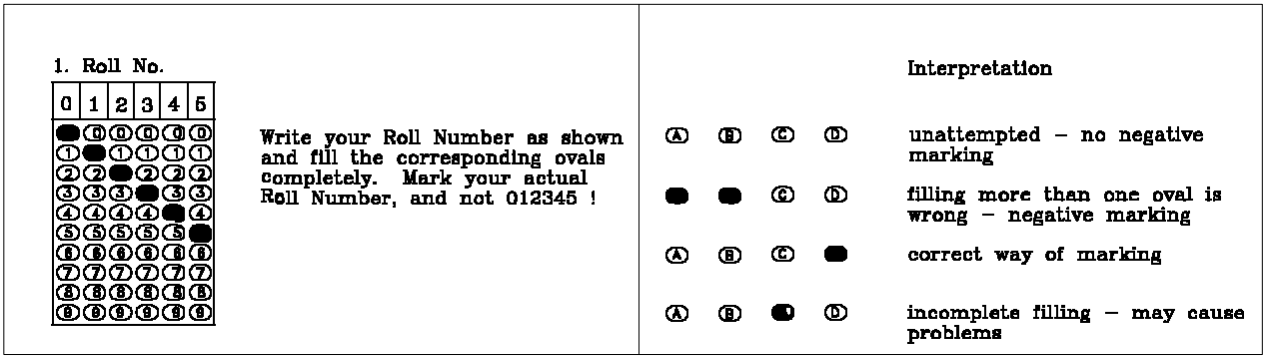
- Use of calculators, slide rules, log tables or other such arithmetic aids and cellular phone, pager etc. is not allowed. Instructions sent to you with the application receipt, books, notes etc. are also not allowed. If you have brought any of these, please leave them with the invigilator.

Important Timings

1415 hrs	Answer sheet and this instruction sheet will be distributed. **Fill all the information asked for, on the answer sheet.**
1425 hrs	GA Question paper distributed. **Write your roll number on the question paper.**
1430 hrs	Afternoon session begins. Check all pages of the question paper for readability and completeness. **Write the paper number on the answer sheet in the space provided.**
Between 1430 and 1500 hrs	The invigilator will come and sign on your answer sheet. Please hand over the hall ticket to the invigilator, **otherwise you will not be sent your score report.**
1530 hrs	GA paper ends. **Return the GA question paper to the invigilator.** CO Question paper distributed. **Write your roll number on the question paper.**
1535 hrs	CO paper begins. Check all pages of the question paper for readability and completeness. **Write the paper number on the answer sheet in the space provided.**
1635 hrs	CO paper ends. **Return the CO question paper to the invigilator.**
1640 hrs	CP question paper distributed. **Write your roll number on this question paper.**
1645 hrs	CP paper begins. Check all pages of the question paper for readability and completeness. **Write the paper number on the answer sheet in the space provided.**
1745 hrs	Examination ends. **Return the answer sheet and CP question paper to the invigilator.**

Marking the Answer Sheet

The following are examples of some correct and incorrect ways of filling in the answer sheet.



NOTE: Please do not leave your seat without the invigilator's consent.

F.5 Instructions to the Candidates (Morning Session) –G Level

Please do not start answering the paper until you have finished reading these instructions.

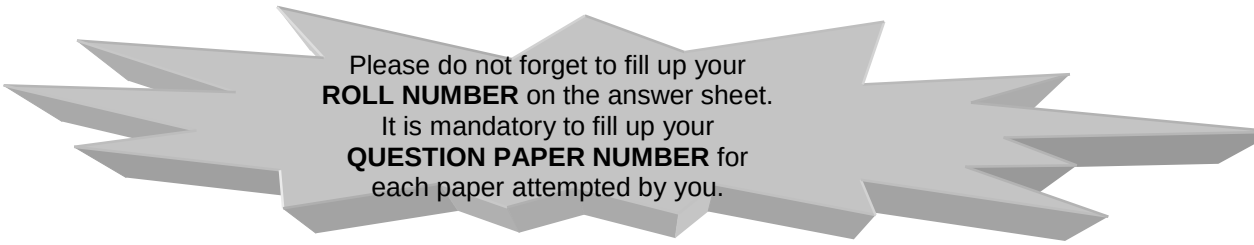
- The G level examination is conducted in two sessions. The morning session **(1000-1315 hrs)** has 3 papers to be answered as per the following schedule: From **1000-1200 hrs** you have to answer 2 optional papers of your choice (OP) out of the 6 papers offered: Web Technology, Computer Networks, Database Management, Software Engineering, Java Technologies and Object Oriented Programming and C++. From **1215-1315 hrs** you have to answer Data Structures and Algorithms (DS). The afternoon session (1430 – 1635 hrs) has two papers. General Aptitude (GA) and Computer Organisation and Operating Systems (CO). Each paper has 25 questions and is expected to be answered in one hour.

