

## Course Coordinator Report

### **Course Name: R Programming**

A free Add-On Course for UG students in the Department of Computer Science, Shri Shivaji Education Society Amravati's Science College, Congress Nagar, Nagpur was held from 1<sup>st</sup> August 2023 to 7<sup>th</sup> October 2023. The course title was "R Programming". It is the complete beginner to Expert Course was perfect for anyone who wants to learn R Programming. R programming is a powerful language and environment for statistical computing and graphics. It is widely used by statisticians, data scientists, and researchers for data analysis and visualization.

In this course the students learned about environment for statistical computing. They learned to import, clean, transform, and summarize data from various sources (CSV, Excel, databases). Students gained proficiency in using data manipulation using packages such as **dplyr** and **tidyr**. Students were able to perform descriptive statistics and exploratory data analysis.

The course duration was 10 weeks (30 hours). Two theory classes were engaged on Friday & Saturday and one Practical was engaged in every week. The structure of marking system was 60 marks on theory paper and 40 marks on practical execution. The question paper of theory examination was in MCQ type of 60 questions with four multiple choices. Practical examination was also taken on this course for 40 marks. Out of 88, 85 students appeared and passed in both theory and practical examination. The result was prepared and certificates were distributed to the students.

Prof. R. N. Jugele  
Course Coordinator



Shri Shivaji Education Society, Amravati's

# SCIENCE COLLEGE

Congress Nagar, Nagpur-12(M.S.), India



Accredited with CGPA of 3.51 at 8A+9 grade by NAAC, Bangalore  
A+ College with Potential for Excellence identified by UGC New Delhi.  
Institutional Member of APQR Recognized Centre for Higher Learning and Research  
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SSES Amravati's Science College, Congress Nagar, Nagpur-12

## DEPARTMENT OF COMPUTER SCIENCE

Session 2023-2024

Free Certificate Course for College Students

Course Title: Certificate Course in R Programming

Duration-30 Hours (10 Weeks)

**Course Start from 1 Aug 2023 to 7 Oct 2023**

Course Coordinator: Prof. R. N. Jugele

तमसो मा ज्योतिर्गमय

To,  
The Principal  
SSES Amt's Science College,  
Congress Nagar, Nagpur-12

Subject: For permission to conduct the add on courses in Computer Science department during the session 2023-2024

Respected Sir,

This is to request you that, the teachers of Computer Science department have prepared the syllabus and modules of the 30 hours certificate courses for the session 2023-2024.


The details of the course module, syllabus and time table is submitted here with.

Hence please permit to run the add on courses and oblige me.

Thanking you

Yours sincerely

6/07/2023  
Nagpur

  
Professor & Head  
Department of Computer Science  
S.S.E.S. Amt's Science College,  
Congress Nagar, Nagpur

Permitted  
MShere

SSES Amravati's Science College, Congress Nagar, Nagpur-12

DEPARTMENT OF COMPUTER SCIENCE

Date: 19-07-2023

## Notice

All the students of B.Sc. are hereby informed that Department of Computer Science is conducting a skill based course titled R Programming. This course aims to enhance your practical skills and knowledge in R Programming. Register on or before 28 July 2023. Looking forward to your active participation.

### Course Details:

- **Course Name:** R Programming
- **Duration:** 1 August 2023 to 7 October 2023
- **Schedule:** 10 week
- **Eligibility:** Any Undergraduate



**Course Coordinator**  
Professor  
Department of Computer Science  
S.S.E.S. Am's Science  
Congress Nagar



**Head of Department**  
Professor & Head  
Department of Computer Science  
S.S.E.S. Am's Science  
Congress Nagar

# CERTIFICATE COURSE IN R PROGRAMMING

```
dens <- density(data, n = npts)
dx <- dens$x
dy <- dens$y
if(add == TRUE)
  plot(0., 0., main = "Density Plot",
       ylab = "Density",
       if(orientat == "v", yaxp = 1, dx, dx),
       x[1.],
       dy2 <- (dx - min(dx)) * x(dy)
       y[1.])
seqbelow <- rep(y[1.], length(dx))
if(Fill == T)
  confshade(dx2, seqbelow, dy2)
```



## Free Certificate Course for College Students

Duration – 30 Hours( 10 Weeks)

Process of Registration- Early Birds will be admitted

### Course Objectives:

- 1) To Understand the basics of R and RStudio, including installation, setup, and an overview of the R programming environment.
- 2) To Gain proficiency in data manipulation using packages such as **dplyr** and **tidyr**.
3. To Learn to import, clean, transform, and summarize data from various sources (CSV, Excel, databases).
- 4) Able Perform descriptive statistics and exploratory data analysis.
- 5) Able to design and interpret different types of graphs and plots to effectively communicate data insights.



Department of Computer Science  
SSES Amt 's Science College, Congress  
Nagar, Nagpur

\* R programming is a powerful language and environment for statistical computing and graphics. It is widely used by statisticians, data scientists, and researchers for data analysis and visualization. R provides a wide array of statistical techniques such as linear and nonlinear modeling, time-series analysis, classification, and clustering. The language is open-source and has a vast collection of packages available through CRAN (Comprehensive R Archive Network), enhancing its functionality. R's syntax is user-friendly, making it accessible for beginners while being robust enough for advanced users. It integrates well with other programming languages like C, C++, and Python.

Last Date of Registration: 28 July 2023  
For Registration Contact: Prof. R. N. Jugele (Coordinator)

  
Professor & Head  
Department of Computer Science  
S.S.E.S. Amt's Science College  
Congress Nagar Nagpur

**SSES Amravati's Science College, Congress Nagar, Nagpur-12**  
**DEPARTMENT OF COMPUTER SCIENCE**

**COURSE MODULE AND SYLLABUS**

**Course Title: Certificate Course in R Programming**

**Course Coordinator : Dr. R. N. Jugele**

**Course description:**

The R Programming course is designed to introduce students to the fundamentals of R, a powerful language for statistical computing and data analysis. Participants will start with an overview of R and RStudio, learning to navigate the environment and write basic scripts. The course covers essential topics in data manipulation, allowing students to clean and transform datasets using packages like `dplyr` and `tidyr`. Students will gain skills in data visualization with `ggplot2`, creating a variety of plots to effectively communicate findings. Additionally, the course delves into statistical analysis and modeling, equipping students to perform hypothesis tests and build predictive models. Advanced programming techniques, including writing custom functions and debugging, are also covered, preparing students for more complex data tasks.

