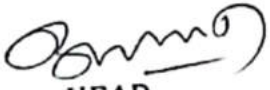




Sharanabasaveshwar College Of Science, Kalaburagi

DEPARTMENT OF MATHEMATICS

1. Course Name : Concepts of Maxima and Sic-lab
2. Course Code : SBMAT02
3. Syllabus Unit wise : Enclosed
4. Duration of the Course : 20-12-2019 to 22-01-2020
5. No of Student Enrolled : 32
6. No of staff handed the Course : 03
7. Fees Collected if any : Free
8. Attendance : Enclosed
9. Experts invited from : 1. Dr. Mahantesh S. Swami GFGC Farhatabad  
2. Sri. Rajshekar Chalegeri, SSM College Shahabad
10. Examination Conducted Details : Enclosed
11. Permission from the Management to start the course: Enclosed
12. Grading \ Class awarding System : Question paper prepared for 80 marks and with respect to evaluated answer scripts Grading /Class is awarded for the students
13. Constitution of BOS and BOE : BOS Meeting Held on 26<sup>th</sup> Feb. 2019 copy Enclosed
14. External Agency involved in MOU :
15. No of times course conducted : Two Times
16. Course Advertisement and their bills : Notice circulated to class enclosed
17. Feedback from Students : Enclosed
18. Action taken report of feedback : On the basis of Feedback Department decides to conduct the course every year
19. Department meetings for conduct of course and their meetings: Enclosed
20. Course Material Prepared : Enclosed

  
HEAD  
Department of Mathematics  
Sharnbasveshwar College of Science  
KALABURAGI

  
PRINCIPAL  
SHARNBASVESHWAR COLLEGE  
OF SCIENCE GULBARGA

SHARANBASVESHWAR COLLEGE OF SCIENCE, KALABURAGI

Date: 12-12-2019

Department Of Mathematics

The student of B.Sc.IV<sup>th</sup> semester here by informed that the Department of Mathematics is introducing a certificate course interested student can enroll their names to Manjunath Kore and fill the application form



Head of the Department

HEAD

Department of Mathematics  
Sharnbasveshwar College of Science  
KALABURAGI



Principal

PRINCIPAL  
SHARNBASVESHWAR COLLEGE  
OF SCIENCE, GULBARGA



SHARANBASVESHWAR COLLEGE OF SCIENCE, KALABURAGI

Department Of Mathematics

The meeting in the department is conducted to Organize a certificate course, Concept of Maxima and Sci-Lab from 20-12-2019 to 22-1-2020, for the B.Sc. IV Semester Students.

Head of the Department

HEAD

Department of Mathematics  
Sharanbasveshwar College of Science  
KALABURAGI

1. Mr. Manjunath Kore

2. Mr. Jagadish Math

3. Mr. Siddarajkumar Aldi



**SHARANBASVESHWAR COLLEGE OF SCIENCE, KALABURAGI**

Course Code	SBMAT02	Internal Marks	20 marks
Number of lecture per week	3hrs	Exam Marks	80
Total number of lecture in hrs	30hrs	Exam Hours	3hrs

Course Objectives: This Course will enable students to:

- Arm the students with basics programming concept of maxima and Scilab
- To understand can solve the problems by using maxima and Scilab software
- To understand and develop well structured programs using software
- To learn the basic data structures through implementing in research.

Contents:

1.Introduction to Maxima and Scilab, History and Installation	4 hours
2. Working with maxima and Maxima files	10
hours	
Computation of programs on Matrices	
i) Addition of matrices ,	
ii) Substraction of matrices ,	
iii)Multiplication of matrices	
iv)Differentiation	
vi)Integration	
vii)limit of a function	
viii)2D and 3D graph	
3.Illustration of Convergent ,Divergent and Oscillatory Sequence	6 Hours

dept of mathematics



SHARANABASAVESHWAR COLLEGE OF SCIENCE KALABURAGI  
Certificate Course 2019-20 I.A

