2.2.1. Methodologies to assess the learning levels of the students

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1. **Flow Chart for Assessing Learning Levels and Special Programmes for Advanced and Slow Learners**

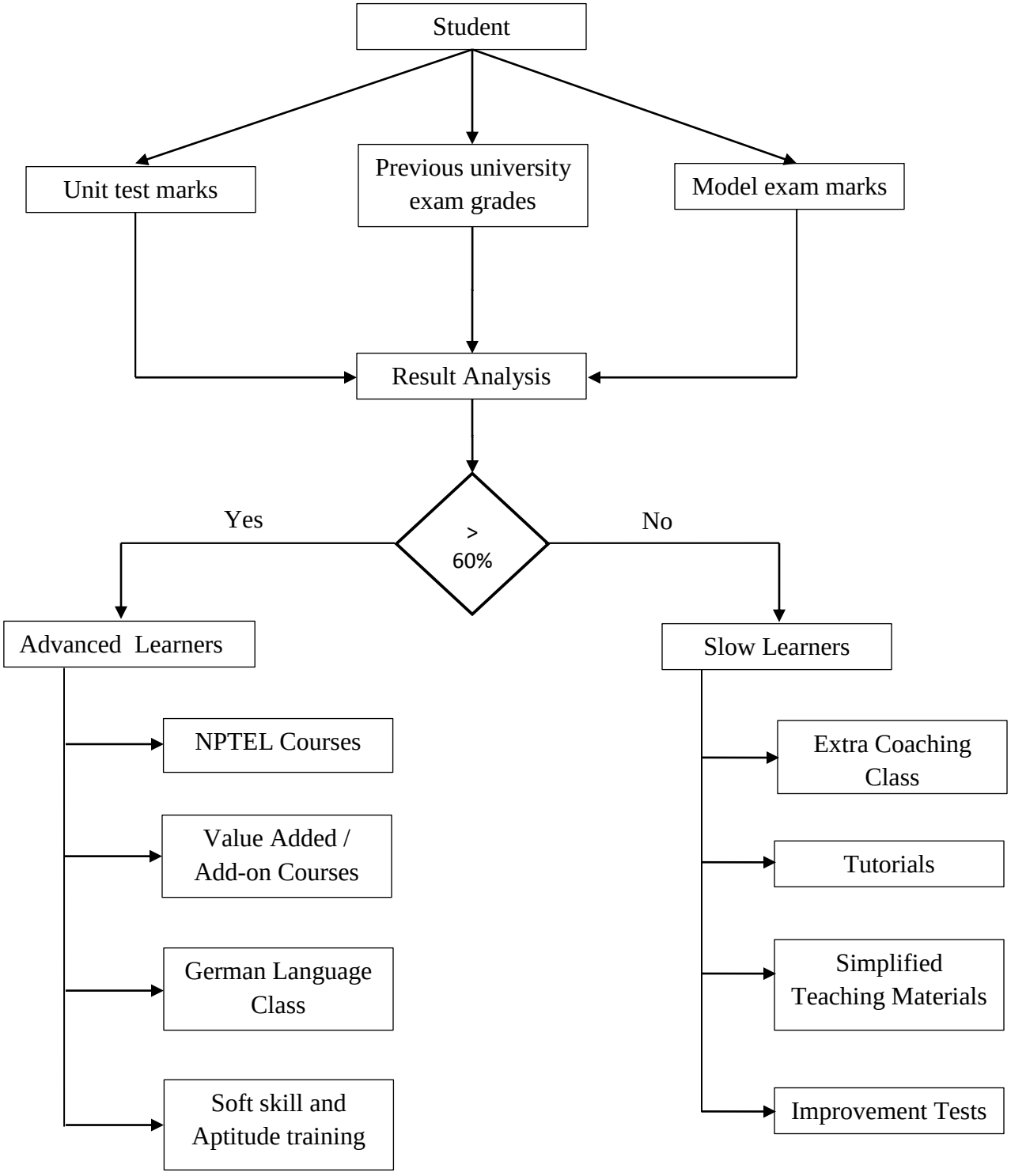


Figure 1: Flow Chart for Assessing Learning Levels and Special Programmes for Advanced and Slow Learners

2. Sample Reports of Activities Conducted for Advanced Learners

a) Sample Certificates for NPTEL Course:

Roll No:NPTEL18CS33S12180283

To
SORNA LAXMI
95,MUNANGI STREET
SIVAKASI
VIRUDHUNAGAR
TAMIL NADU
626123
PH. NO :9487272064

Score	Type of Certificate
>=90	Elite + Gold Medal
60-89	Elite
40-59	Successfully Completed the course
<40	No Certificate

No. of credits recommended by NPTEL:2

Elite

NPTEL Online Certification
(Funded by the Ministry of HRD, Govt. of India)

This certificate is awarded to
SORNA LAXMI
for successfully completing the course
Introduction to Programming in C
with a consolidated score of 62 %

Online Assignments	19.75/25	Proctored Exam	42/75

Total number of candidates certified in this course: 3925

Prof. T. V. Prabhakar
Chairman
Center for Continuing Education, IITK

Aug-Oct 2018
(8 week course)

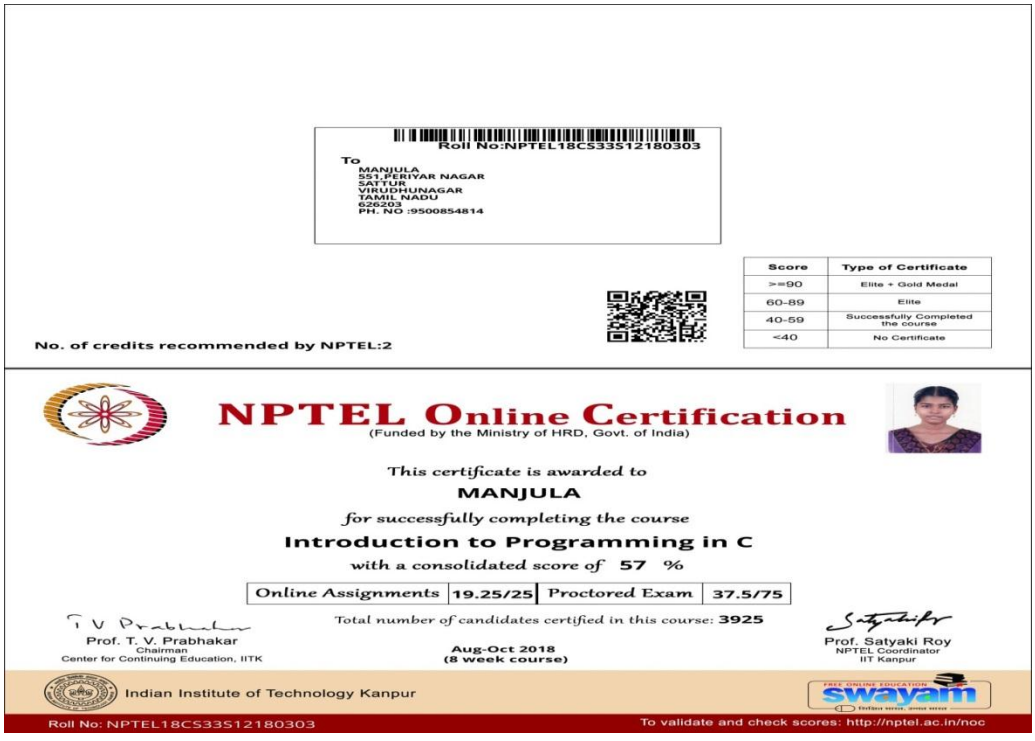
Prof. Satyaki Roy
NPTEL Coordinator
IIT Kanpur

Indian Institute of Technology Kanpur

swayam

Roll No: NPTEL18CS33S12180283

To validate and check scores: http://nptel.ac.in/noc



Roll No:NPTEL18CS33S12180303

To
MANJULA
551,PERIYAR NAGAR
SATTUR
VIRUDHUNAGAR
TAMIL NADU
626203
PH. NO :9500854814

Score	Type of Certificate
>=90	Elite + Gold Medal
60-89	Elite
40-59	Successfully Completed the course
<40	No Certificate

No. of credits recommended by NPTEL:2

NPTEL Online Certification
(Funded by the Ministry of HRD, Govt. of India)

This certificate is awarded to
MANJULA
for successfully completing the course
Introduction to Programming in C
with a consolidated score of 57 %

Online Assignments	19.25/25	Proctored Exam	37.5/75

Total number of candidates certified in this course: 3925

Prof. T. V. Prabhakar
Chairman
Center for Continuing Education, IITK

Aug-Oct 2018
(8 week course)

Prof. Satyaki Roy
NPTEL Coordinator
IIT Kanpur

Indian Institute of Technology Kanpur

swayam

Roll No: NPTEL18CS33S12180303

To validate and check scores: http://nptel.ac.in/noc

b) Sample Certificates for Value added course:

AAA COLLEGE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE - Affiliated to Anna University, Chennai.)
Run by Vinayaga - Sonny Fireworks Group of Industries / Panjurajan - Amaravathy Trust
Sivakasi - Virudhunagar, Kamarajar Educational Road, Amathur-626 005.
An ISO 9001 : 2015 Certified Institution

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Certificate of Participation

This is to certify that ~~Mr.~~/Ms....K. ANNAPOORNI.....of

.....SECOND YEAR.....Computer Science and Engineering has actively participated n the Value Added Course on "C PROGRAMMING" organized by the Department of Computer Science and Engineering from 05-01-2015 to 09-01-2015.

COORDINATOR 9/1/15 HOD/CSE 9/1/15 PRINCIPAL

AAA COLLEGE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE - Affiliated to Anna University, Chennai.)
Run by Vinayaga - Sonny Fireworks Group of Industries / Panjurajan - Amaravathy Trust
Sivakasi - Virudhunagar, Kamarajar Educational Road, Amathur-626 005.
An ISO 9001 : 2015 Certified Institution

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Certificate of Participation

This is to certify that ~~Mr~~./Ms. M. PADMAPRIYA of SECOND YEAR Computer Science and Engineering has actively participated in the Value Added Course on "C PROGRAMMING" organized by the Department of Computer Science and Engineering from 06-07-2015 to 10-07-2015.

COORDINATOR HOD/CSE PRINCIPAL

AAA COLLEGE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE - Affiliated to Anna University, Chennai.)
Run by Vinayaga - Sonny Fireworks Group of Industries / Panjurajan - Amaravathy Trust
Sivakasi - Virudhunagar, Kamarajar Educational Road, Amathur-626 005.
An ISO 9001 : 2015 Certified Institution

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Certificate of Participation

This is to certify that Mr./~~Ms~~.....K.T. ARAVINDH.....of

.....SECOND YEAR.....Computer Science and Engineering has actively participated in the Value Added Course on "C++ PROGRAMMING" organized by the Department of Computer Science and Engineering from 16-02-2015 to 20-02-2015.