- Please show your hall ticket to the invigilator when the invigilator comes to you and signs on your answer sheet. Retain the hall ticket and hand it over during the afternoon session. **Please note that C-DAC, Mumbai must have your hall ticket for sending you your score report.**

- For this morning session, you will be given **two** Optical Mark Reader (OMR) answer sheets at the following timings: at 0945 hrs an answer sheet will be given for optional papers (OP). At **1205 hrs** you will be given a separate answer sheet for DS paper. You have to mark your answers in this sheet and give it to the invigilator at the end of the corresponding paper. The OMR sheet provided has six answer blocks (A1 - A6). Each answer block has 26 rows for marking answers of upto 26 questions of a paper. Please ignore the 26th row in each block.

- **It is mandatory to fill up the following information** in each of the OMR answer sheets. Without this information, the answer sheet is liable for rejection. Fill in corresponding ovals carefully with a **HB or 2B pencil**. The answer sheet will be machine evaluated. Make sure that the ovals are exactly filled and properly darkened.

Information	Remarks
Roll Number	This is printed on your hall ticket. Ignore first four digits (2011) while marking the roll number on the answer sheet.
Level	Mark the G level.
Name of candidate	Mark your name in this block. Leave a blank block to separate the components of your name. The same name will be used in your score report.
Paper Number	This must be marked for **each of the question papers**. The question paper number (4 Digit) can be found on the right hand top corner of each page of the question paper. Different question papers will have different numbers.
Number of attempted questions	Indicate the number of attempted questions for each of the question papers. Mark 00, for unused blocks out of A1-A6.
Candidate's Signature	Please sign in the space provided, with a pen.



- You can use all the blank space in the question paper for your rough work. No additional sheets will be provided for rough work.

- We recommend that you mark your answers first on the question paper itself. You can later

transfer them to the answer sheet. In case you make a mistake while filling in a choice, erase the wrongly marked choice properly and then fill in the substitute choice.

- All questions are to be answered by choosing the most suitable from the given alternatives. If you feel that the exact answer is not given, choose the best available answer. **Do not seek any clarifications from the invigilator or any one else during the examination.**

- Each correct answer will carry 3 marks. Each wrong answer will carry 1 negative mark. Unanswered questions will carry zero marks.

- The question paper **MUST** be returned with all the sheets intact. Failure to return these will result in your being disqualified from the examination.

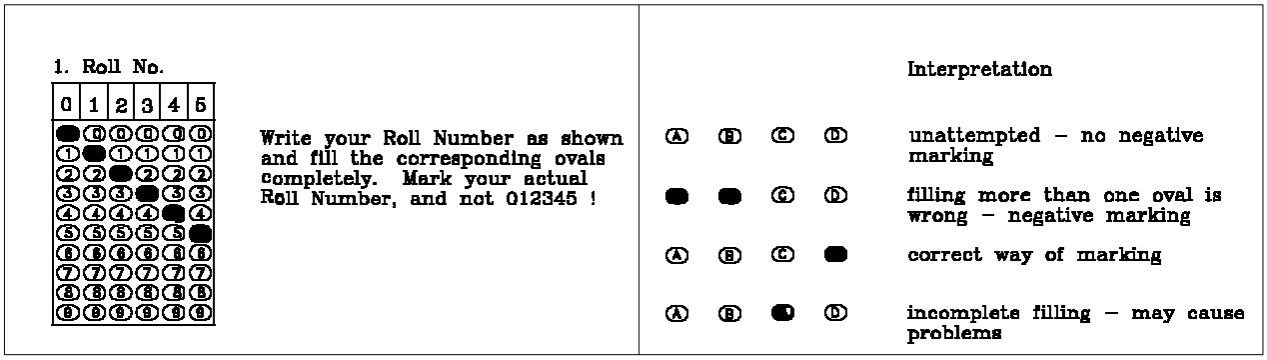
- Use of calculators, slide rules, log tables or other such arithmetic aids and cellular phone, pager etc. is not allowed. Instructions sent to you with the application receipt, books, notes etc. are also not allowed. If you have brought any of these, please leave them with the invigilator.