**Course Objectives:**

- 1) To Understand the R programming environment and its ecosystem.
- 2) To Understand and utilize basic data types in R (numeric, character, logical) and to Work with complex data structures (vectors, matrices, lists, data frames).
- 3) To be able Import and export data from various sources (CSV, Excel, databases), Perform data cleaning and preprocessing and use `dplyr` and `tidyr` packages for data manipulation.
- 4) To be able to Understand and apply various statistical models.
- 5) To be able Customize and enhance plots for presentation

**Instructional Strategies:**Theory class, Practical, Video clips, Models etc.

**Evaluation Strategies:**Oral discussions and Final MCQ examination.

**Course outline:**

1. **Introduction to R:**
2. **Data Types and Structures:**
3. **Data Manipulation:**
4. **Statistical Analysis:**
5. **Data Visualization:**
6. **Programming Concepts:**

## Course Outcomes (COs):


Students will be able to:

1. Proficiently Use R and RStudio
2. Perform Data Manipulation
3. Create Data Visualizations
4. Conduct Statistical Analyses
5. Implement Advanced Programming Techniques

**Duration of course:** Ten weeks (30 Hours)

### The Structure of Syllabus and system of evaluation -

Course	Theory Papers and Practical	Total Marks	
		Theory	Practical
Certificate Course in R Programming	Theory paper- R Programming * Theory examination will be of MCQ pattern having 60 or 80 questions each with equal marks.	60	40
	* Practical examination will be based on performance evaluation in the laboratory	100	

  
Professor  
Department of Computer Science  
S. S. E. S. Amravati's Science College,  
Congress Nagar, Nagpur.

  
Internal Quality Assurance Cell  
(IQAC)  
S. S. E. S. A. Science College  
Congress Nagar, Nagpur.

  
Principal  
S. S. E. S. Amravati's  
Science College, Nagpur.

# SYLLABUS

Certificate course (10 weeks)  
(R Programming)

## Theory-

### UNIT- I

#### 1. Introduction to R:

- Introduction to R and its applications
- Installing R and RStudio
- Overview of RStudio interface
- Basic R commands and functions
- Data types in R (numeric, character, logical)
- Vectors and vector operations
- Basic functions and data type conversions

#### 2. Data Structures

- Introduction to matrices and arrays
- Lists and data frames
- Accessing and modifying elements in data structures

### UNIT – II

#### 3. Data Import Export

- Reading and writing CSV files
- Importing data from Excel
- Connecting to databases

#### 4. Statistical Analysis:

- Descriptive statistics and exploratory data analysis
- Hypothesis testing (t-tests, chi-square tests)
- Introduction to linear regression

### UNIT – III

#### 5.Data Visualization:

1. Basics of ggplot2
2. Creating various types of plots (scatter, line, bar, histogram)
3. Customizing plots with themes and annotations

#### 6. Programming Concepts:

1. Writing functions in R
2. Control structures (if-else, loops)
3. Debugging and error handling



**Distribution of marks: -**

UNIT I- 20 marks (Theory)

UNIT II- 20 marks(Theory)

UNIT III- 20 marks(Theory)+40 (practicals)


**Week-wise teaching plan:**


Week	Hrs.	Syllabus
Week 1	1	Introduction to R and its applications Installing R and RStudio
	2	Overview of RStudio interface
Week 2	1	Basic R commands and functions
	2	Data types in R (numeric, character, logical)
Week 3	1	Vectors and vector operations
	2	Basic functions and data type conversions
Week 4	1	Introduction to matrices and arrays
	2	Lists and data frames
Week 5	1	Accessing and modifying elements in data structures
	2	Reading and writing CSV files
Week 6	2	Importing data from Excel
	1	Connecting to databases
Week 7	2	Descriptive statistics and exploratory data analysis
	1	Hypothesis testing (t-tests, chi-square tests)
Week 8	2	Introduction to linear regression
	1	Basics of ggplot2
Week 9	2	Creating various types of plots (scatter, line, bar, histogram)
	1	Customizing plots with themes and annotations
Week 10	1	Writing functions in R
	2	Control structures (if-else, loops) Debugging and error handling

**SSES AMT'S SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR-12**

**Certificate Course in R Programming  
Time Table**

<b>Day</b>	<b>Theory</b>
<b>Friday</b>	<b>RNJ (B9) Theory 4.00 PM – 5.00 PM</b>
<b>Saturday</b>	<b>RNJ (B9) Theory, 4.00 PM – 5.00 PM</b>
	<b>RNJ (Computer Laboratory) practical, 5.00 PM – 6.00 PM</b>

  
Professor & Head  
Department of Computer Science  
S.S.E.S. Amit's Science College,  
Congress Nagar, Nagpur

  
Professor  
Department of Computer Science  
S.S.E.S. Amit's Science College,  
Congress Nagar, Nagpur

## Student List for Registration (Addon Course-R Programming)

Registration of course in R Programming	
1. Jagruti P Balsaje	Brigge
2. Kaitirvi Lure	Kaiturvi
3. Disha Bhalwa	Bhalwa
4. Anam Gajbhiye	Kajbhiye
5. Aditi Jasar	Ahmad
6. Akshata Naspurkar	Amurkar
7. Anchal Jiwale	Anwal
8. Hemanshu Parshionkar	Hathi
9. Hemant Rane	Hemant
10. Rutvik Katre	Rkatre
11. Sahil Mendhe	Mendhe
12. Bhagyashree Kumbre	Kumbre
13. Divya Warkar	Divya
14. D.G. Daware	Daware
15. Farhad Kazi	Fkazi
16. Gauri Bhakare	Bhakare
17. Hrishada Badane	Hbadane
18. H.J. Verdi	HVerdi
19. Ishi Omudhary	Ishik
20. Twinkle Madavi	Twinkle
21. Vidya Manmode	VManmode
22. Yash Sahase	Yash
23. Y.D. Mangrulkar	YDMangrulkar
24. Vivek Indurkar	VIndurkar
25. Yash Kattane	YKattane
26. Abhay Singh	Abhay
27. A.H. Mandwe	AHMandwe
28. P. D. Jaje	PDJaje

29	PAYAL GUPTA	<del>Handwritten</del> Babu
30	Ponima Sahu	Handwritten
31	Jay Aniswal	<del>Handwritten</del>
32	A. Pawar	Handwritten
33	Pranali Pillare	Handwritten
34	Sanika Vaidya	Handwritten
35	Tachan Deshmukh	Handwritten
36	Varsh Chopde	Handwritten
37	Khush Rang Bhendarkar	Handwritten
38	M. Dwangan	Handwritten
39	Ujjwal Mankar	Handwritten
40	Vaibhav Suryavanshi	Handwritten
41	Yashika Bhande	Handwritten
42	Abhisakti Ghugal	Handwritten
43	Ajinkya Ingole	Handwritten
44	Arzoo Ingole	Handwritten
45	Varunja Jalnikar	Handwritten
46	M. S. Maske	Handwritten
47	Jalguni Singhare	Handwritten
48	Gunjan Radke	Handwritten
49	Neha Khandate	Handwritten
50	Prachi Thakre	Handwritten
51	Divya Kamble	<del>Handwritten</del>
52	Harshal Umredkar	Handwritten
53	Harshal Mougya	Handwritten
54	Rahul Nasre	Handwritten
55	Ayushi Lichade	Handwritten
56	Chetana Pardhi	Handwritten
57	Saavech Daware	Handwritten
58	S. Charode	Handwritten
59	T. Mohatre	Handwritten