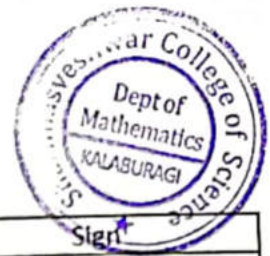
Sl.NO	Reg No	Name	Combination	
1	91494805	Simra Nishath	PCM	
2	91949780	Pramod	PCM	
3	91949750	Kalyankumar	PCM	
4	91949788	Sai charan	PCM	
5	91949828	Veenashri	PCM	
6	91949768	Nagaraj	PCM	
7	91949850	Bhagashree.A.S	PCM	
8	91949987	Sourabh S. Patil	PMD	
9	91949832	Vijay G.U	PMD	
10	91949847	Ashwini. S	PMCS	
11	91949722	Arunkumar B	PCM	
12	91949741	Gayatri	PCM	
13	91947414	Akshata	PCM	
14	91949726	Ashwini. N	PCM	
15	91950031	Sudharani	PCM	
16	91949764	Manjunath	PCM	
17	91949998	Channamma	PMCS	
18	91949730	Brundha H	PCM	
19	91949716	Akshata K	PCM	
20	91949845	Anuja K	PMCS	
21	91949895	Surekha .S	PMCS	
22	91949732	Channamma Patil	PCM	
23	91949996	Shreelaxmi	PCM	
24	91949738	Deevraj.B Devaraj	PCM	
25	91949872	Rahul	PMCS	
26	91949759	Laxmi Mulage	PCM	
27	1949729	Bhagyashree .S.K	PCM	
28	91949762	Mamta	PCM	
29	91949749	Jyoti C.H	PCM	
30	91949758	Laxmi .J.S	PCM	
31	91949812	Sugnyani	PCM	
32	91949792	Sapna M.K	PCM	

*(Signature)*  
HEAD

Department of Mathematics  
Sharnbasveshwar College of Science  
KALABURAGI

(Maths dept.) Attendance sheet.

SHARANABASAVESHWAR COLLEGE OF SCIENCE KALABURAGI  
Certificate Course 2019-20



Sl.NO	Reg No	Name	Combination	Sign
1	91494805	Simra Nishath	PCM	
2	91949780	Pramod	PCM	
3	91949750	Kalyankumar	PCM	
4	91949788	Sai charan	PCM	
5	91949828	Veenashri	PCM	
6	91949768	Nagaraj	PCM	
7	91949850	Bhagashree.A.S	PCM	
8	91949987	Sourabh S. Patil	PMD	
9	91949832	Vijay G.U	PMD	
10	91949847	Ashwini. S	PMCS	
11	91949722	Arunkumar B	PCM	
12	91949741	Gayatri	PCM	
13	91947414	Akshata	PCM	
14	91949726	Ashwini. N	PCM	
15	91950031	Sudharani	PCM	
16	91949764	Manjunath	PCM	
17	91949998	Channamma	PMCS	
18	91949730	Brundha H	PCM	
19	91949716	Akshata K	PCM	
20	91949845	Anuja K	PMCS	
21	91949895	Surekha .S	PMCS	
22	91949732	Channamma Patil	PCM	
23	91949996	Shreelaxmi	PCM	
24	91949738	Deevraj.B De vohaj	PCM	
25	91949872	Rahul	PMCS	
26	91949759	Laxmi Mulage	PCM	
27	1949729	Bhagyashree .S.K	PCM	
28	91949762	Mamta	PCM	
29	91949749	Jyoti C.H	PCM	
30	91949758	Laxmi .J.S	PCM	
31	91949812	Sugnyani	PCM	
32	91949792	Sapna M.K	PCM	

HEAD

Department of Mathematics  
Sharanabasveshwar College of Science  
KALABURAGI



SHARNBASVESHWAR COLLEGE OF SCIENCE, KALABURAGI



Application Form  
(To be filled by the Candidate)

Application.no:

Date:

Application for the ..... Certificate Course

- Name of the Candidate (as enrolled in the SSLC records in block letters)  
.....SIMRA NISHATH.....
- Father's Name: BANDENAWAZ KALAKERI.....
- Caste & Category MUSLIM, R.B.....
- Date of Birth: 15-01-2000.....
- Sex: Male/Female: Female.....
- Percentage of SSLC & PUC Examination: 95.52% and 95%.....
- Present Academic status: Marks obtained in Mathematics  
Isem: 86 IIsem: 96 IIIsem: 85 IVsem: ..... Vsem: .....  
VIsem: .....
- University Reg.No: 91949805..... Roll No: 106.....
- Combination : P.C.M.....
- Address of the candidate with Pin code (in block letters)  
P & T COLONY, BEHMATH NAGAR.....  
KALABURAGI.....
- Mobile No: 9980347731 E - mail address: Simranishath2000@gmail.com