20/2/15
COORDINATOR

20/2/15
HOD/CSE

PRINCIPAL

AAA COLLEGE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE - Affiliated to Anna University, Chennai.)
Managed by Vinayaga - Sony Fireworks Group of Industries / Panjurajan - Amaravathy Trust
Sivakasi - Virudhunagar, Kamarajar Educational Road, Amathur-626 005.
website: www.aaaenggcoll.ac.in aaaengineeringcollege@gmail.com
An ISO 9001 : 2015 Certified Institution

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CERTIFICATE OF PARTICIPATION

This is to certify that Mr./~~Ms~~ M. HAREESH KUMAR of THIRD YEAR Computer Science and Engineering has actively participated in the Value Added Course on "NETWORK SIMULATOR-2" organized by the Department of Computer Science and Engineering from 20-12-2017 to 30-03-2018.

30/3/18
COORDINATOR

30/3/18
HOD / CSE

PRINCIPAL

AAA COLLEGE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE - Affiliated to Anna University, Chennai.)
Managed by Vinayaga - Sony Fireworks Group of Industries / Panjurajan - Amaravathy Trust
Sivakasi - Virudhunagar, Kamarajar Educational Road, Amathur-626 005.
website: www.aaaenggcoll.ac.in aaaengineeringcollege@gmail.com
An ISO 9001 : 2015 Certified Institution

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CERTIFICATE OF PARTICIPATION

This is to certify that ~~Mr.~~/Ms. M. BALAMEENAKSHI of THIRD YEAR Computer Science and Engineering has actively participated in the Value Added Course on "INTERNET OF THINGS" organized by the Department of Computer Science and Engineering from 20-12-2017 to 11-04-2018.

A. Reji 11/4/18
COORDINATOR

11/4/18
HOD / CSE

PRINCIPAL

AAA COLLEGE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE - Affiliated to Anna University, Chennai.)
Managed by Vinayaga - Sony Fireworks Group of Industries / Panjurajan - Amaravathy Trust
Sivakasi - Virudhunagar, Kamarajar Educational Road, Amathur-626 005.
website: www.aaaenggcoll.ac.in aaaengineeringcollege@gmail.com
An ISO 9001 : 2015 Certified Institution

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

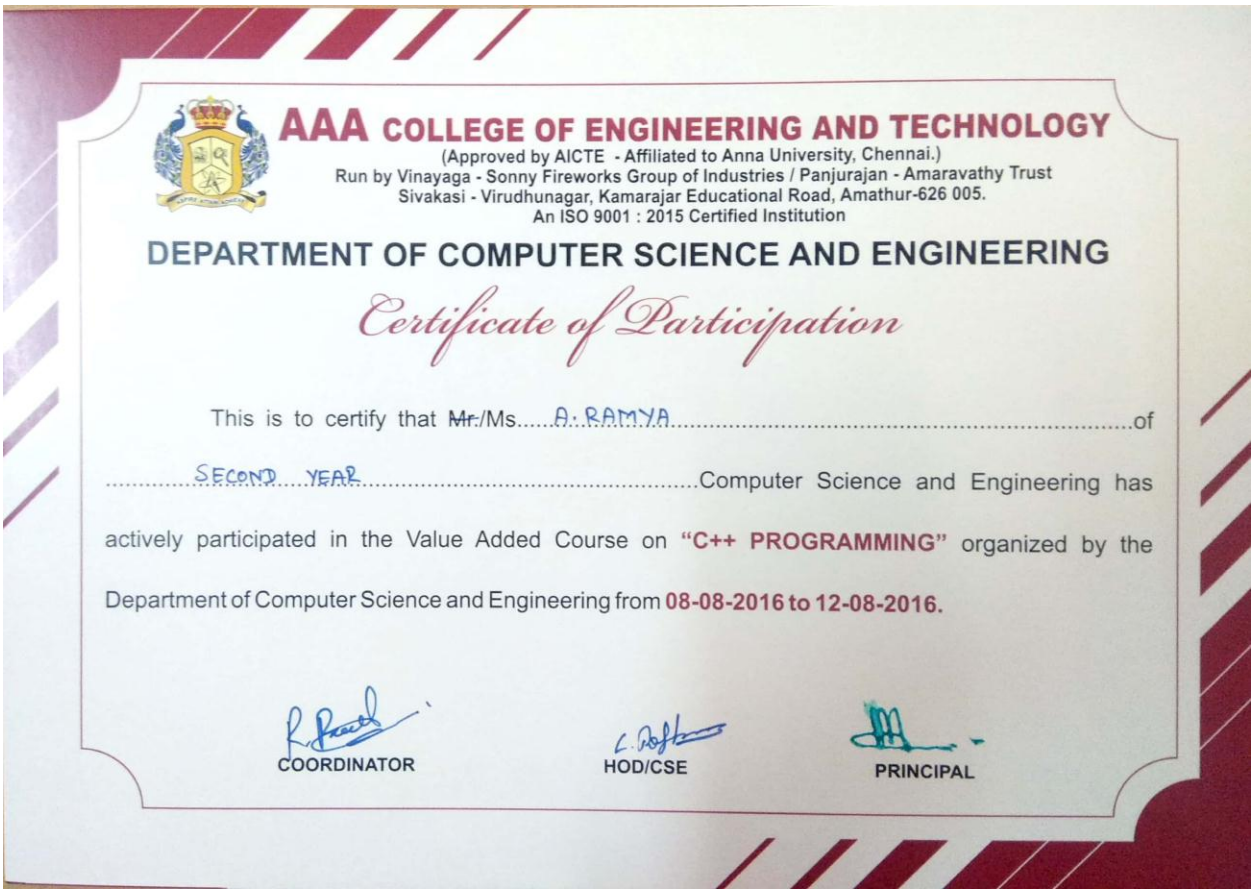
CERTIFICATE OF PARTICIPATION

This is to certify that ~~Mr~~/Ms. M. MANJULA of SECOND YEAR Computer Science and Engineering has actively participated in the Value Added Course on "PYTHON PROGRAMMING" organized by the Department of Computer Science and Engineering from 20-12-2017 to 11-04-2018.

11/4/18
COORDINATOR

11/4/18
HOD / CSE

PRINCIPAL



AAA COLLEGE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE - Affiliated to Anna University, Chennai.)
Run by Vinayaga - Sonny Fireworks Group of Industries / Panjurajan - Amaravathy Trust
Sivakasi - Virudhunagar, Kamarajar Educational Road, Amathur-626 005.
An ISO 9001 : 2015 Certified Institution

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Certificate of Participation

This is to certify that ~~Mr.~~/Ms. A. RAMYA of SECOND YEAR Computer Science and Engineering has actively participated in the Value Added Course on **"C++ PROGRAMMING"** organized by the Department of Computer Science and Engineering from **08-08-2016 to 12-08-2016.**

COORDINATOR HOD/CSE PRINCIPAL

AAA COLLEGE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE - Affiliated to Anna University, Chennai.)
Managed by Vinayaga - Sony Fireworks Group of Industries / Panjurajan - Amaravathy Trust
Sivakasi - Virudhunagar, Kamarajar Educational Road, Amathur-626 005.
website: www.aaaenggcoll.ac.in aaaengineeringcollege@gmail.com
An ISO 9001 : 2015 Certified Institution

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CERTIFICATE OF PARTICIPATION

This is to certify that ~~Mr./Ms.~~ R. SORNA LAXMI of SECOND YEAR Computer Science and Engineering has actively participated in the Value Added Course on "JAVA PROGRAMMING" organized by the Department of Computer Science and Engineering from 20-12-2017 to 30-03-2018.

A. Reji 30/3/18
for COORDINATOR

HOD / CSE

PRINCIPAL

C**. German Language Class:**

AAA College of Engineering and Technology,
Sivakasi.

10
NB/CSE
29/8/18

AAA/ Academic /2018- '19 / 39

29-08-2018

CIRCULAR

German language classes will commence from 01-09-2018 (Saturday) onwards. All students registered for the course (Level A1) are asked to attend the inaugural session at 1.30p.m (01-09-2018) in the ~~grand~~ ground floor seminar hall New block.

PRINCIPAL
(Dr. M. Sekar)

Copy to:

1. HODs.(to arrange for reading in all their class rooms)
2. Dr. R. Sivasangari Prof/EEE

Inaugural ceremony of German Language Class

German Language examination conducted on 28th January 2019

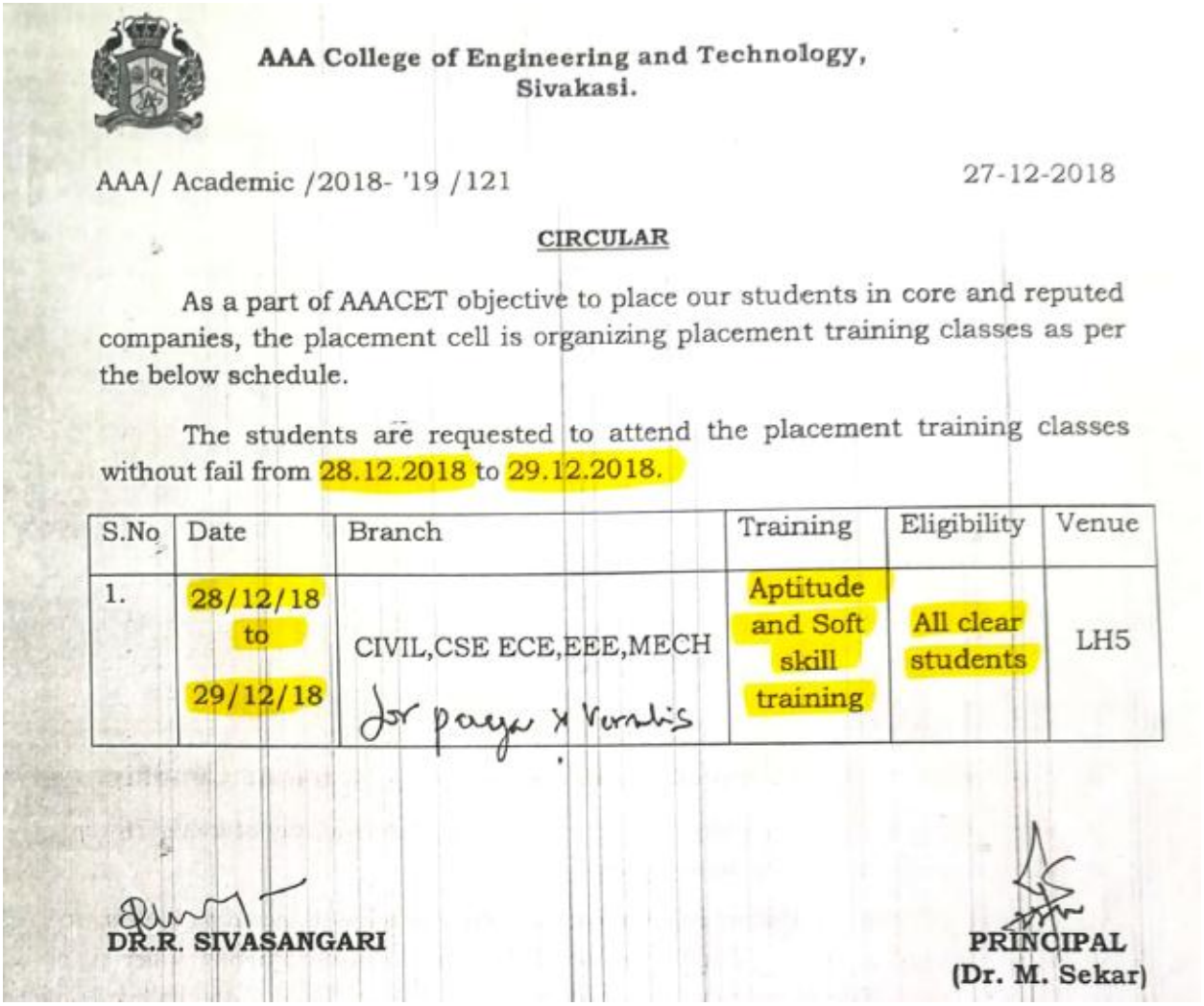
Results of German Language Examination:

GERMAN LANGUAGE A1 EXAMINATION

The following students are cleared German Language A1 examination conducted by GOETHE INSTITUTE at AAACET campus on 28.01.2019.

1. J. Maria Sneha, IV Civil
2. Y. Karuppasamy, III EEE
3. M. Sangeetha, IV CSE

d. Circular for Aptitude and Soft Skill Training



AAA College of Engineering and Technology,
Sivakasi.

AAA/ Academic /2018- '19 /121 27-12-2018

CIRCULAR

As a part of AAACET objective to place our students in core and reputed companies, the placement cell is organizing placement training classes as per the below schedule.

The students are requested to attend the placement training classes without fail from 28.12.2018 to 29.12.2018.

S.No	Date	Branch	Training	Eligibility	Venue
1.	28/12/18 to 29/12/18	CIVIL,CSE ECE,EEE,MECH for pooja & Vanitha	Aptitude and Soft skill training	All clear students	LH5

DR.R. SIVASANGARI

PRINCIPAL
(Dr. M. Sekar)

List of Advanced Learners for CSE:

AAA COLLEGE OF ENGINEERNG AND TECHNOLOGY
Kamarajar Educational Road, Amathur, Sivakasi – 626 005.

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018 - 2019

ADVANCED LEARNERS STUDENTS LIST **BATCH 2015-2019**

As a part of AAACET objective to place our students in core and reputed companies, the placement cell is organizing placement training classes on 28.12.2018 and 29.12.2018. The Following advanced learners students are asked to attend the training

S.No	Reg. No.	Name of the Student
1.	953715104002	AkshayaDharshini S
2.	953715104005	Balameenakshi M
3.	953715104007	Ezhilarasi M
4.	953715104008	Giridharan S
5.	953715104009	Hareesh Kumar M
6.	953715104011	Jenishganamuthu P
7.	953715104015	KarthickSankar V
8.	953715104018	Kavitha R
9.	953715104023	Nithya R
10.	953715104024	Pandiselvi V
11.	953715104025	Priyanka K
12.	953715104028	Ramaprabha J
13.	953715104029	Ramya A
14.	953715104032	Samrat Kishore B
15.	953715104033	Sangeetha M

29/12/18

HoD-CSE

Refresher Course Time Table for Advanced Learners:

AAA COLLEGE OF ENGINEERNG AND TECHNOLOGY

Kamarajar Educational Road,
Amathur, Sivakasi – 626 005.

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Academic Year : 2018 – 2019 ODD Batch : 2015 – 2019 Class : IV CSE

Refresher Courses – Time Table

Date : 26.7.2018 To 10.8.2018

Course Name : C Programming
Faculty Name : 1. Mrs.K.Indhumathi AP/CSE
2. Mrs.P.S.Uma AP/CSE

Date / Period	5	6	7	8
26.07.2018	Mrs.P.S.Uma			
27.07.2018	Mrs. K.Indhumathi			
28.07.2018	Mrs.P.S.Uma		Mrs.K.Indhumathi	
30.07.2018	Mrs.K.Indhumathi		Mrs.P.S.Uma	

Course Name : C++ Programming
Faculty Name : 1. Mr.C.Raj Kannan, AP/CSE
2.Mrs.R.M.Rajeshwari, AP/CSE

Date / Period	5	6	7	8
31.07.2018	Mr.C.Raj Kannan		Mrs.R.M.Rajeshwari	
01.08.2018	Mrs.R.M.Rajeshwari		Mr.C.Raj Kannan	

Course Name : JAVA Programming
Faculty Name : 1. Mr.R.Prabhu AP/CSE
2. Mr.P.Elamparithi AP/CSE

Date / Period	5	6	7	8
02.08.2018	Mr.P.Elamparithi	Mr.R.Prabhu		
03.08.2018	Mr.P.Elamparithi			Mr.R.Prabhu
06.08.2018	Mr.P.Elamparithi		Mr.R.Prabhu	
07.08.2018	Mr.R.Prabhu		Mr.P.Elamparithi	

Course Name : HTML5
Faculty Name : Ms.A.Raji, AP/CSE

Date / Period	5	6	7	8
09.08.2018	Ms.A.Raji			
10.08.2018	Ms.A.Raji			

R. Prabhu
Placement Coordinator

HoD/CSE

PRINCIPAL

List of Students for Refresher Course

AAA COLLEGE OF ENGINEERNG AND TECHNOLOGY
Kamarajar Educational Road, Amathur, Sivakasi – 626 005.

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018 - 2019

ADVANCED LEARNERS STUDENTS LIST BATCH 2015-2019

As a part of AAACET objective to place our students in core and reputed companies, the placement celi is organizing placement training classes from 26.7.2018 and 10.08.2018. The Following advanced learners students are asked to attend the refresher courses and get the beneficial.

S.No	Reg. No.	Name of the Student
1.	953715104002	AkshayaDharshini S
2.	953715104005	Balameenakshi M
3.	953715104007	Ezhilarasi M
4.	953715104008	Giridharan S
5.	953715104009	Hareesh Kumar M
6.	953715104011	Jenishganamuthu P
7.	953715104015	KarthickSankar V
8.	953715104018	Kavitha R
9.	953715104023	Nithya R
10.	953715104024	Pandiselvi V
11.	953715104025	Priyanka K
12.	953715104028	Ramaprabha J
13.	953715104029	Ramya A
14.	953715104032	Samrat Kishore B
15.	953715101033	Sangeetha M

25/7/18

HoD-CSE

List of Students placed in various companies

AAA COLLEGE OF ENGINEERNG AND TECHNOLOGY

Kamarajar Educational Road, Amathur, Sivakasi – 626 005.

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

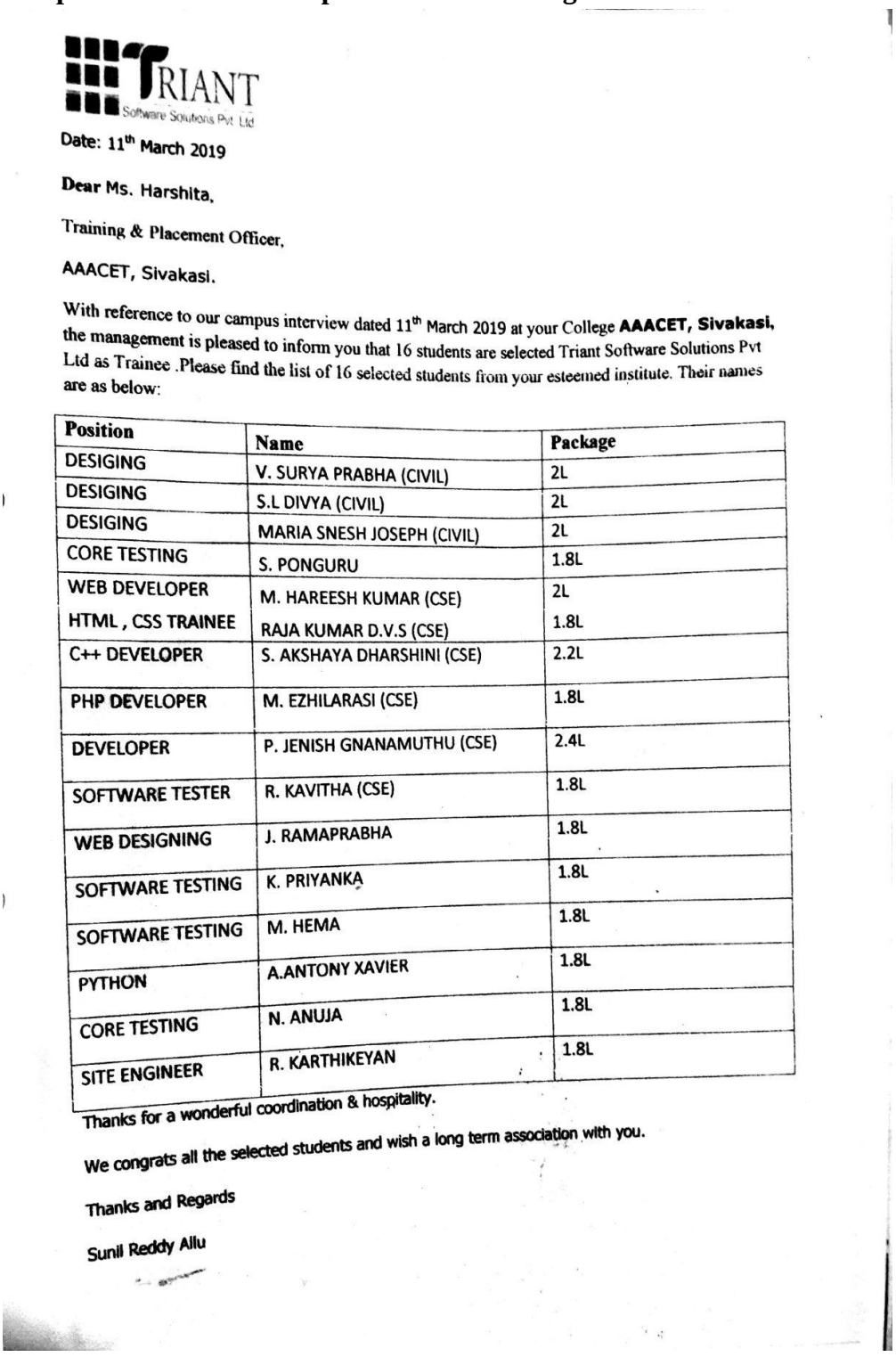
ACADEMIC YEAR 2018 - 2019

PLACED STUDENTS LIST

BATCH 2015-2019

S.No	Reg. No.	Name of the Student	Name of the Company Placed
1.	953715104002	AkshayaDharshini S	Tridant Software Solution
2.	953715104007	Ezhilarasi M	Tridant Software Solution,TechMahendra
3.	953715104008	Giridharan S	Armentum
4.	953715104009	Hareesh Kumar M	Tridant Software Solution
5.	953715104010	Hema M	Tech Mahendra , Tridant Software Solution
6.	953715104011	Jenishganamuthu P	Tridant Software Solution
7.	953715104018	Kavitha R	Tridant Software Solution
8.	953715104020	Nandhini S	Karvy DigiKonnect
9.	953715104023	Nithya R	Infosys
10.	953715104024	Pandiselvi V	Infosys
11.	953715104025	Priyanka K	Tridant Software Solution
12.	953715104028	Ramaprabha J	Tridant Software Solution
13.	953715104029	Ramya A	Infosys
14.	953715104031	Reshmika T S	Infosys,Amplus
15.	953715104033	Sangeetha M	Armentum