60. Sagar Bisen	<del>B</del>
61. Vihabka Khaini	Vhaini
62. Oshara Chhara	Chhara
63. Gunjan Mourya	Gunjati
64. -Harshad Rangari	-Rangari
65. Kiran Rao	Rao
66. Jayant Haldar	Haldar
67. Parth Virchare	Virchare
68. Rohan Ninge	Ninge
69. Shreya Dhokmal	<del>D</del>
70. Vedant Dable	Vedant
71. Sweth Bhoopalekar	<del>B</del>
72. Vipul Sangitkar	Sangitkar
73. Tanvi Raut	Raut
74. Priya Deenath	PriyaDee
75. Jaitani Diwankar	JDiwankar
76. Gshita Shrivastava	<del>S</del>
77. Stuti Karotiye	StutiKarotiye
78. Sudharshu Sabare	Sabare
79. Ayesha Siddique	ASiddique
80. A. Adhav	-Adhav
81. B. Sant	<del>B</del> Sant
82. Dhruvika Gotmare	DGotmare
83. -Anjali Jaiswal	-Ajaiswal
84. Jyoti Mondhe	JMondhe
85. Vaidhi Tethakate	Vethakate
86. Jyoti Chavhan	JyotiC.
87. Kashish Bawargade	KBawargade
88. Sanjana Jadhav	SJadhav

**S S E S Amravati's Science College, Congress Nagar, Nagpur-12**  
**DEPARTMENT OF COMPUTER SCIENCE**  
**Certificate Course (10 weeks)**  
**(R Programming)**

**Students Registration List**

**Session 2023-24**

Sr. No.	Name of Student
1	Jagruti P Bairagi
2	Kasturi A Guhe
3	Disha I Bhelwa
4	Aatma V Gajbhiye
5	Aditi V Tarar
6	Akshata K Nagpurkar
7	Anchal R Tiwari
8	Hemanshu V Parshionikar
9	Himanshu A Rane
10	Rutuik P Kawre
11	Sahil J Mendhe
12	Bhagyashri C Kumre
13	Divya V Watkar
14	Divyani G Daware
15	Firdosh S Kazi
16	Gauri D Bhakare
17	Harshada B Badane
18	Harshneet Kaur J Virdi
19	Tulsi K Choudhary
20	Twinkle B Madavi
21	Vidya O Manmode
22	Yogita M Sahare
23	Yukta D Mangam
24	Vivek V Indurkar
25	Yash S Hattewar
26	Abhay Singh
27	Adarsh H Mandwe
28	Payal D Bagle
29	Payal R Gupta
30	Pornima J Sahu
31	Ajay B Ahirwar
32	Akash A Pawar
33	Pranali D Pillare
34	Sanika G Varpatkar
35	Toshan N Deshmukh

36	Vansh T Chopde
37	Khush Rang Bhendarkar
38	Mahendra Dwangan
39	Ujjwal Mnkar
40	Vaibhav Sryavanshi
41	Yashika Barade
42	Abhisakti Ghugal
43	Ajinkya Ingle
44	Shreya Bagde
45	Lavanya R Talnikar
46	Madhua S Maske
47	Falguni A Singalwar
48	Gunjan B Radke
49	Neha Khandate
50	Prachi Thakre
51	Divya Kamble
52	Harshal Umredkar
53	Harshit Mourya
54	Rahul Nasare
55	Ayushi K Lichade
56	Chetana M Pardhi
57	sarvesh Daware
58	Sonu Chanode
59	Tanhvi Mohature
60	Sagar Bisen
61	Vishaka M Khiani
62	Osheen D Arora
63	Gunjan V Mourya
64	Harshal B Rangari
65	Kiran Rao
66	Jayant J Haldar
67	Parth S Virkhare
68	Rohan K Nimje
69	Shreya N Dhokwal
70	Vedanti P Doble
71	Sweth A Pimpalkar
72	Vipul D Sangitrao
73	Tanvi H Raut
74	Priya Kumari Prasad Deonath
75	Ishita S Shrivastava
76	Janhavi P Diwakar
77	Stuti Karotiya
78	Sudhanshu Sakare
79	Ayesha A Siddique
80	Avani V Adhav

81	Ekta V Sant
82	Dhruvika O Gotmare
83	Anjali Jaiswal
84	Trupti A Mondhe
85	Vaidehi S Jibhakate
86	Jyoti D Chavan
87	Kashish H Bawangade
88	Sanjana M Ghatole









**SSES Amravati's Science College, Congress Nagar, Nagpur-12**  
**DEPARTMENT OF COMPUTER SCIENCE**

**Date:09-10-2023**

## Notice

All the students who are registered for the Certificate course in R Programming are hereby informed that the theory and practical examination is scheduled as given below.

<b>Examination</b>	<b>Date</b>	<b>Place</b>	<b>Time</b>
<b>Theory</b>	<b>18-10-2023</b>	<b>Computer laboratory</b>	<b>11:00 to 1:00</b>
<b>Practical</b>	<b>19-10-2023</b>	<b>Computer laboratory</b>	<b>11:00 to 1:00</b>



Professor  
Department of Computer Science  
S.S.E.S. Amr's Science College,  
Congress Nagar, Nagpur



Professor & Head  
Department of Computer Science  
S.S.E.S. Amr's Science College,  
Congress Nagar, Nagpur

SSES Amravati's Science College, Congress Nagar, Nagpur-12

DEPARTMENT OF COMPUTER SCIENCE

COURSE MODULE AND SYLLABUS

Course Title: Certificate Course in R Programming

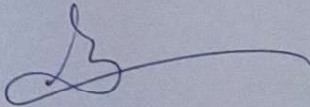
Date: 18-10-2023

Attendance Sheet: Theory Examination

Roll . No.	Name of Student	Signature
RProg-1	Jagruti P Bairagi	J Bairagi
RProg-2	Kasturi A Guhe	Kasturi G
RProg-3	Disha I Bhelwa	D Bhelwa
RProg-4	Aatma V Gajbhiye	A Gajbhiye
RProg-5	Aditi V Tarar	A Tarar
RProg-6	Akshata K Nagpurkar	A Nagpurkar
RProg-7	Anchal R Tiwari	A Tiwari
RProg-8	Hemanshu V Parshionikar	H Parshionikar
RProg-9	Himanshu A Rane	H Rane
RProg-10	Rutuik P Kawre	R Kawre
RProg-11	Sahil J Mendhe	S Mendhe
RProg-12	Bhagyashri C Kumre	B Kumre
RProg-13	Divya V Watkar	D Watkar
RProg-14	Divyani G Daware	D Daware
RProg-15	Firdosh S Kazi	F Kazi
RProg-16	Gauri D Bhakare	G Bhakare
RProg-17	Harshada B Badane	H Badane
RProg-18	Harshneet Kaur J Viridi	H Kaur
RProg-19	Tulsi K Choudhary	T Choudhary
RProg-20	Twinkle B Madavi	T Madavi
RProg-21	Vidya O Manmode	V Manmode
RProg-22	Yogita M Sahare	Y Sahare
RProg-23	Yukta D Mangam	Y Mangam
RProg-24	Vivek V Indurkar	V Indurkar
RProg-25	Yash S Hattewar	Y Hattewar
RProg-26	Abhay Singh	A Singh
RProg-27	Adarsh H Mandwe	A Mandwe
RProg-28	Payal D Bagle	P Bagle
RProg-29	Payal R Gupta	P Gupta
RProg-30	Pornima J Sahu	P Sahu