Important Timings

0945 hrs	Answer sheet for OP and this instruction sheet will be distributed. **Fill all the information asked for, on the answer sheet.**
0955 hrs	A booklet containing Optional papers distributed**. Write your roll number on the question paper**.
1000 hrs	Examination begins. Check all pages of the question paper for readability and completeness. **Write the paper number on the answer sheet in the space provided.**
Between 1000 and 1030 hrs	The invigilator will come and sign on your answer sheet.
1200 hrs	Examination for the optional papers ends. **Return the answer sheet and optional papers booklet to the invigilator.**
1205 hrs	Answer sheet for DS will be distributed. **Fill all the information asked for, on the answer sheet.**
1210 hrs	DS Question paper distributed. **Write your roll number on the question paper**.
1215 hrs	DS paper begins.
1315 hrs	Morning Session ends. **Return answer sheet and the question paper to the invigilator.**
1415 hrs	***The afternoon session will start.***

Marking the Answer Sheet

The following are examples of some correct and incorrect ways of filling in the answer sheet.



NOTE: Please do not leave your seat without the invigilator's consent

F.6 Instructions to the Candidates (Afternoon Session) –G Level

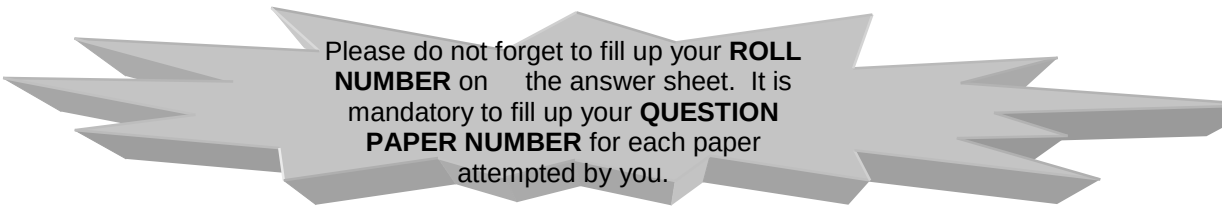
Please do not start answering the paper until you have finished reading these instructions.

- The G Level afternoon session consists of 2 papers: General Aptitude (GA) and Computer Organisation and Operating Systems (CO). The duration of the G level afternoon session is 2 hours **(1430 – 1530 hrs for GA and 1535 – 1635 hrs for CO).** Each paper has 25 questions and is expected to be answered in one hour.

- At the start of the examination, you will be given an Optical Mark Reader (OMR) **answer sheet**. You have to mark your answers in this sheet and give it back to the invigilator at the end of the examination. The OMR sheet provided has six answer blocks (A1 – A6). Each answer block has 26 rows for marking answers of upto 26 questions of a paper. Please ignore the 26th row in each block.

- **It is mandatory to fill up the following information** in the OMR answer sheet. Without this information, the answer sheet is liable for rejection. Fill in corresponding ovals carefully with a **HB or 2B pencil**. The answer sheet will be machine evaluated. Make sure that the ovals are exactly filled and properly darkened.

Information	**Remarks**
Roll Number	This is printed on your hall ticket. Ignore first four digits (2011) while marking the roll number on the answer sheet.
Level	Mark the G level.
Name of candidate	Mark your name in this block. Leave a blank block to separate the components of your name. The same name will be used in your score report.
Paper Number	This must be marked for **each of the question papers**. The question paper number (4 Digit) can be found on the right hand top corner of each page of the question paper. Different question papers will have different numbers.
Number of attem-pted questions	Indicate the number of attempted questions for each of the question papers. Mark 00, for unused blocks out of A1-A6.
Candidate's Signature	Please sign in the space provided, with a pen.



- You can use all the blank space in the question paper for your rough work. No additional sheets will be provided for rough work.

- We recommend that you mark your answers first on the question paper itself. You can later transfer them to the answer sheet. In case you make a mistake while filling in a choice, erase the wrongly marked choice properly and then fill in the substitute choice.

- All questions are to be answered by choosing the most suitable from the given alternatives. If you feel that the exact answer is not given, choose the best available answer. **Do not seek any clarifications from the invigilator or any one else during the examination.**

- Each correct answer will carry 3 marks. Each wrong answer will carry 1 negative mark. Unanswered questions will carry zero marks.

- The question paper **MUST** be returned with all the sheets intact. Failure to return these will result in your being disqualified from the examination.