Sample Offer letter of the placed students are given below:



TRIANT
Software Solutions Pvt. Ltd

Date: 11th March 2019

Dear Ms. Harshita,

Training & Placement Officer,

AAACET, Sivakasi.

With reference to our campus interview dated 11th March 2019 at your College **AAACET, Sivakasi,** the management is pleased to inform you that 16 students are selected Triant Software Solutions Pvt Ltd as Trainee .Please find the list of 16 selected students from your esteemed institute. Their names are as below:

Position	Name	Package
DESIGING	V. SURYA PRABHA (CIVIL)	2L
DESIGING	S.L DIVYA (CIVIL)	2L
DESIGING	MARIA SNESH JOSEPH (CIVIL)	2L
CORE TESTING	S. PONGURU	1.8L
WEB DEVELOPER	M. HAREESH KUMAR (CSE)	2L
HTML , CSS TRAINEE	RAJA KUMAR D.V.S (CSE)	1.8L
C++ DEVELOPER	S. AKSHAYA DHARSHINI (CSE)	2.2L
PHP DEVELOPER	M. EZHILARASI (CSE)	1.8L
DEVELOPER	P. JENISH GNANAMUTHU (CSE)	2.4L
SOFTWARE TESTER	R. KAVITHA (CSE)	1.8L
WEB DESIGNING	J. RAMAPRABHA	1.8L
SOFTWARE TESTING	K. PRIYANKA	1.8L
SOFTWARE TESTING	M. HEMA	1.8L
PYTHON	A.ANTONY XAVIER	1.8L
CORE TESTING	N. ANUJA	1.8L
SITE ENGINEER	R. KARTHIKEYAN	1.8L

Thanks for a wonderful coordination & hospitality.

We congrats all the selected students and wish a long term association with you.

Thanks and Regards

Sunil Reddy Allu

Tech Mahindra
BUSINESS PROCESS SERVICES

Tech Mahindra Limited
SBC Tech Park, No. 90/B1,
MTH Road, Industrial Estate,
Ambattur, Chennai - 600 058,
Tamilnadu, India.

Tel: +91 44 6662 4000

techmahindra.com
connect@techmahindra.com

Registered Office:
Gateway Building, Apollo Bunder
Mumbai 400 001, India.

CIN:L64200MH1986PLC041370

Dear M. Hema

Expression of Interest

We are pleased to convey through this Expression of Interest letter that you are being considered for the post of **Customer Support Associate** provided you fulfill other requirements. This letter is intended only as an overview of the potential offer from Tech Mahindra Limited. The detailed terms and conditions of employment will be contained in an offer letter, which may be issued by the company and may contain additional provisions to those herein

Proposed Date of Joining: June 2019 onwards **Place: Chennai**

We request you to bring the following documents at the time of your joining, as they are mandatory for our records and necessary for the completion of joiningformalities.

- Copy of Class 10th Certificate & Class 12th Certificate & Degree / Graduation certificates.
- Copy of Residence proof
- Copy of Identity Proof.(Driving License or Passport or Voter card)
- Original copy of LAST PAY SLIP received (If applicable).
- Copy of RELIEVING LETTER / APPOINTMENT LETTER from previous employer(s) (If applicable).
- Passport size photographs-10 nos. & Post Card Size Photographs -2 nos.

This letter remains valid for the period of 7 days from the date of issue. After that another round of interview will be conducted at our company premises. There after the company would issue you an offer letter with details of all service terms and conditions and salary annexure along with suitable date of joining. If any information furnished by you in your application is found to be incorrect or false or if you have suppressed material information regarding your qualification, experience, identity etc, the company may withdraw this letter without any notice.

Please note this letter is not an offer or a legally binding contract of employment. An offer for employment shall be made to you at the sole discretion of the company and there is no obligation on the company to do so. An employee-employer relationship between you and company shall be established only upon the company's issuance and your acceptance of a legally binding agreement of employment.

Kindly sign and return a copy of this letter as a token of your acceptance of this expression of interest.

Candidate Signature _____

Sincerely,
Resource Management Group
Tech Mahindra Limited

armen

17.09.2018

HRD/13/TR/31-45

Ms. Sangeetha M

Dear Sangeetha M,

This letter shall confirm our conditional offer of employment to you as a **Junior Web Engineer** subject to the following terms and conditions:

- 1. Evidence and confirmation of educational credentials
- 2. Confirmation of clearing your all module of training given by Armentum during your internship period.

Assuming favorable results are received, and you choose to accept our offer, we will extend a final offer of employment to you in writing. Please feel free to contact me in the interim should you have any questions.

Please be aware that this letter does not constitute a guarantee or contract of employment. Accordingly, you or we may terminate the selection process at any time for any reason, upon written notice.

Your CTC after the training period will be INR 2.2lac per annum. Your Annexure details will be shared once your training period is completed.

Your employment will be governed by the rules, regulations and policies of the Company. The terms of this offer letter shall remain confidential and are not to be disclosed to any third party. We wish you all the best for the future endeavors.

Yours sincerely,

Richa Sareen

Richa Sareen
HR Manager
Armentum

armer

17.09.2018

HRD/13/TR/29-45

Mr. Giridharan S

Dear Giridharan S,

This letter shall confirm our conditional offer of employment to you as a **Junior Web Engineer** subject to the following terms and conditions:

- 1. Evidence and confirmation of educational credentials
- 2. Confirmation of clearing your all module of training given by Armentum during your internship period.

Assuming favorable results are received, and you choose to accept our offer, we will extend a final offer of employment to you in writing. Please feel free to contact me in the interim should you have any questions.

Please be aware that this letter does not constitute a guarantee or contract of employment. Accordingly, you or we may terminate the selection process at any time for any reason, upon written notice.

Your CTC after the training period will be INR 2.4lac per annum. Your Package breakup details will be shared once your training period is completed.

Your employment will be governed by the rules, regulations and policies of the Company. The terms of this offer letter shall remain confidential and are not to be disclosed to any third party. We wish you all the best for the future endeavors.

Yours sincerely.

Richa Sareen

Richa Sareen
HR Manager
Armentum

Infosys®

Please find the below list of candidates.

1. Vimala. R
2. Brindha. R
3. Raja Ponni. M
4. Dinesh Kumar. C
5. Swathi. B.V
6. Sangeetha. M
7. Nithya. R
8. Reshmika. T.S
9. Ramya. A
10. Bavithra Devi. K
11. Nandhini. S
12. Saranya. E
13. Janavi. V
14. Deepak. S
15. Krithik. S
16. Vinaya. M

- For Documentation, they are supposed to carry their Academic Marks Card (10th, 12th, Degree/ B.E)
- They have to carry their original ID proof.
- 4 passport size photographs.
- Salary Slab: 2.7L – 3.8L.
- Projects and Designations are assigned only at the time of documentation.

Regards,
Pooja,
Team Leader – Operations,
Infosys.

AMPLUS

9th Sept, 2018

Dear Mr. /Ms. T S RESHMIKA

Congratulations! It is my pleasure to extend the following of employment to you on behalf of Amplus HR Solutions Pvt Ltd, further to the interview and discussions you have had with us. You are expected to join duty approximately in the month Sept 2019, which will be intimated to you shortly.

You are appointed to the position of "**Graduate - Trainee**". As Graduate Trainee, your starting monthly remuneration will be Rs 1, 80,000 /- C.T.C per annum (One Lakhs Eighty thousand Rupees Only). You will be on a probation period of six month.

After successful completion of the probation and review thereof, you will be entitled to other allowances and benefits whatever are per policies of organization. Regular performance reviews will be done to assess your suitability.

Offer stands cancelled in case of any deviation in information or if you fail to report to us on or before pre-decided date which will be intimated to you over an e-mail. We will have to assume that you have not accepted this offer if we do not hear from you before the given date.

You will need to submit your entire qualification documents on the joining date.

We look forward to an enduring relationship with you.

Sincerely,
For Amplus HR Solutions Pvt .Ltd

AMPLUS

AMPLUS HR SOLUTIONS PVT. LTD.
Neetika K

Tech Mahindra
BUSINESS PROCESS SERVICES

Tech Mahindra Limited
SBC Tech Park, No. 90/B1,
MTH Road, Industrial Estate,
Ambattur, Chennai - 600 058,
Tamilnadu, India.

Tel: +91 44 6662 4000

techmahindra.com
connect@techmahindra.com

Registered Office:
Gateway Building, Apollo Bunder
Mumbai 400 001, India.

CIN:L64200MH1986PLC041370

Expression of Interest

Dear EZHILARASI.M

We are pleased to convey through this Expression of Interest letter that you are being considered for the post of **Customer Support Associate** provided you fulfill other requirements. This letter is intended only as an overview of the potential offer from Tech Mahindra Limited. The detailed terms and conditions of employment will be contained in an offer letter, which may be issued by the company and may contain additional provisions to those herein

Proposed Date of Joining: June 2019 onwards **Place: Chennai**

We request you to bring the following documents at the time of your joining, as they are mandatory for our records and necessary for the completion of joiningformalities.