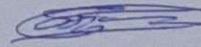
RProg-31	Ajay B Ahirwar	Ahirmwar
RProg-32	Akash A Pawar	Akash P
RProg-33	Pranali D Pillare	Pillari P
RProg-34	Sanika G Varpatkar	SVarpatkar
RProg-35	Toshan N Deshmukh	T Deshmukh
RProg-36	Vansh T Chopde	Vansh
RProg-37	Khush Rang Bhendarkar	Khush Rang B
RProg-38	Mahendra Dwangan	Mahendra D
RProg-39	Ujjwal Mnkar	Ujjwal M
RProg-40	Vaibhav Sryavanshi	Vaibhav
RProg-41	Yashika Barade	Y Barade
RProg-42	Abhisakti Ghugal	Abhisakti G
RProg-43	Ajinkya Ingle	Ajinkya I
RProg-44	Shreya Bagde	S Bagde
RProg-45	Lavanya R Talnikar	L Talnikar
RProg-46	Madhua S Maske	M Maske
RProg-47	Falguni A Singalwar	F Singalwar
RProg-48	Gunjan B Radke	G Radke
RProg-49	Neha Khandate	N Khandate
RProg-50	Prachi Thakre	P Thakre
RProg-51	Divya Kamble	D Kamble
RProg-52	Harshal Umredkar	H Umredkar
RProg-53	Harshit Mourya	H Mourya
RProg-54	Rahul Nasare	R Nasare
RProg-55	Ayushi K Lichade	A Lichade
RProg-56	Chetana M Pardhi	C Pardhi
RProg-57	sarvesh Daware	S Daware
RProg-58	Sonu Chanode	S Chanode
RProg-59	Tanhvi Mohature	T Mohature
RProg-60	Sagar Bisen	S Bisen
RProg-61	Vishaka M Khiani	V Khiani
RProg-62	Osheen D Arora	O Arora
RProg-63	Gunjan V Mourya	G Mourya
RProg-64	Harshal B Rangari	H Rangari
RProg-65	Kiran Rao	K Rao
RProg-66	Jayant J Haldar	J Haldar
RProg-67	Parth S Virkhare	P Virkhare
RProg-68	Rohan K Nimje	R Nimje
RProg-69	Shreya N Dhokwal	S Dhokwal
RProg-70	Vedanti P Doble	V Doble
RProg-71	Sweth A Pimpalkar	S Pimpalkar

RProg-72	Vipul D Sangitrao	Vipul D Sangitrao
RProg-73	Tanvi H Raut	Tanvi H Raut
RProg-74	Priya Kumari Prasad Deonath	Priya Deo
RProg-75	Ishita S Shrivastava	Ishita S Shrivastava
RProg-76	Janhavi P Diwakar	Janhavi P Diwakar
RProg-77	Stuti Karotiya	Stuti Karotiya
RProg-78	Sudhanshu Sakare	Sudhanshu Sakare
RProg-79	Ayesha A Siddique	Ayesha A Siddique
RProg-80	Avani V Adhav	Avani V Adhav
RProg-81	Ekta V Sant	Absent
RProg-82	Dhruvika O Gotmare	Dhruvika O Gotmare
RProg-83	Anjali Jaiswal	Anjali Jaiswal
RProg-84	Trupti A Mondhe	Trupti A Mondhe
RProg-85	Vaidehi S Jibhakate	Vaidehi S Jibhakate
RProg-86	Jyoti D Chavan	Jyoti D Chavan
RProg-87	Kashish H Bawangade	Kashish H Bawangade
RProg-88	Sanjana M Ghatole	Sanjana M Ghatole



Course Coordinator

Professor  
Department of Computer Science  
S.S.E.S. Am's Science College,  
Congress Nagar, Nagpur



Head of Department

Professor & Head  
Department of Computer Science  
S.S.E.S. Am's Science College,  
Congress Nagar, Nagpur

SSES Amravati's Science College, Congress Nagar, Nagpur-12

DEPARTMENT OF COMPUTER SCIENCE

COURSE MODULE AND SYLLABUS

Course Title: Certificate Course in R Programming

Date: 19-10-2023

Attendance Sheet: Practical Examination


Roll . No.	Name of Student	Signature
RProg-1	Jagruti P Bairagi	Bairagi
RProg-2	Kasturi A Guhe	Kasturi G
RProg-3	Disha I Bhelwa	Bhelwa
RProg-4	Aatma V Gajbhiye	Gajbhiye
RProg-5	Aditi V Tarar	Tarar
RProg-6	Akshata K Nagpurkar	ANAGPURKAR
RProg-7	Anchal R Tiwari	Aiwari
RProg-8	Hemanshu V Parshionkar	Parshi
RProg-9	Himanshu A Rane	Hemanshu
RProg-10	Rutuik P Kawre	Kawre
RProg-11	Sahil J Mendhe	Mendhe
RProg-12	Bhagyashri C Kumre	Kumre
RProg-13	Divya V Watkar	Dwatkar
RProg-14	Divyani G Daware	Daware
RProg-15	Firdosh S Kazi	FRAZL
RProg-16	Gauri D Bhakare	Bhakare
RProg-17	Harshada B Badane	Badane
RProg-18	Harshneet Kaur J Virdi	J Virdi
RProg-19	Tulsi K Choudhary	Choudhary
RProg-20	Twinkle B Madavi	Madavi
RProg-21	Vidya O Manmode	Manmode
RProg-22	Yogita M Sahare	Sahare
RProg-23	Yukta D Mangam	Mangam
RProg-24	Vivek V Indurkar	Indurkar
RProg-25	Yash S Hattewar	Hattewar
RProg-26	Abhay Singh	Singh
RProg-27	Adarsh H Mandwe	Mandwe
RProg-28	Payal D Bagle	Bagle
RProg-29	Payal R Gupta	PGupta
RProg-30	Pornima J Sahu	Sahu