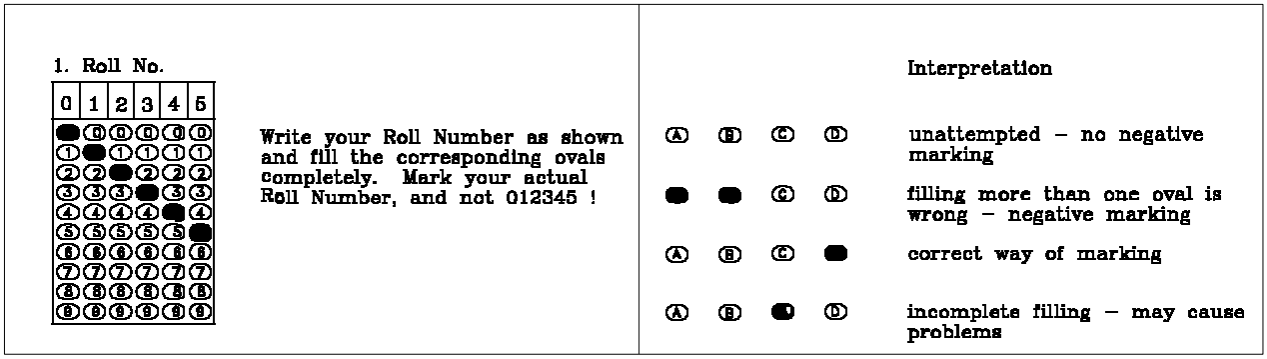
- Use of calculators, slide rules, log tables or other such arithmetic aids and cellular phone, pager etc. is not allowed. Instructions sent to you with the application receipt, books, notes etc. are also not allowed. If you have brought any of these, please leave them with the invigilator.

Important Timings

1415 hrs	Answer sheet and this instruction sheet will be distributed. **Fill all the information asked for, on the answer sheet.**
1425 hrs	GA Question paper distributed. **Write your roll number on the question paper.**
1430 hrs	Afternoon session begins. Check all pages of the question paper for readability and completeness. **Write the paper number on the answer sheet in the space provided.**
Between 1430 and 1500 hrs	The invigilator will come and sign on your answer sheet. Please hand over the hall ticket to the invigilator, **otherwise you will not be sent your score report.**
1530 hrs	GA paper ends. **Return the GA question paper to the invigilator.** CO Question paper distributed. **Write your roll number on the question paper.**
1535 hrs	CO paper begins. Check all pages of the question paper for readability and completeness. **Write the paper number on the same answer sheet in the space provided.**
1635 hrs	Examination ends. **Return the answer sheet and CO question paper to the invigilator.**