- Copy of Class 10th Certificate & Class 12th Certificate & Degree / Graduation certificates.
- Copy of Residence proof
- Copy of Identity Proof.(Driving License or Passport or Voter card)
- Original copy of LAST PAY SLIP received (If applicable).
- Copy of RELIEVING LETTER / APPOINTMENT LETTER from previous employer(s) (If applicable).
- Passport size photographs-10 nos. & Post Card Size Photographs -2 nos.

This letter remains valid for the period of 7 days from the date of issue. After that another round of interview will be conducted at our company premises. There after the company would issue you an offer letter with details of all service terms and conditions and salary annexure along with suitable date of joining. If any information furnished by you in your application is found to be incorrect or false or if you have suppressed material information regarding your qualification, experience, identity etc, the company may withdraw this letter without any notice.

Please note this letter is not an offer or a legally binding contract of employment. An offer for employment shall be made to you at the sole discretion of the company and there is no obligation on the company to do so. An employee-employer relationship between you and company shall be established only upon the company's issuance and your acceptance of a legally binding agreement of employment.

Kindly sign and return a copy of this letter as a token of your acceptance of this expression of interest.

Candidate Signature

Sincerely,
Resource Management Group
Tech Mahindra Limited

KARVY
KEEP GROWING

Karvy Digikonnect Limited

Date:22/12/2018

Dear Nandhini S

Subject: Letter of Intent

We are pleased to inform you that you have been shortlisted for the designation of a **Customer Support Officer** Your DOJ will be after successful completion of Exams & start date will be in the Month of July 8th 2019

The CTC offered to you will be Vary from 1.8 LPA to 2.2 LPA.

Xerox copies of the following documents shall be required for the completion of your joining formalities With us:

- **Educational Proof:** SSLC, HSC and Graduation / Diploma duty attested by a Gazette Officer.
- **Date of Birth Proof:** SSLC Mark sheet / PAN Card / School Leaving Certificate / Birth Certificate / Passport.
- **Experience Proof:** Acknowledged Resignation Letter from last employer / Relieving Letter / Experience Letter.
- **Photo Identity Proof:** Copy of Passport / PAN Card / Voter ID / Driving License / Passport / Aadhar card.
- **Residence Proof:** Copy of Passport / Voter ID / Driving License / Utility Bills / Ration Card / Rent Agreement / Lease Agreement.
- **Photographs:** 5 Passport Size.
- In case if you failed to join us on the day which has been offered, your offer remains cancelled.

Your work location will be discussed and approved after completion of your final exams with no history of backlogs

- In case of any uninformed leave your services will be terminated from the organization.

We look forward to a rewarding and long term association with **Karvy DigiKonnect Limited.**

Address: # Vasant's Business Park, 3rd Floor, 44/2A, Bellary Road, NH-7, Hebbal, Bangalore - 560092

Contact HR Team @ 7411012542

For, Karvy DigiKonnect Limited.

Authorized Signatory

Accepted:

CONFIDENTIAL

3) Sample Reports of Measures taken for Slow Learners

a. Sample Improvement test and Coaching class schedule for Slow Learners:

AAA COLLEGE OF ENGINEERING & TECHNOLOGY
Amathur, Sivakasi - 626 005.

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

IMPROVEMENT TEST I - COACHING & TEST SCHEDULE

CLASS : II YEAR CSE **BATCH : 2017 - 2021** **SEMESTER : III**

Course Code & Name	Name of the faculty with Designation & Dept.	Coaching Date, Day & Time	Date, Day& Time of Exam	Register Numbers of students	Total No. of Students
MA8351 - Discrete Mathematics	Mr.M.Thirupathi, AP/Maths	16.8.2018, Thursday & 4.10 – 5 PM	20.08.2018, Monday& 4.30 – 6 PM	953717104006, 4008, 4011, 4013, 4014, 4024, 4027, 4032, 4034, 4041, 4042, 4045, 4046	13
CS8351 - Digital Principles and System Design	Mr.V.MeenakshiSundram, AP/ECE	21.8.2018, Tuesday &3.20 – 4.20 PM	21.08.2018, Tuesday & 4.30 – 6 PM	953717104002, 4005, 4024, 4027, 4032, 4046	6
CS8391 - Data Structures	Mrs.P.S.Uma, AP/CSE	22.08.2018, Wednesday & 3.20 – 4.20 PM	22.08.2018, Wednesday & 4.30 – 6 PM	953717104001, 4005, 4006, 4008, 4013, 4016, 4019, 4024, 4026, 4034, 4035, 4037, 4046	13
CS8392 - Object Oriented Programming	Dr.A.Shenbagarajan, AP/CSE	24.08.2018 Friday & 3.20 – 4.20 PM	24.08.2018 Friday & 4.30 – 6 PM	953717104001,4002, 4006, 4008, 4010, 4011, 4013,4016, 4019, 4024, 4026, 4027, 4034, 4038, 4046	15
EC8395 – Communication Engineering	Mrs.M.Gayathri, AP/ECE	24.8.2018, Friday &1.30 – 3.10 PM	25.08.2018, Saturday& 9 – 10.30 am	953717104001, 4002, 4005, 4006,4008, 4010, 4011, 4013, 4017, 4018, 4019, 4020, 4024, 4026, 4027, 4029, 4032, 4034, 4035, 4036, 4038, 4039, 4040, 4042, 4045, 4046	26

Class Advisor

Head of the Department

AAA COLLEGE OF ENGINEERING & TECHNOLOGY
Amathur, Sivakasi - 626 005.

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

IMPROVEMENT TEST I - COACHING & TEST SCHEDULE

CLASS : IV YEAR CSE **BATCH : 2015 - 2019** **SEMESTER : VII**

Course Code & Name	Name of the faculty with Designation & Dept.	Coaching Date, Day& Time	Date, Day&Timeof Exam	Register Numbers of students	Total No. of Students
CS6701 - Cryptography And Network Security	Mrs.P.S.Uma, AP/CSE	16.8.2018, Thursday & 4.10 – 5 PM	20.08.2018, Monday& 4.30 – 6 PM	953715104002, 4014,4017, 4018, 4030, 4031, 4034, 4701, 4702	09
CS6702 - Graph Theory And Applications	Dr. R. Senthil Kumar, AP/Maths	21.8.2018, Tuesday & 3.20 – 4.20 PM	21.08.2018, Tuesday & 4.30 – 6 PM	953715104016, 4034, 4702	03
CS6703 - Grid And Cloud Computing	Mr.R.Prabhu, AP/CSE	22.08.2018, Wednesday & 3.20 – 4.20 PM	22.08.2018, Wednesday & 4.30 – 6 PM	953715104002, 4034, 4702	03
CS6704 - Resource Management Techniques	Mrs.K.Indumathi, AP/CSE	24.08.2018 Friday & 3.20 – 4.20 PM	24.08.2018 Friday & 4.30 – 6 PM	953715104009,4011, 4013, 4014, 4016, 4034, 4701, 4702	08
CS6004 - Cyber Forensics	Mr.P.Elamparithi, AP/CSE	24.8.2018, Friday & 1.30 – 2.20 PM	25.08.2018, Saturday& 9 – 10.30 am	953715104002, 4008, 4011, 4014, 4018, 4026, 4027, 4030,4034, 4701, 4702	11
CS6007 - Information Retrieval	Mr.C.Rajkannan, AP/CSE	24.8.2018, Friday &2.20 – 3.10 PM	25.08.2018, Saturday& 12 NOON– 1.30 PM	953715104002, 4003, 4007, 4008, 4014, 4016, 4017, 4020, 4027, 4030,4034, 4701, 4702	13

Class Advisor

Head ofthe Department

Sample reports for Corrective Action for Slow Learners:

AAA COLLEGE OF ENGINEERNG AND TECHNOLOGY
Kamarajar Educational Road, Amathur, Sivakasi – 626 005.
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
ACADEMIC YEAR 2018 - 2019 ODD SEMESTER

CORRECTIVE ACTION FOR SLOW LEARNERS

Batch : 2016– 2020 **Class/Semester : II CSE /III**

Course Instructor : Mr.V.Meenakshi Sundaram **Date : 21/08/2018**

Course Code/Name : CS8351 – Digital Principals and System Design

Topic Covered : Boolean Functions

S. No.	Reg. No.	Name of the Student	Attendance
1.	953717104002	ANAND P	/
2.	953717104005	ASHOK M	/
3.	953717104014	ISHWARYA S	/
4.	953717104024	MANOJNATHAN A	AB
5.	953717104027	PARTHIBAN M	/
6.	953717104032	PRINCE SHALEM A	/
7.	953717104046	VISWA M	/

Course Instructor **HOD** 21/8

AAA COLLEGE OF ENGINEERNG AND TECHNOLOGY

Kamarajar Educational Road, Amathur, Sivakasi – 626 005.

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018 - 2019 ODD SEMESTER

CORRECTIVE ACTION FOR SLOW LEARNERS

Batch : 2016– 2020 **Class/Semester : II CSE /III**

Course Instructor : Mr.M.Thirupathi **Date : 16/08/2018**

Course Code/Name : MA8351 – Discrete Mathematics

Topic Covered : Rules of Inference

S. No.	Reg. No.	Name of the Student	Attendance
1.	953717104006	ASWINI A	✓
2.	953717104008	BOTHAHAR ANTHONY JOHNSON S	✓
3.	953717104011	GOKUL D	a
4.	953717104013	GOWTHAM R	✓
5.	953717104014	ISHWARYA S	✓
6.	953717104024	MANOJNATHAN A	✓
7.	953717104027	PARTHIBAN M	✓
8.	953717104032	PRINCE SHALEM A	a
9.	953717104034	SARANIKA A	✓
10.	953717104041	SUDHA A	✓
11.	953717104042	SWATHIKA K	✓
12.	953717104045	VISHNU K	✓
13.	953717104046	VISWA M	✓

Course Instructor **HOD** 16/8/18

AAA COLLEGE OF ENGINEERNG AND TECHNOLOGY

Kamarajar Educational Road, Amathur, Sivakasi – 626 005.

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018 - 2019 ODD SEMESTER

CORRECTIVE ACTION FOR SLOW LEARNERS

Batch : 2016– 2020 **Class/Semester : II CSE /III**

Course Instructor : Dr.A.Shenbagarajan **Date** : 24/08/2018

Course Code/Name : CS8392 – Object Oriented Programming

Topic Covered : Fundamental Programming Structures in Java

S. No.	Reg. No.	Name of the Student	Attendance
1.	953717104001	AJITHKUMAR V	/
2.	953717104002	ANAND P	/
3.	953717104006	ASWINI A	/
4.	953717104008	BOTHAHAR ANTHONY JOHNSON S	/
5.	953717104010	DIVYA S	/
6.	953717104011	GOKUL D	/
7.	953717104013	GOWTHAM R	/
8.	953717104016	JANANI N	/
9.	953717104019	JUDAH SHEEGAN RAJ P	/
10.	953717104024	MANOJNATHAN A	/
11.	953717104026	PANDIYA RAJ R V	/
12.	953717104027	PARTHIBAN M	a
13.	953717104034	SARANIKA A	/
14.	953717104038	SIVASAKTHI C	/
15.	953717104046	VISWA M	/

24/8/18
Course Instructor

24/8/18
HOD

AAA COLLEGE OF ENGINEERNG AND TECHNOLOGY

Kamarajar Educational Road, Amathur, Sivakasi – 626 005.