RProg-31	Ajay B Ahirwar	Abhirwar
RProg-32	Akash A Pawar	Akash
RProg-33	Pranali D Pillare	Pillare
RProg-34	Sanika G Varsatkar	Varsatkar
RProg-35	Toshan N Deshmukh	Absent
RProg-36	Vansh T Choyde	Vansh
RProg-37	Khush Rang Bhendarkar	Khush Rang
RProg-38	Mahendra Dwangan	Mahendra
RProg-39	Hijwal Mekar	Hijwal
RProg-40	Vaibhav Sryavanshi	Vaibhav
RProg-41	Yashika Barade	Barade
RProg-42	Abhivakti Ghugal	Abhivakti
RProg-43	Ajinkya Ingle	Ajinkya
RProg-44	Shreya Bagde	Shreya
RProg-45	Lavanya R Talnikar	Lavanya
RProg-46	Madhva S Maske	Madhva
RProg-47	Falguni A Singalwar	Falguni
RProg-48	Gunjan B Radke	Gunjan
RProg-49	Neha Khandate	Neha
RProg-50	Prachi Thakre	Prachi
RProg-51	Divya Kamble	Divya
RProg-52	Harshall Umredkar	Harshall
RProg-53	Harshit Mourya	Harshit
RProg-54	Rahul Nasare	Rahul
RProg-55	Ayushi K Lichade	Ayushi
RProg-56	Chetana M Pardhi	Chetana
RProg-57	sarvesh Daware	Sarvesh
RProg-58	Sonu Chanode	Sonu
RProg-59	Tanvi Mohature	Tanvi
RProg-60	Sagar Bisen	Sagar
RProg-61	Vishaka M Khiani	Vishaka
RProg-62	Oshoon D Arora	Oshoon
RProg-63	Gunjan V Mosurya	Gunjan
RProg-64	Harshal B Rangari	Harshal
RProg-65	Kiran Rao	Kiran
RProg-66	Jayanti J Halkar	Jayanti
RProg-67	Parth S Virkhare	Parth
RProg-68	Rohan K Nimje	Rohan
RProg-69	Shreya N Dhokwal	Shreya
RProg-70	Vedanti P Doble	Vedanti
RProg-71	Sweeth A Pansolkar	Sweeth

RProg-72	Vipul D Sangitrao	Vipul D Sangitrao
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 Head of Department  
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 S.S.E.S. Am's Science College,  
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SSES Amravati's Science College, Congress Nagar, Nagpur-12

DEPARTMENT OF COMPUTER SCIENCE

Certificate course in R Programming  
Theory Examination

Date: 18/10/2023

Max Marks : 60

Time :11:00 am to 1:00 pm

---

Roll No :

Name of Student :

---

Note: 1. All questions are compulsory and carry equal marks  
2. Tick only one correct option

1. **What is R primarily used for?**

- A) Web development
- B) Statistical computing and graphics
- C) Game development
- D) Mobile app development

2. **Which of the following is NOT a step in installing R and RStudio?**

- A) Downloading R from CRAN
- B) Downloading RStudio from the RStudio website
- C) Running RStudio without installing R
- D) Installing R first, then RStudio

3. **Which pane in RStudio is primarily used for writing and editing R scripts?**

- A) Console pane
- B) Environment/History pane
- C) Source/Editor pane
- D) Files/Plots/Packages/Help pane

4. **Which of the following commands is used to calculate the mean of a numeric vector in R?**

- A) `sum()`
- B) `mean()`
- C) `median()`
- D) `mode()`

5. **After installing R and RStudio, which command is used to check the version of R installed?**

- A) `version()`
- B) `R.version()`
- C) `R.version`
- D) `getVersion()`

6. **What will be the result of the following operation in R: `3 + 5 * 2`?**
- A) 13
  - B) 16
  - C) 10
  - D) 11
7. **Which of the following is NOT a basic data type in R?**
- A) Numeric
  - B) Character
  - C) Boolean
  - D) Logical
8. **How can you create a numeric vector with the numbers 1 to 5 in R?**
- A) `c(1, 2, 3, 4, 5)`
  - B) `1:5`
  - C) `seq(1, 5)`
  - D) All of the above
9. **Which function is used to combine elements into a character vector?**
- A) `cbind()`
  - B) `paste()`
  - C) `c()`
  - D) `combine()`
10. **What will be the output of the following R code: `c(TRUE, FALSE, TRUE) & c(TRUE, TRUE, FALSE)`?**
- A) `TRUE FALSE TRUE`
  - B) `TRUE FALSE FALSE`
  - C) `FALSE FALSE TRUE`
  - D) `TRUE TRUE FALSE`
11. **Which function would you use to find the smallest number in a numeric vector?**
- A) `min()`
  - B) `max()`
  - C) `mean()`
  - D) `sum()`
12. **What is the result of `as.numeric("123.45")` in R?**
- A) "123.45"
  - B) 123.45
  - C) NA
  - D) Error
13. **What will be the result of the following operation: `c(1, 2, 3) + c(4, 5, 6)`?**
- A) `5 7 9`
  - B) `4 5 6`
  - C) `1 2 3 4 5 6`
  - D) Error

14. How can you create a vector with 10 repetitions of the number 3 in R?

- A) `c(3, 10)`
- B) `rep(3, 10)`
- C) `seq(3, 10)`
- D) `replicate(3, 10)`

15. Which function calculates the average value of a numeric vector in R?

- A) `mean()`
- B) `median()`
- C) `sum()`
- D) `avg()`

16. How would you access the third element of a vector `v` in R?

- A) `v[2]`
- B) `v(3)`
- C) `v[3]`
- D) `v{3}`

17. How can you create a 3x3 matrix filled with numbers 1 to 9 in R?

- A) `matrix(1:9, nrow=3, ncol=3)`
- B) `array(1:9, dim=c(3,3))`
- C) Both A and B
- D) Neither A nor B

18. Which function is used to create a list in R?

- A) `list()`
- B) `c()`
- C) `combine()`
- D) `vector()`

19. What is a data frame in R?

- A) A multi-dimensional array
- B) A list of vectors of equal length
- C) A matrix with row and column names
- D) A single vector

20. How do you access the element in the second row, third column of a matrix `m`?

- A) `m[2, 3]`
- B) `m[3, 2]`
- C) `m[2][3]`
- D) `m(2, 3)`

21. How do you change the value of the element in the second row, first column of a data frame `df` to 10?

- A) `df[2, 1] <- 10`
- B) `df[1, 2] <- 10`
- C) `df(2, 1) <- 10`
- D) `df(1, 2) <- 10`

22. Which function would you use to create an identity matrix of size 4x4 in R?

- A) `diag(4)`
- B) `identity(4)`
- C) `matrix(1, 4, 4)`
- D) `eye(4)`

23. What is the output of the following code: `my_list<- list(a=1, b=2, c=3); my_list$c?`

- A) 1
- B) 2
- C) 3
- D) NULL

24. How do you access the column named "Age" in a data frame `df`?

- A) `df["Age"]`
- B) `df$Age`
- C) `df[, "Age"]`
- D) All of the above

25. Which command creates a data frame with two columns, "Name" and "Age", with three rows of data?

- A) `data.frame(Name=c("John", "Jane", "Doe"), Age=c(25, 30, 35))`
- B) `list(Name=c("John", "Jane", "Doe"), Age=c(25, 30, 35))`
- C) `c(Name=c("John", "Jane", "Doe"), Age=c(25, 30, 35))`
- D) `matrix(Name=c("John", "Jane", "Doe"), Age=c(25, 30, 35))`