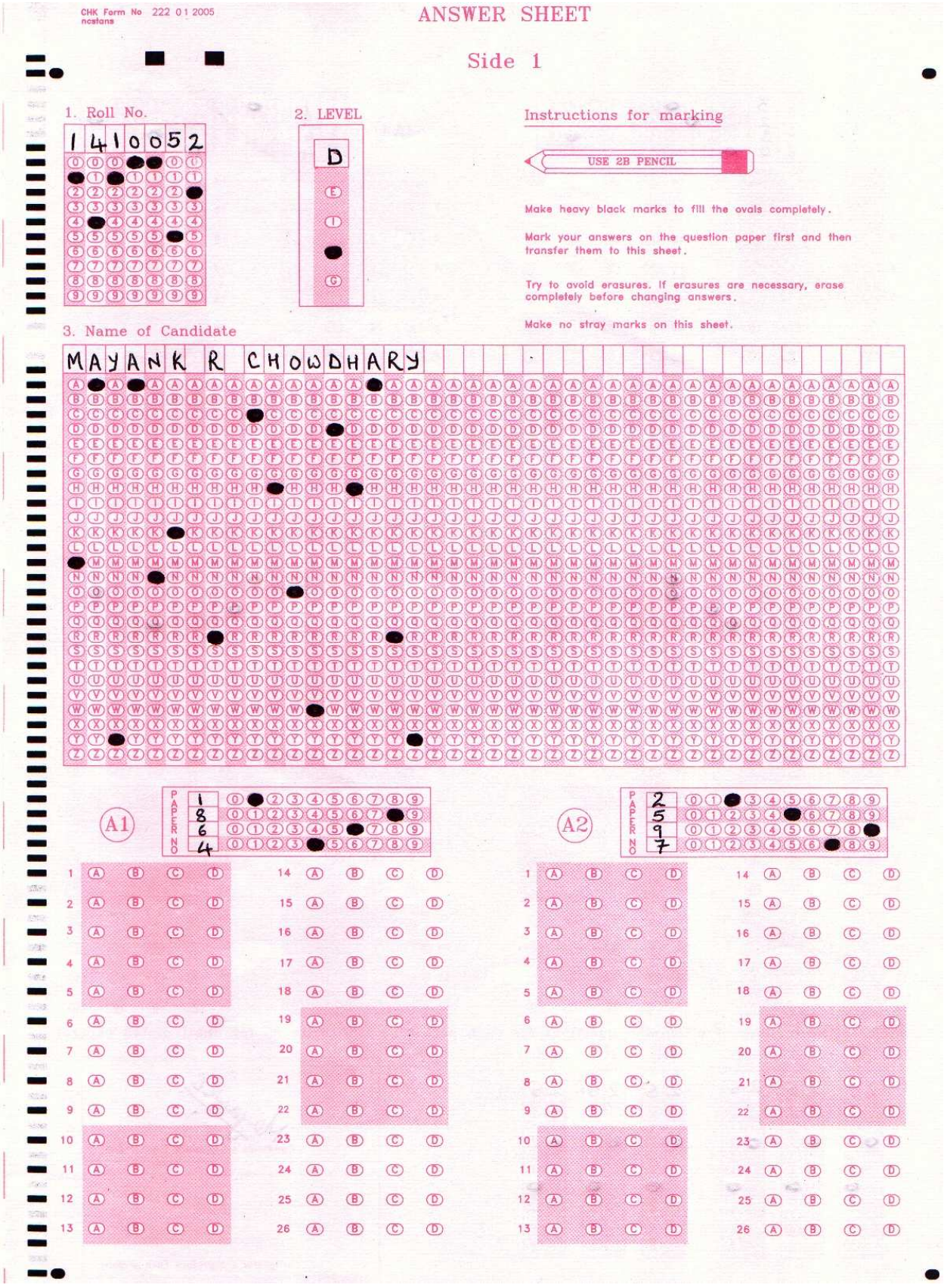
Marking the Answer Sheet

The following are examples of some correct and incorrect ways of filling in the answer sheet.



NOTE: Please do not leave your seat without the invigilator's consent.

Appendix G: Sample of Filled OMR answer sheet



Side 2

A3

PAPER NO: 3 2 8 0

A4

PAPER NO: 1 9 6 4

A5

PAPER NO: 3 3 1 0

A6

PAPER NO: 1 9 2 6

Indicate the number of attempted questions for each part A1 – A6 (Write 00 for unattempted papers)

A1	A2	A3	A4	A5	A6
25	25	25	25	25	25

Mayank C.

Candidate's signature (use a pen)

Invigilator's signature (use a pen)

A-1 Application form

for CST-2011 Examination

(for appearing in the CST-2011 exam)

Staple 2 photos here with your name written on the reverse. Do not paste. (recent photo taken after 1/08/2010)	For Office Use Only: Degree/Diploma Qualification: Completed/ (strike out as appropriate) Not Completed Fees Paid: CST ID:	Paste 1 Passport-size Photograph here. Do not staple. (recent photo taken after 1/08/2010)

FORM TO BE FILLED IN CAPITAL LETTERS ONLY (refer guidelines for form A-1 in Section 4)

(Provide one space after each word)

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) appearing for E I D G
12. Examination City Information

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

    In C-DAC Centres: Mumbai Bengaluru

    Other Selected C-DAC centres
14. Applying for dissertation project at C-DAC, Mumbai and Electronics City, Bengaluru

    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 BCIDS NMIMS: MCA ISME: PGPM

    Smt. Parvatibai Chowgule College of Arts & Science Goa : M. Sc. (IT)

16. If you have taken CST – 2010 examination, provide the details

Year: CST ID

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

Mention your Student 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 month &year of completion

20. University Name

21. Fee Details

Level	Total Examination fees		Your Choice (Tick one)
	Physical Application	Online Application	
E	650	600	□
I	750	700	□
D	850	800	□
G	950	900	□

22. Payment Details: Cash DD

DD should be drawn in the 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 FPGDST/FPGDIS course admission will be cancelled/C-DAC recruitment will be terminated, if any of the information given by me in this form is found to be false OR if I fail to submit the required documents on or before December 31, 2011.

Signature:

Place: Date:

A-2 Application form

for Admission to C-DAC Courses based on CST-2010 Score

(To be filled in only for FPGDST-2011/FPGDIS-2011 course admissions based on CST-2010 scores (all levels). This form is not to be used for appearing in the CST-2011 examination.)

Staple 2 photos here with your name written on the reverse. Do not paste (recent photo taken after 1/08/2010)	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** **(recent photo taken after 1/08/2010)**

FORM TO BE FILLED IN CAPITAL LETTERS ONLY (refer guidelines for form A-2 in Section 4)

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

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 Name

16. Processing fee: **Rs. 400**/- (must be paid while submitting the A-2 form)

Payment Details: Cash ☐ DD ☐

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

DD Date: ☐☐ ☐☐ ☐☐☐☐ DD Number: ☐☐☐☐☐☐

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

Bank Name: ☐☐☐☐☐☐☐☐☐