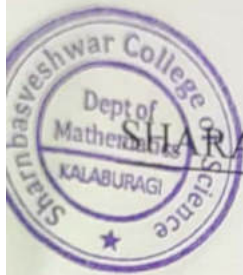
Candidate's Signature

Father/Mother/Guardian Signature

Hod & Coordinator  
1) Dr.T.V.Biradar  
2) Sri.Manjunath S.Kore

Principal  
Dr.S.G.Dollegoudru  
PRINCIPAL  
SHARNBASVESHWAR COLLEGE  
OF SCIENCE, GULBARGA

\* Certificate courses:  
Mathematical software( Maxima and Scilab)



# SHARNBASVESHWAR COLLEGE OF SCIENCE, KALABURAGI



Application Form  
(To be filled by the Candidate)

Application.no: \_\_\_\_\_

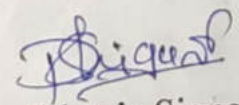
Date: \_\_\_\_\_

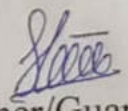
Application for the ..... Certificate Course

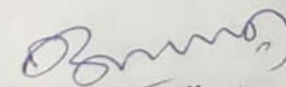
1. Name of the Candidate (as enrolled in the SSLC records in block letters)  
..... PRAMOD .....
2. Father's Name: ..... RAJENDRA KUMAR .....
3. Caste & Category ..... NEIKAR & IIA .....
4. Date of Birth: ..... 18/12/2000 .....
5. Sex: Male/Female: ..... MALE .....
6. Percentage of SSLC & PUC Examination : 76% & 72% .....
7. Present Academic status: Marks obtained in Mathematics  
Isem: ... 81 ... IIsem: ... 79 ... IIIsem: ... 86 ... IVsem: ... Vsem: ...  
VIsem: .....
8. University Reg.No.: 91949780 ..... Roll No: 73 .....
9. Combination : ... P.C.M. ....
10. Address of the candidate with Pin code (in block letters)  
..... Old OLD JEVERGI ROAD RAM MANDIR .....
- ..... KALABURGI .....


11. Mobile No: 6363979022

E - mail address: pramodshri@gmail.com

  
Candidate's Signature

  
Father/Mother/Guardian Signature

  
Hod & Coordinator  
1) Dr.T.V.Biradar  
2) Sri.Manjunath S.Kore

  
Principal  
Dr.S.G.Dollegoudru  
PRINCIPAL  
SHARNBASVESHWAR COLLEGE  
OF SCIENCE, GULBARGA

\* Certificate courses:  
Mathematical software (Maxima and Scilab)





# SHARNBASVESHWAR COLLEGE OF SCIENCE, KALABURAGI

## Application Form (To be filled by the Candidate)



Application.no: .....

Date: .....

Application for the ..... Certificate Course

1. Name of the Candidate (as enrolled in the SSLC records in block letters)  
..... KALYANKUMAR .....
2. Father's Name: .. BHEEMASHANKAR .....
3. Caste & Category .. II(A) NEIKAR .....
4. Date of Birth: .. 19-7-2000 .....
5. Sex: Male/Female: .. MALE .....
6. Percentage of SSLC & PUC Examination : 79.2% & 61%
7. Present Academic status: Marks obtained in Mathematics  
Isem: .. 89 .. IIsem: .. 88 .. IIIsem: .. 115 .. IVsem: .. ..... Vsem: .. .....  
VIsem: .. .....
8. University Reg.No.: .. 91949750 ..... Roll No.: .. 41 .....
9. Combination : .. PCM .....
10. Address of the candidate with Pin code (in block letters)  
..... AFZALPUR ROAD, NEAR WATER TANK, BIDDAPUR ..  
..... COLONY, KALABURAGI - 585103 .....

11. Mobile No: .. 9353881080 .....

E - mail address: .. KalyanKadai1414@gmail.com .....