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018 - 2019 ODD SEMESTER

CORRECTIVE ACTION FOR SLOW LEARNERS

Batch : 2016– 2020

Class/Semester : II -CSE /III

Course Instructor : Mrs.P.S.Uma

Date : 22/08/2018

Course Code/Name : CS8391 – Data Structures

Topic Covered : Singly Linked Lists

S. No.	Reg. No.	Name of the Student	Attendance
1.	953717104001	AJITHKUMAR V	✓
2.	953717104005	ASHOK M	✓
3.	953717104006	ASWINI A	✓
4.	953717104008	BOTHAHAR ANTHONY JOHNSON S	✓
5.	953717104013	GOWTHAM R	✓
6.	953717104019	JUDAH SHEEGAN RAJ P	a
7.	953717104024	MANOJNATHAN A	✓
8.	953717104026	PANDIYA RAJ R V	✓
9.	953717104034	SARANIKA A	✓
10.	953717104035	SEEYANA NACHIAR G	a
11.	953717104037	SHRISUMUGI S	a
12.	953717104046	VISWA M	✓

22/8/18

Course Instructor

22/8/18

HOD

AAA COLLEGE OF ENGINEERNG AND TECHNOLOGY

Kamarajar Educational Road, Amathur, Sivakasi – 626 005.

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ACADEMIC YEAR 2018 - 2019 ODD SEMESTER

CORRECTIVE ACTION FOR SLOW LEARNERS

Batch : 2016– 2020 **Class/Semester : II CSE /III**

Course Instructor : Mrs.M.Gayathri **Date : 24/08/2018**

Course Code/Name : EC8395 –Communication Engineering

Topic Covered : Modulators And Demodulators

S. No.	Reg. No.	Name of the Student	Attendance
1.	953717104001	AJITHKUMAR V	✓
2.	953717104002	ANAND P	✓
3.	953717104005	ASHOK M	✓
4.	953717104006	ASWINI A	✓
5.	953717104008	BOTHAHAR ANTHONY JOHNSON S	✓
6.	953717104010	DIVYA S	✓
7.	953717104011	GOKUL D	a
8.	953717104013	GOWTHAM R	✓
9.	953717104014	ISHWARYA S	✓
10.	953717104017	JEYA ASWIN M	✓
11.	953717104018	JOHN MARTIN X	✓
12.	953717104019	JUDAH SHEEGAN RAJ P	✓
13.	953717104020	KALAIVANI V	✓
14.	953717104024	MANOJNATHAN A	✓
15.	953717104026	PANDIYA RAJ R V	✓
16.	953717104027	PARTHIBAN M	✓
17.	953717104029	PONRAJKUMAR B	a
18.	953717104032	PRINCE SHALEM A	✓
19.	953717104034	SARANIKA A	✓
20.	953717104035	SEEYANA NACHIAR G	✓
21.	953717104036	SHALINI S S	✓
22.	953717104037	SHRISUMUGI S	✓
23.	953717104038	SIVASAKTHI C	✓
24.	953717104039	SIVA SANKARI J	✓
25.	953717104040	SUBIKSHA K	✓
26.	953717104041	SUDHA A	✓
27.	953717104042	SWATHIKA K	✓
28.	953717104043	VIJAYALAKSHMI P	✓
29.	953717104045	VISHNU K	✓
30.	953717104046	VISWA M	✓

Gayathri s/in.

Course Instructor

HOD 24/8/18

AAA COLLEGE OF ENGINEERNG AND TECHNOLOGY
Kamarajar Educational Road,
Amathur, Sivakasi

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

(Academic Year 2018 – 19 ODD)

CORRECTIVE ACTION FOR SLOW LEARNERS

Batch : 2015-19 **Class / Semester** : IV CSE / VII

Course Instructor : Mrs. P.S.Uma, AP/CSE **Date** : 16/08/2018

Course Code/ Name : CS6701 – Cryptography and Network Security

Topic Covered : Classical Encryption Techniques

COACHING CLASS -1 ATTENDENCE

S.No	Reg.No	Name of the Student	Attendence
1.	953715104002	AkshayaDharshini S	✓
2.	953715104014	Karpagavalli A	✓
3.	953715104017	Karthikeyan S	a
4.	953715104018	Kavitha R	✓
5.	953715104030	Ranjith Kumar P	✓
6.	953715104031	Reshmika T S	✓
7.	953715104034	Thiagaselvan S	✓
8.	953715104701	Hemanath	a
9.	953715104702	Saravanan	a

Course Instructor

16/8/18

HoD - CSE

AAA COLLEGE OF ENGINEERNG AND TECHNOLOGY
Kamarajar Educational Road,
Amathur, Sivakasi

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

(Academic Year 2018 – 19 ODD)

CORRECTIVE ACTION FOR SLOW LEARNERS

Batch : 2015-19 **Class / Semester** : IV CSE / VII

Course Instructor : Mrs. K. Indumathi, AP/CSE **Date** : 24/08/2018

Course Code/ Name : CS6704 – Resource Management Techniques

Topic Covered : Simplex and Graphical Method

COACHING CLASS -1 ATTENDENCE

S.No	Reg.No	Name of the Student	Attendence
1.	953715104009	Hareesh Kumar M	✓
2.	953715104011	Jenishganamuthu P	✓
3.	953715104013	Kaleeswari K	✓
4.	953715104014	Karpagavalli A	✓
5.	953715104016	Karthika A	✓
6.	953715104034	Thiagaselvan S	✓
7.	953715104701	Hemanath	a
8.	953715104702	Saravanan	✓

Course Instructor

HoD - CSE

AAA COLLEGE OF ENGINEERNG AND TECHNOLOGY
Kamarajar Educational Road,
Amathur, Sivakasi

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

(Academic Year 2018 – 19 ODD Semester)

CORRECTIVE ACTION FOR SLOW LEARNERS

Batch : 2015-19 **Class / Semester** : IV CSE / VII

Course Instructor : Dr. R. Senthil Kumar, AP/Maths **Date** : 21/08/2018

Course Code/ Name : CS6702 – Graph Theory and it's Application

Topic Covered : Tree – Properties of Tree

COACHING CLASS -1 ATTENDENCE

S.No	Reg.No	Name of the Student	Attendence
1.	953715104016	Karthika A	/
2.	953715104034	Thiagaselvan S	/
3.	953715104702	Saravanan	/

Course Instructor

21/8/18
HoD - CSE

AAA COLLEGE OF ENGINEERNG AND TECHNOLOGY
Kamarajar Educational Road,
Amathur, Sivakasi

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

(Academic Year 2018 – 19 ODD)

CORRECTIVE ACTION FOR SLOW LEARNERS

Batch : 2015-19
Course Instructor : Mr.C. Raj Kannan, AP/CSE
Course Code/ Name : CS6007 – Information Retrieval
Topic Covered : Components of IR
Class / Semester : IV CSE / VII
Date : 24/08/2018 (6th Hour)

COACHING CLASS -1 ATTENDENCE

S.No	Reg.No	Name of the Student	Attendence
1.	953715104002	AkshayaDharshini S	✓
2.	953715104003	Antony Xavier A	✓
3.	953715104007	Ezhilarasi M	✓
4.	953715104008	Giridharan S	✓
5.	953715104014	Karpagavalli A	✓
6.	953715104016	Karthika A	✓
7.	953715104017	Karthikeyan S	a
8.	953715104020	Nandhini S	✓
9.	953715104027	Rajaponni M	✓
10.	953715104030	Ranjith Kumar P	✓
11.	953715104034	Thiagaselvan S	✓
12.	953715104701	Hemanath	✓
13.	953715104702	Saravanan	a

C. Raj 24/8/18
Course Instructor

24/8/18
HoD - CSE

AAA COLLEGE OF ENGINEERNG AND TECHNOLOGY
Kamarajar Educational Road,
Amathur, Sivakasi

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

(Academic Year 2018 – 19 ODD)

CORRECTIVE ACTION FOR SLOW LEARNERS

Batch : 2015-19 **Class / Semester** : IV CSE / VII

Course Instructor : Mr. P.Elamparithi, AP/CSE **Date** : 24/08/2018 (5th hour)

Course Code/ Name : CS6004 – Cyber Forensics

Topic Covered : SSL Protocol

COACHING CLASS -1 ATTENDENCE

S.No	Reg.No	Name of the Student	Attendence
1.	953715104002	AkshayaDharshini S	✓
2.	953715104008	Giridharan S	✓
3.	953715104011	Jenishganamuthu P	✓
4.	953715104014	Karpagavalli A	✓
5.	953715104018	Kavitha R	✓
6.	953715104026	Raja Kumar D V S	a
7.	953715104027	Rajaponni M	✓
8.	953715104030	Ranjith Kumar P	✓
9.	953715104034	Thiagaselvan S	a
10.	953715104701	Hemanath	✓
11.	953715104702	Saravanan	✓

Course Instructor

24/8/18

HoD - CSE

AAA COLLEGE OF ENGINEERNG AND TECHNOLOGY
Kamarajar Educational Road,
Amathur, Sivakasi

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

(Academic Year 2018 – 19 ODD)

CORRECTIVE ACTION FOR SLOW LEARNERS

Batch : 2015-19 **Class / Semester** : IV CSE / VII

Course Instructor : Mr. R. Prabhu, AP/CSE **Date** : 22/08/2018

Course Code/ Name : CS6703 – Grid and Cloud Computing

Topic Covered : Grid Computing Infrastructures

COACHING CLASS -1 ATTENDENCE

S.No	Reg.No	Name of the Student	Attendence
1.	953715104002	AkshayaDharshini S	✓
2.	953715104034	Thiagaselvan S	✓
3.	953715104702	Saravanan	✓

R. Prabhu
Course Instructor

22/8/18
HoD - CSE

b. Sample Tutorial Material:

AAA COLLEGE OF ENGINEERING AND TECHNOLOGY.

DEPT OF COMPUTER SCIENCE

CS6704 - RESOURCE MANAGEMENT TECHNIQUE.

PART-B. TUTORIAL SUMS.