26. How do you add an element "d" with value 4 to an existing list `my_list`?

- A) `my_list["d"] <- 4`
- B) `my_list$d<- 4`
- C) `my_list<- append(my_list, 4, after=3)`
- D) `my_list<- c(my_list, d=4)`

27. Which function is used to read a CSV file into R?

- A) `read.csv()`
- B) `import.csv()`
- C) `read.table()`
- D) `csv.read()`

28. Which function is used to write a data frame to a CSV file in R?

- A) `write.csv()`
- B) `save.csv()`
- C) `write.table()`
- D) `csv.write()`

29. Which package in R is commonly used to import data from Excel files?

- A) `xlsx`
- B) `readxl`
- C) `openxlsx`
- D) `excelR`

30. How do you read an Excel file named "data.xlsx" with the sheet name "Sheet1" into R using the readxl package?
- A) `read_excel("data.xlsx", sheet = "Sheet1")`
  - B) `read_excel("data.xlsx", sheetname = "Sheet1")`
  - C) `read_excel("data.xlsx", "Sheet1")`
  - D) `read.xlsx("data.xlsx", sheet = "Sheet1")`
31. Which package allows writing data frames to Excel files in R?
- A) `readxl`
  - B) `writexl`
  - C) `openxlsx`
  - D) Both B and C
32. Which package in R is commonly used to connect to relational databases?
- A) `RMySQL`
  - B) `DBI`
  - C) `RSQLite`
  - D) All of the above
33. Which function from the DBI package is used to execute a SQL query on a connected database?
- A) `dbExecute()`
  - B) `dbSendQuery()`
  - C) `dbQuery()`
  - D) `dbSendStatement()`
34. What is the argument to skip the first row while reading a CSV file using `read.csv()`?
- A) `skip = 1`
  - B) `header = FALSE`
  - C) `rows.skip = 1`
  - D) `start.row = 2`
35. Which argument in `read.csv()` is used to specify how missing values are represented in the CSV file?
- A) `na.strings`
  - B) `missing.values`
  - C) `na.values`
  - D) `missing`
36. Which function is used to fetch all results of a SQL query sent to the database in R?
- A) `fetch()`
  - B) `dbFetch()`
  - C) `dbGetQuery()`
  - D) `dbReadTable()`

37. **Which function in the dplyr package is used to select specific columns from a dataframe?**
- A) filter()
  - B) select()
  - C) mutate()
  - D) arrange()
38. **What is the primary purpose of the dplyr package in R?**
- A) Data visualization
  - B) Statistical modeling
  - C) Data manipulation and transformation
  - D) Machine learning
39. **Which dplyr function is used to filter rows based on a condition?**
- A) arrange()
  - B) select()
  - C) filter()
  - D) summarize()
40. **How do you create a new variable or modify an existing one in a dataframe using dplyr?**
- A) group\_by()
  - B) mutate()
  - C) summarize()
  - D) select()
41. **Which function would you use to sort a dataframe by one or more variables in dplyr?**
- A) arrange()
  - B) filter()
  - C) select()
  - D) mutate()
42. **How can you summarize data, such as calculating the mean or sum, using dplyr?**
- A) select()
  - B) summarize()
  - C) arrange()
  - D) filter()
43. **What does the group\_by() function do in dplyr?**
- A) It groups the dataset by one or more variables to perform operations on each group.
  - B) It selects specific columns from the dataframe.
  - C) It filters rows based on a condition.
  - D) It arranges rows in a specific order.
44. **Which function in the tidyr package is used to convert data from wide format to long format?**
- A) spread()
  - B) gather()
  - C) separate()
  - D) unite()



45. **What does the separate() function do in the tidyr package?**

- A) Combines multiple columns into one.
- B) Converts data from long to wide format.
- C) Splits a single column into multiple columns.
- D) Converts data from wide to long format.

46. **Which function would you use to combine multiple columns into a single column in tidyr?**

- A) gather()
- B) spread()
- C) separate()
- D) unite()

47. **What is the primary goal of tidying data with tidyr?**

- A) To perform statistical analysis
- B) To visualize data
- C) To ensure that data is in a consistent and structured format suitable for analysis
- D) To clean and preprocess text data

48. **What is the primary purpose of the ggplot2 package in R?**

- A) Data manipulation
- B) Statistical modeling
- C) Data visualization
- D) Data cleaning

49. **Which function is used to initialize a ggplot2 plot?**

- A) ggplot()
- B) plot()
- C) gg\_init()
- D) geom\_plot()

50. **In ggplot2, what does the aes() function specify?**

- A) The appearance settings of the plot
- B) The aesthetics, mapping variables to axes and other plot properties
- C) The dataset to be used
- D) The type of plot to be created

51. **Which function would you use to create a scatter plot in ggplot2?**

- A) geom\_point()
- B) geom\_line()
- C) geom\_bar()
- D) geom\_histogram()

52. **Which geom function is used to create a line plot in ggplot2?**

- A) geom\_point()
- B) geom\_line()
- C) geom\_bar()
- D) geom\_histogram()

53. **To create a bar plot in ggplot2, which geom function should be used?**

- A) `geom_point()`
- B) `geom_line()`
- C) `geom_bar()`
- D) `geom_histogram()`

54. **What function would you use to create a histogram in ggplot2?**

- A) `geom_point()`
- B) `geom_line()`
- C) `geom_bar()`
- D) `geom_histogram()`

55. **Which ggplot2 function is used to add titles and labels to axes?**

- A) `theme()`
- B) `labs()`
- C) `aes()`
- D) `annotate()`

56. **How can you add text annotations to a ggplot2 plot?**

- A) `geom_text()`
- B) `annotate()`
- C) `labs()`
- D) `theme()`

57. **What argument would you use within the `theme()` function to change the plot background color in ggplot2?**

- A) `plot.background`
- B) `plot.color`
- C) `background.fill`
- D) `theme.background`

58. **What is the purpose of exploratory data analysis (EDA)?**

- A) To confirm hypotheses with statistical tests
- B) To summarize the main characteristics of the data using visualizations and summary statistics
- C) To build predictive models
- D) To clean and preprocess data

59. **Which test would you use to compare the means of two independent groups?**

- A) Chi-square test
- B) Paired t-test
- C) Independent t-test
- D) ANOVA

60. **Which of the following statements correctly calls a function named `calculateSum` with arguments 5 and 10?**

- A) `calculateSum[5, 10]`
- B) `calculateSum(5, 10)`
- C) `calculateSum{5, 10}`
- D) `calculateSum<- 5, 10`