STAFF: INDUMATHI.K

1. Max $Z = 5x_1 + 4x_2$

S.t $6x_1 + 4x_2 \leq 24$

$x_1 + 2x_2 \leq 6$

$-x_1 + x_2 \leq 1$

$x_2 \leq 2.$

The standard form is given by

Max $Z = 5x_1 + 4x_2 + 0S_1 + 0S_2 + 0S_3 + 0S_4$

S.t $6x_1 + 4x_2 + S_1 = 24$

$x_1 + 2x_2 + S_2 = 6$

$-x_1 + x_2 + S_3 = 1$

$x_2 + S_4 = 2.$

$x_1, x_2, S_1, S_2, S_3, S_4 \geq 0.$

CB	C_j	5	4	0	0	0	0		
	B.V	x_1	x_2	S_1	S_2	S_3	S_4	Soln.	Ratio.
0	S_1	6	4	1	0	0	0	24	4
0	S_2	1	2	0	1	0	0	6	6
0	S_3	-1	1	0	0	1	0	1	-1
0	S_4	0	1	0	0	0	1	2	∞
	Z_j	0	0	0	0	0	0		
	$C_j - Z_j$	5	4	0	0	0	0		

CB	C_j	5	4	0	0	0	0		
	B.V	x_1	x_2	s_1	s_2	s_3	s_4	Soln	Ratio.
5	x_1	1	2/3	1/6	0	0	0	4	6
0	s_2	0	4/3	-1/6	1	0	0	2	3/2
0	s_3	0	5/3	-1/6	0	1	0	5	3
0	s_4	0	1	0	0	0	1	2	2
	Z_j	5	10/3	-5/6	0	0	0		
	$C_j - Z_j$	0	2/3	-5/6	0	0	0		

CB	C_j	5	4	0	0	0	0		
	B.V	x_1	x_2	s_1	s_2	s_3	s_4	Soln	Ratio.
5	x_1	1	0	1/4	-1/2	0	0	3	
4	x_2	0	1	-1/8	3/4	0	0	3/2	
0	s_3	0	0	3/8	-5/4	1	0	5/2	
0	s_4	0	0	1/8	-3/4	0	1	1/2	
	Z_j	5	4	3/2	1/2	0	0	21	
	$C_j - Z_j$	0	0	-3/2	-1/2	0	0		

$x_1 = 3$

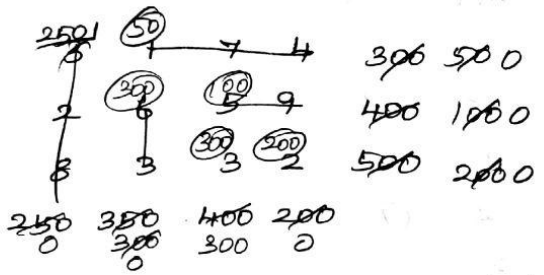
$x_2 = 3/2$

$Z = 21$

2.

	A	B	C	D	S
1	3	1	7	4	300
2	2	6	5	9	400
3	8	3	3	2	500
D	250	350	400	200.	

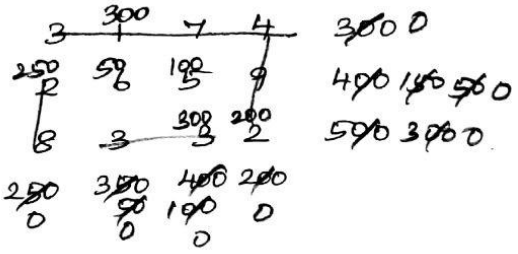
North West Corner:



= 250×3 + 50×1 + 300×6 + 100×5 + 300×3 + 200×2

= Rs.4400.

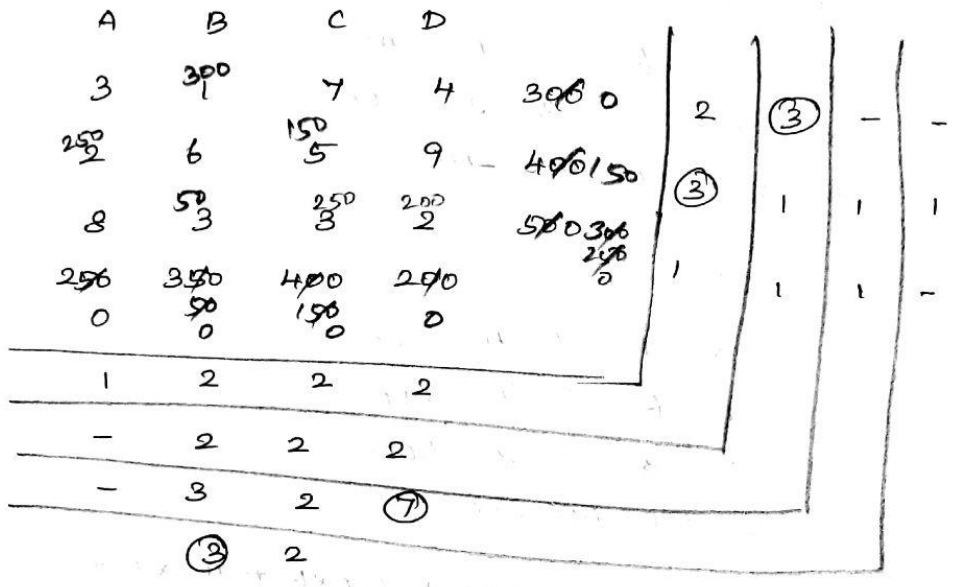
Least Cost Method:



= 300×1 + 250×2 + 50×6 + 100×5 + 300×3 + 200×2

= Rs.2900.

Vogel's Approximation Method :



= 300 x1 + 250x2 + 150x5 + 50x3 + 250x3 + 200x2

= Rs. 2850.

3. U·V Method :

200 (3)	50 (1)	7	4	250 500
(2)	250 (6)	100 (5)	9	350 1000
8	3	250 (3)	150 (2)	400 1500
200	300	350	150	
0	250	250	0	
	0			

$= 200\times3 + 50\times1 + 250\times6 + 100\times5 + 250\times3 + 150\times2$

$= 3700.$

$V_1=3 \quad V_2=1 \quad V_3=0 \quad V_4=-1$

$U_1=0$	200 (3) (−)	50 (1) (+)	7	4
$U_2=5$	2 (5) (+)	6 (−)	100 (5)	9
$U_3=3$	8	3	250 (3)	150 (2)

$m+n-1=6$

$3+4-1=6$

$6=6.$

$P_{ij} = U_i + V_j - C_{ij}$

$C_{13} = 0+0-7 = -7$

$C_{14} = 0-1-4 = -5$

$C_{21} = 5+3-2 = \boxed{6}$

$C_{24} = 5-1-9 = -5$

$C_{31} = 3+3-8 = -2$

$C_{32} = 3+1-3 = 1$

	$V_1=-3$	$V_2=1$	$V_3=0$	$V_4=-1$
		250		
$U_1=0$	3	1	7	4
$U_2=5$	200 2	50 6	100 5	9
$U_3=3$	8	3	250 3	150 2

$C_{11} = 0-3-3 = -6$

$C_{13} = 0+0-7 = -7$

$C_{14} = 0-1-4 = -5$

$C_{21} = 5-1-9 = -5$

$C_{31} = 3-3-8 = -8$

$C_{32} = 3+1-3 = \boxed{1}$

	$V_1=2$	$V_2=1$	$V_3=1$	$V_4=0$.
$U_1=0$	3	1	7	4
$U_2=4$	2	6	5	9
$U_3=2$	8	3	3	2

$C_{11} = 0-2-3 = -5$

$C_{13} = 0+1-7 = -6$

$C_{14} = 0+0-4 = -4$

$C_{22} = 4+1-6 = -1$

$C_{24} = 4+0-9 = -5$

$C_{31} = 2-2-8 = -8$.

condition satisfied.

Total cost = $250\times1 + 200\times2 + 150\times5 + 50\times3 + 200\times3 + 150\times2$

= Rs. 2450.

AAA COLLEGE OF ENGINEERING AND TECHNOLOGY

DEPT OF COMPUTER SCIENCE.

CS6704 - RESOURCE MANAGEMENT TECHNIQUES.

PART-B. TUTORIAL SUMS

STAFF : INDUMATHI

1. Assignment Problem:

Jobs	Machines M_1	M_2	M_3	M_4
J_1	5	7	11	6
J_2	8	5	9	6
J_3	4	7	10	7
J_4	10	4	8	3

Solution :

$$\begin{pmatrix} 5 & 7 & 11 & 6 \\ 8 & 5 & 9 & 6 \\ 4 & 7 & 10 & 7 \\ 10 & 4 & 8 & 3 \end{pmatrix}$$

$\therefore$ No. of rows = No. of columns

It is a balanced Assignment Problem.

Reduced Row Matrix :

$$\begin{pmatrix} 0 & 2 & 6 & 1 \\ 3 & 0 & 4 & 1 \\ 0 & 3 & 6 & 3 \\ 7 & 1 & 5 & 0 \end{pmatrix}$$

Reduced column matrix.

$$\begin{pmatrix} 0 & 2 & 2 & 1 \\ 3 & 0 & 0 & 1 \\ 0 & 3 & 2 & 3 \\ 7 & 1 & 1 & 0 \end{pmatrix}$$

∴ The resultant Matrix is given by

$$\begin{pmatrix} 0 & 1 & 1 & 0 \\ 3 & 0 & 0 & 1 \\ 0 & 2 & 1 & 2 \\ 8 & 1 & 1 & 0 \end{pmatrix}$$

$$\begin{pmatrix} 0 & 0 & 0 & 0 \\ 5 & 0 & 0 & 2 \\ 0 & 1 & 0 & 2 \\ 8 & 0 & 0 & 0 \end{pmatrix}$$

$$= \begin{pmatrix} (0) & \times & \times & \times \\ 5 & (0) & 0 & 2 \\ 0 & 1 & (0) & 2 \\ 8 & 0 & 0 & (0) \end{pmatrix}$$

The optimum assignment is given by $J_1 \to M_1$, $J_2 \to M_2$, $J_3 \to M_3$, $J_4 \to M_4$ and the optimum (minimum) assignment cost

$= Rs.(5+5+10+3)$

$= Rs.23$

2. Using dual Simplex method solve the LPP.

$$\text{Min } z = 2x_1 + x_2$$
$$\text{s.t } 3x_1 + x_2 \geq 3$$
$$4x_1 + 3x_2 \geq 6$$
$$x_1 + 2x_2 \geq 3$$
$$x_1, x_2 \geq 0.$$

$$\text{Max } z^* = -2x_1 - x_2$$
$$\text{s.t } -3x_1 - x_2 \leq -3$$
$$-4x_1 - 3x_2 + s_2 = -6$$
$$-x_1 - 2x_2 + s_3 \geq -3$$
$$\text{and } x_1, x_2, s_1, s_2, s_3 \geq 0.$$

∴ The initial solution given by

$s_1 = -3 \quad s_2 = -6 \quad s_3 = -3 \quad (x_1 = x_2 = 0)$

		C_j	-2	-1	0	0	0
C_B	Y_B	X_B	x_1	x_2	s_1	s_2	s_3
0	s_1	-3	-3	-1	1	0	0
← 0	s_2	-6	-4 (-3)	0	1	0	
0	s_3	-3	-1	-2	0	0	1
$(Z_j^* - C_j)$		0	2	1 ↑	0	0	0

∴ $(Z_j^* - C_j) \geq 0$ and all $X_{Bi} < 0$, the current solution is not an optimum basic feasible solution.

$$X_{B2} = -6$$

$$\therefore \quad \theta = \text{Max}\left\{\frac{(Z_j^* - C_j)}{a_{ik}},\ a_{ik} < 0\right\}$$

$$= \text{Max}\left\{\frac{2}{-4}, \frac{1}{-3}\right\}$$

$$= \frac{-1}{3}.$$

Drop S_2 and introduce x_2.