BSES Amravati's Science College, Congress Nagar, Nagpur-12

DEPARTMENT OF COMPUTER SCIENCE

Course Title: Certificate Course in R Programming

Course Coordinator : Dr. R. N. Jugele

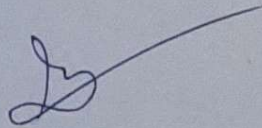
### Marksheet

Date: 26-10-2023

Sr. No	Name of Student	Theory(60)	Practical(40)	Total (100)	Grade
RProg-1	Jagruti P Bairagi	39	30	69	B <sup>+</sup>
RProg-2	Kasturi A Guhe	53	35	88	A <sup>+</sup>
RProg-3	Disha I Bhelwa	44	32	76	A
RProg-4	Aatma V Gajbhiye	38	32	70	B <sup>+</sup>
RProg-5	Aditi V Tarar	47	37	84	A <sup>+</sup>
RProg-6	Akshata K Nagpurkar	38	37	75	A
RProg-7	Anchal R Tiwari	43	31	74	A
RProg-8	Hemanshu V Parshionikar	57	33	90	A <sup>+</sup>
RProg-9	Himanshu A Rane	38	40	78	A
RProg-10	Rutuik P Kawre	57	34	91	O
RProg-11	Sahil J Mendhe	44	35	79	A
RProg-12	Bhagyashri C Kumre	58	30	88	A <sup>+</sup>
RProg-13	Divya V Watkar	44	31	75	A
RProg-14	Divyani G Daware	50	34	84	A <sup>+</sup>
RProg-15	Firdosh S Kazi	39	38	77	A
RProg-16	Gauri D Bhakare	55	38	93	O
RProg-17	Harshada B Badane	35	30	65	B <sup>+</sup>
RProg-18	Harshneet Kaur J Viridi	42	30	72	A
RProg-19	Tulsi K Choudhary	48	32	80	A
RProg-20	Twinkle B Madavi	51	30	81	A <sup>+</sup>
RProg-21	Vidya O Manmode	59	30	89	A <sup>+</sup>
RProg-22	Yogita M Sahare	40	31	71	A
RProg-23	Yukta D Mangam	40	37	77	A
RProg-24	Vivek V Indurkar	51	34	85	A <sup>+</sup>
RProg-25	Vash S Hattewar	46	34	80	A
RProg-26	Abhay Singh	40	38	78	A
RProg-27	Adarsh H Mandwe	56	35	91	O
RProg-28	Payal D Bagle	38	36	74	A
RProg-29	Payal R Gupta	49	32	81	A <sup>+</sup>

RProg-30	Pornima J Sahu	39	36	75	A
RProg-31	Ajay B Ahirwar	38	39	77	A
RProg-32	Akash A Pawar	50	32	82	A+
RProg-33	Pranali D Pillare	41	39	80	A
RProg-34	Sanika G Varparkar	48	36	84	A+
RProg-35	Toshan N Deshmukh	58	Ab	58	Ab
RProg-36	Vansh T Chopde	49	35	84	A+
RProg-37	Khush Rang Bhendarkar	39	36	75	A
RProg-38	MahendraDwangan	53	34	87	A+
RProg-39	UjjwalMnkar	51	39	90	A+
RProg-40	VaibhavSryavanshi	42	40	82	A+
RProg-41	YashikaBarade	60	35	95	O
RProg-42	AbhisaktiGhugal	45	30	75	A
RProg-43	Ajinkya Ingle	36	31	67	B+
RProg-44	Shreya Bagde	56	40	96	O
RProg-45	Lavanya R Talnikar	42	31	73	A
RProg-46	Madhua S Maske	52	37	89	A+
RProg-47	Falguni A Singalwar	42	38	80	A
RProg-48	Gunjan B Radke	53	39	92	O
RProg-49	NehaKhandate	37	36	73	A
RProg-50	PrachiThakre	45	39	84	A+
RProg-51	DivyaKamble	44	31	75	A
RProg-52	HarshalUmredkar	35	38	73	A
RProg-53	HarshitMourya	37	30	67	B+
RProg-54	Rahul Nasare	53	40	93	O
RProg-55	Ayushi K Lichade	53	33	86	A+
RProg-56	Chetana M Pardhi	37	30	67	B+
RProg-57	sarveshDaware	41	38	79	A
RProg-58	SonuChanode	57	37	94	O
RProg-59	TanhviMohature	40	30	70	B+
RProg-60	SagarBisen	45	39	84	A+
RProg-61	Vishaka M Khiani	48	33	81	A+
RProg-62	Osheen D Arora	39	36	75	A
RProg-63	Gunjan V Mourya	57	36	93	O
RProg-64	Harshal B Rangari	47	38	85	A+
RProg-65	Kiran Rao	39	30	69	B+
RProg-66	Jayant J Haldar	49	38	87	A+
RProg-67	Parth S Virkhare	42	31	73	A
RProg-68	Rohan K Nimje	36	34	70	B+
RProg-69	Shreya N Dhokwal	36	33	69	B+
RProg-70	Vedanti P Doble	35	39	74	A

RProg-71	Sweth A Pimpalkar	46	30	76	A
RProg-72	Vipul D Sangitrao	55	36	91	O
RProg-73	Tanvi H Raut	54	38	92	O
RProg-74	PriyaKumari Prasad Deonath	53	Ab	53	Ab
RProg-75	Ishita S Shrivastava	47	40	87	A <sup>+</sup>
RProg-76	Janhavi P Diwakar	37	30	67	B <sup>+</sup>
RProg-77	StutiKarotiya	58	34	92	O
RProg-78	SudhanshuSakare	55	40	95	O
RProg-79	Ayesha A Siddique	53	32	85	A <sup>+</sup>
RProg-80	Avani V Adhav	42	39	81	A <sup>+</sup>
RProg-81	Ekta V Sant	Ab	35	35	Ab
RProg-82	Dhruvika O Gotmare	40	36	76	A
RProg-83	Anjali Jaiswal	40	35	75	A
RProg-84	Trupti A Mondhe	47	39	86	A <sup>+</sup>
RProg-85	Vaidehi S Jibhakate	58	37	95	O
RProg-86	Jyoti D Chavan	57	35	92	O
RProg-87	Kashish H Bawangade	48	32	80	A
RProg-88	Sanjana M Ghatole	59	37	96	O



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Head of Department  
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<b>Add-on Course</b>		
<b>Course Exam Name: Certificate Course in R Programming</b>		
<b>Name of Student:</b>		<b>INSTRUCTIONS FOR FILLING THE SHEET</b> 1. This sheet should not be folded or crushed. 2. Use only blue/ black ball point pen to fill the circles. 3. Use of pencil is strictly prohibited. 4. Circles should be darkened completely and properly. 5. Cutting and erasing on this sheet is not allowed. 6. Do not use any stray marks on the sheet. 7. Do not use marker or white fluid to hide the mark.
<b>Roll No.:</b>	<b>Session: 2023-24</b>	
<b>Test Date: 18/10/2023</b>	<b>Max. Marks: 60</b>	<b>WRONG METHODS</b> <b>CORRECT METHOD</b> 
<b>Invigilator Signature</b>	<b>Obtained Marks:</b> <input type="text"/>	

A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
1 ○○○○	11 ○○○○	21 ○○○○	31 ○○○○	41 ○○○○	51 ○○○○
2 ○○○○	12 ○○○○	22 ○○○○	32 ○○○○	42 ○○○○	52 ○○○○
3 ○○○○	13 ○○○○	23 ○○○○	33 ○○○○	43 ○○○○	53 ○○○○
4 ○○○○	14 ○○○○	24 ○○○○	34 ○○○○	44 ○○○○	54 ○○○○
5 ○○○○	15 ○○○○	25 ○○○○	35 ○○○○	45 ○○○○	55 ○○○○
6 ○○○○	16 ○○○○	26 ○○○○	36 ○○○○	46 ○○○○	56 ○○○○
7 ○○○○	17 ○○○○	27 ○○○○	37 ○○○○	47 ○○○○	57 ○○○○
8 ○○○○	18 ○○○○	28 ○○○○	38 ○○○○	48 ○○○○	58 ○○○○
9 ○○○○	19 ○○○○	29 ○○○○	39 ○○○○	49 ○○○○	59 ○○○○
10 ○○○○	20 ○○○○	30 ○○○○	40 ○○○○	50 ○○○○	60 ○○○○

Answer Key



Shri Shivaji Education Society, Amravati's  
**SCIENCE COLLEGE**  
Congress Nagar, Nagpur-12 (M.S.), India



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Mentor College under 'PARAMARSH Scheme', UGC, New Delhi

**Add-on Course**

Course Exam Name: Certificate Course in R Programming

Name of Student: .....		INSTRUCTIONS FOR FILLING THE SHEET	
Roll No.: .....		1. This sheet should not be folded or crushed.	
Session: 2023-24		2. Use only blue/ black ball point pen to fill the circles.	
Test Date: 18/10/2023		3. Use of pencil is strictly prohibited.	
Max. Marks: 60		4. Circles should be darkened completely and properly.	
Invigilator Signature		5. Cutting and erasing on this sheet is not allowed.	
Obtained Marks: <input type="text"/>		6. Do not use any stray marks on the sheet.	
		7. Do not use marker or white fluid to hide the mark.	
		WRONG METHODS      CORRECT METHOD	

A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D						
1	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	11	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	21	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	31	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	41	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	51	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	12	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	22	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	32	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	42	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	52	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	13	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	23	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	33	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	43	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	53	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
4	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	14	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	24	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	34	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	44	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	54	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
5	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	15	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	25	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	35	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	45	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	55	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
6	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	16	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	26	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	36	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	46	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	56	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
7	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	17	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	27	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	37	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	47	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	57	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	18	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	28	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	38	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	48	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	58	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
9	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	19	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	29	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	39	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	49	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	59	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
10	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	20	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	30	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	40	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	50	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	60	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>



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**Add-on Course**

Course Exam Name: Certificate Course in R Programming

Name of Student:

Jyoti D Chawan

Roll No.:

RPrg - 86

Session: 2023-24

Test Date: 18/10/2023

Max. Marks: 60

Invigilator Signature

*[Handwritten Signature]*

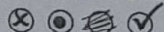
Obtained Marks:

57

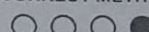
INSTRUCTIONS FOR FILLING THE SHEET

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WRONG METHODS



CORRECT METHOD



A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D						
1	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	11	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	21	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	31	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	41	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	51	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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6	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	16	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	26	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	36	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	46	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	56	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
7	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	17	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	27	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	37	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	47	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	57	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	18	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	28	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	38	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	48	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	58	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
9	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	19	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	29	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	39	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	49	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	59	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
10	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	20	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	30	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	40	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	50	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	60	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>





Shri Shivaji Education Society Amravati's  
**SCIENCE COLLEGE, CONGRESS NAGAR,  
NAGPUR**

Accredited with CGPA of 3.51 at 'A+' Grade  
A College with Potential for Excellence



## CERTIFICATE

Mr./Ku. JYOTI CHAVAN is awarded with certificate on successful completion of the course entitled, Certificate course in "R' Programming".

Session 2023-24 under Add-on course conducted for 30 hours from 01/08/2023 to 07/10/2023 by Department of Computer Science, SSESAs, Science College, congress Nagar, Nagpur 440012.

He/She has passed the Examination with 'D' Grade.

**Prof. R. N. Jugele**  
Coordinator, Department of Computer Science

**Prof. M. P. Dhore**  
Principal, Science College, Nagpur

**Action Taken:**

A free Add-On Course for UG students in the Department of Computer Science, Shri Shivaji Education Society Amravati's Science College, Congress Nagar, Nagpur was held from 1st August 2023 to 7th October 2023. The course title was "R Programming". 85 students appeared and passed in both theory and practical examination. The result was prepared and certificates were distributed to the students.

**Shri Shivaji Education Society Amravati's Science College,  
Congress Nagar, Nagpur**

**Add on Course in R Programming Feedback Form**

Name of Student.....

Please rate the following aspects of the program on a scale from 1 to 5, with

1. Best	2. Excellent	3. Good	4. Satisfactory	5. Fair
---------	--------------	---------	-----------------	---------

**Q.1** How would you rate the organization and structure of the course?

1       2       3       4       5

**Q.2** How do you rate the quality of the delivery of the units by the Teacher?

1       2       3       4       5

**Q.3** How useful were the hands-on assignments and projects in enhancing your practical understanding of R programming?

1       2       3       4       5

**Q.4** How well-organized was the course structure, including the sequencing of topics and the pacing of the material?

1       2       3       4       5

**Q.5** Overall, how would you rate your learning experience in this AI course?

1       2       3       4       5

**Q.6 Any Suggestions:**

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## Feedback Analysis

1. Number of Students Registered for the Course : 88
2. Number of Students submitted the Feedback : 85
3. Question wise analysis of the Feedback:

Sr. No	Question	Responses in Percentage (%)				
		Best	Excellent	Good	Satisfactory	Fair
1)	How would you rate the organization and structure of the course?	42.85	14.28	16.66	22.61	3.57
2)	How do you rate the quality of the delivery of the units by the Teacher?	36.9	23.8	22.61	17.85	0
3)	How useful were the hands-on assignments and projects in enhancing your practical understanding of AI?	40.47	22.61	17.85	14.28	4.76
4)	How well-organized was the course structure, including the sequencing of topics and the pacing of the material?	40.47	17.85	13.69	22.61	5.95
5)	Overall, how would you rate your learning experience in this course?	35.71	14.28	23.8	23.61	2.57
6)	Any Suggestions	No Suggestions: 29.4% Remaining Comments: Good Course, Nice Course, Change the timing of Classes				

Remark: Students commented that the course will be useful in professional life.

Department will keep on improving the quality of the course.

# Certificate course: R Programming (2023-24)

## Feedback Analysis