	C_B	Y_B	X_B	x_1	x_2	S_1	S_2	S_3
←	0	S_1	-1	$(-5/3)$	0	1	$-1/3$	0
	-1	x_2	2	$4/3$	1	0	$-1/3$	0
	0	S_3	1	$5/3$	0	0	$-2/3$	1
	$(Z_j^* - C_j)$		-2	$2/3$ ↑	0	0	$1/3$	0

$(Z_j^* - C_j) \geq 0$ $X_{B1} = -1 < 0$, the current solution is not optimum basic feasible solution.

$$\theta = \text{Max}\left\{\frac{2/3}{-5/3}, \frac{1/3}{-1/3}\right\}$$

$$= \text{Max}\{-2/5, -1\}$$

$$= -2/5$$

Drop S_1 and introduce x_1.

C_B	Y_B	X_B	x_1	x_2	S_1	S_2	S_3
-2	x_1	$3/5$	1	0	$-3/5$	$1/5$	0
-1	x_2	$6/5$	0	1	$4/5$	$-3/5$	0
0	S_3	0	0	0	1	-1	1
$(Z_j^* - C_j)$		$-12/5$	0	0	$2/5$	$1/5$	0

$(Z_j^* - C_j) \geq 0$ and all $X_{Bi} \geq 0$.

Max $Z^* = -12/5$ $x_1 = 3/5$ $x_2 = 6/5$

Min $Z = -\text{Max } Z^* = -(-12/5) = 12/5$

Min $Z = 12/5$ $x_1 = 3/5$ $x_2 = 6/5$

c. Sample hand written notes for Simplified Teaching Material

Walk, Path and Circuits:

Walk:

A walk is defined as a finite alternating seq of vert/. and edges, beginning and ending with vert/.. Such that each edge is incident with the vertices preceding and following it.

- No edge appears more than once in a walk
- Vertex appears more than once.
- Walk is also referred to as an edge train or a chain.
- Vert/. at which walk begins and ~~edg~~ ends are called terminal vertices.

Closed walk:

walk begins and ends at the same Vertex.

Open walk:

- walk that is not closed
- Terminal vertices are distinct.

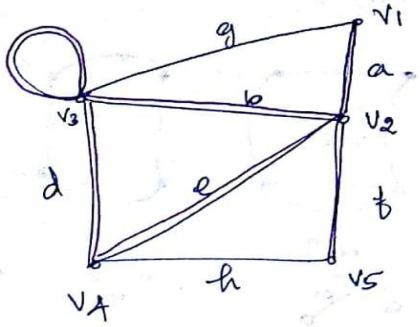
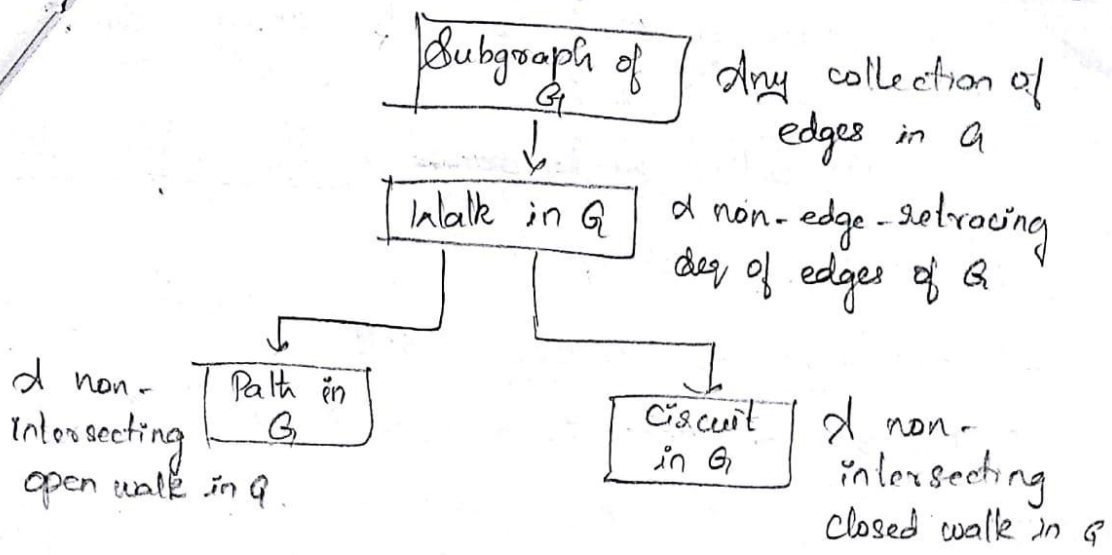


fig:
Open Walk



Connected Graphs, Disconnected Graphs and Components:

- A graph is connected if we can reach any vertex from any other vertex by traveling along the edges.
- A graph is said to be connected if there is atleast one path blt every pair of vertices in G.
- A graph is said to be disconnected if there is no path blt every pair of vertices in G.
- Null graph of more than one vertex is disconnected.

Component:

A disconnected graph consists of 2 or more connected graphs. Each of the connected subgraphs is called a component.

Path:

An open walk in which no vertex appears more than once is called a path.

- Otherwise called simple path or elementary path.

Eg: $v_1 a v_2 b v_3 d v_4$.

- Path does not intersect itself.
- Number of edges in a path is called a length of the path.
- Self-loop can be included in walk but not in path.
- Terminal vert/.. → Degree one

  Intermediate vert/.. → Degree two.

Circuit:

- A closed walk in which no vertex appears more than once is called a circuit.
- Circuit is closed, non-intersecting walk.

Eg: $v_2 b v_3 d v_4 e v_2$

- Every vert/.. → Degree two.
- Also called as cycle, elementary cycle, circular path and polygon.

Trail: A trail is a walk with all edges distinct.

Theorem 1:

A graph G is disconnected iff its vertex set V can be partitioned into 2 non-empty, disjoint subset V_1 and V_2 such that there exists no edge in G whose one end vertex is in subset V_1 and the other in subset V_2.

Proof:

- Consider 2 Vert/. a & b of G

$a \in V_1$ & $b \in V_2$

No path exist blt 'a' and 'b'.

Otherwise there will be an edge with one end vertex in V_1 & other end vertex in V_2.

∴ Hence if partition exist, G is not connected.

Converse:

If G is disconnected, then partition exists.

Proof:

Let G → disconnected graph.

Vert/. a → G

V_1 → Set of all vertices that are joined by paths to 'a'.

V_2 → Remaining Vert/.

No vert/. in V_1 is joined to any in V_2 by an edge

Hence the partition.

Theorem 2:

If a graph (connected or disconnected) ha exactly two vertices of odd degree, there must be a path joining these two vert/..

Proof:

$G \rightarrow$ graph with even vert/.. except v_1 & v_2

v_1 & v_2 = odd vert/..

[By thm/.. the no of odd deg/. vert must always be even]

For every component of a disconnected graph, no graph can have odd no of odd vert/..

So, in graph G, v_1 and v_2 must belong to d same component.

Hence there must be a path blt them.

Theorem 3:

A simple graph (i.e., a graph w/o parallel edges nor self-loops) with n vertices and k components can have atmost $\frac{(n-k)(n-k+1)}{2}$ edges.

Proof:

Let $n_1, n_2, \ldots, n_k$ be d no of vert/.. in each of k components of the graph G. Then

$$n_1 + n_2 + \cdots + n_k = n$$

$$n_i \geq 1$$

$$\sum_{i=1}^{k} n_i = n \qquad \text{——— (I)}$$

Now, $\sum_{i=1}^{k} (n_i - 1) = (n_1 - 1) + (n_2 - 1) + \cdots + (n_k - 1)$

$$= \sum_{i=1}^{k} n_i - k$$

$$\sum_{i=1}^{k} (n_i - 1) = n - k \qquad \text{——— (1)}$$

Squaring on both sides,

$$\left[\sum_{i=1}^{k} (n_i - 1)\right]^2 = (n-k)^2$$

$$(n_1-1)^2 + (n_2-1)^2 + \cdots + (n_k-1)^2 \leq n^2 + k^2 - 2nk.$$

$$n_1^2 + 1 - 2n_1 + n_2^2 + 1 - 2n_2 + \cdots + n_k + 1 - 2n_k \leq n^2 + k^2 - 2nk.$$

$$\sum_{i=1}^{k} n_i^2 - \sum_{i=1}^{k} 2n_i + k \leq n^2 + k^2 - 2nk.$$

$$\sum_{i=1}^{k} n_i^2 - 2n + k \leq n^2 + k^2 - 2nk.$$

$$\sum_{i=1}^{k} n_i^2 \leq n^2 + k^2 - 2nk + 2n - k. \qquad \text{——— (2)}$$

Since G_i is simple, the max no of edges of G_i in it's components is $\frac{n_i(n_i-1)}{2}$.

Max no of edges in $G_i = \sum_{i=1}^{k} \frac{n_i(n_i-1)}{2}$

$$= \frac{1}{2}\sum_{i=1}^{k} n_i^2 - \frac{1}{2}\sum_{i=1}^{k} n_i \quad [\text{using (I)}]$$

$$= \frac{1}{2}\sum_{i=1}^{k} n_i^2 - \frac{1}{2}n$$

using ②

$$= \frac{1}{2}\left[n^2 + k^2 - 2nk + 2n - k \right]$$

$$= \frac{1}{2}\left[(n^2 + k^2 - 2nk) + n - k \right]$$

$$= \frac{1}{2}\left[(n-k)^2 + (n-k) \right]$$

$$= \frac{1}{2}\left[(n-k)(n-k+1) \right]$$

Max. no of edges of $G \leq \dfrac{\left[(n-k)(n-k+1) \right]}{2}$