Kadai  
Candidate's Signature

B  
Father/Mother/Guardian Signature

[Signature]  
Hod & Coordinator  
1) Dr.T.V.Biradar  
2) Sri.Manjunath S.Kore

[Signature]  
Principal  
Dr.S.G.Dollegoudru  
**PRINCIPAL**  
**SHARNBASVESHWAR COLLEGE**  
**OF SCIENCE, GULBARGA**

\* Certificate courses:  
Mathematical software( Maxima and Scilab)



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# SHARNBASVESHWAR COLLEGE OF SCIENCE, KALABURAGI

Application Form  
(To be filled by the Candidate)




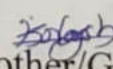
Application.no: \_\_\_\_\_ Date: \_\_\_\_\_


Application for the .....Certificate Course


1. Name of the Candidate (as enrolled in the SSLC records in block letters)  
... SAI CHARAN .....
2. Father's Name: ... NAGESH .....
3. Caste & Category ... SC & SA KUMBAR & IIA .....
4. Date of Birth: ... 20-01-2001 .....
5. Sex: Male/Female: ... MALE .....
6. Percentage of SSLC & PUC Examination : 63% & 64%
7. Present Academic status: Marks obtained in Mathematics  
Isem: ... 81 ... IIsem: ... 75 ... IIIsem: ... 84 ... IVsem: ... .. Vsem: ... ..  
VIsem: ... ..
8. University Reg.No.: ... 91949788 ... Roll No: ... 84 .....
9. Combination : ... PCM .....
10. Address of the candidate with Pin code (in block letters)  
... JADHAV LAYOUT, BIDDAPUR COLONY ..  
... KALBURGI - 585103 .....

11. Mobile No: 9742056434 E - mail address: Sai charan kumar 367@gmail.com

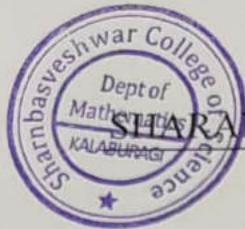
  
Candidate's Signature

  
Father/Mother/Guardian Signature

  
Hod & Coordinator  
1) Dr.T.V.Biradar  
2) Sri.Manjunath S.Kore

  
Principal  
Dr.S.G.Dollegoudru  
PRINCIPAL  
SHARNBASVESHWAR COLLEGE  
OF SCIENCE, GULBARGA

\* Certificate courses:  
Mathematical software( Maxima and Scilab)



6

SHARNBASVESHWAR COLLEGE OF SCIENCE, KALABURAGI

Application Form  
(To be filled by the Candidate)



Photo

Application.no:

Date:

Application for the .....Certificate Course

1. Name of the Candidate (as enrolled in the SSLC records in block letters)  
.....NAGARAJ.....
2. Father's Name: .....MAHANTESH MALI.....
3. Caste & Category .....MALAGAR (I.A.).....
4. Date of Birth: .....01-01-2000.....
5. Sex: Male/Female: .....MALE.....
6. Percentage of SSLC & PUC Examination : 81.60% and 67.33%
7. Present Academic status: Marks obtained in Mathematics  
Isem:.....88... IIsem:..83...IIIsem:..78...IVsem:.....Vsem:.....  
VIsem:.....
8. University Reg.No.:...91949768..... Roll No:.....58.....
9. Combination :...PCM.....
10. Address of the candidate with Pin code (in block letters)  
.....HIROLI - 585302..... TQ:- ALAND.....  
.....D.I.S.T:- KALABURAGI.....

11. Mobile No:....9019346383

E - mail address: malinagesh18@9

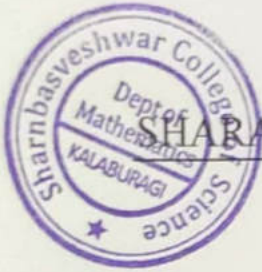
Candidate's Signature  
*(Signature)*

Father/Mother/Guardian Signature  
*M.K.MALI*

Hod & Coordinator  
1) Dr.T.V.Biradar  
2) Sri.Manjunath S.Kore

Principal  
*(Signature)*  
Dr.S.G.Dollegoudru  
PRINCIPAL  
SHARNBASVESHWAR COLLEGE  
OF SCIENCE, GULBARGA

\* Certificate courses:  
Mathematical software( Maxima and Scilab)



SHARNBASVESHWAR COLLEGE OF SCIENCE, KALABURAGI

Application Form  
(To be filled by the Candidate)



Application.no: \_\_\_\_\_

Date: \_\_\_\_\_

Application for the ..... Certificat

1. Name of the Candidate (as enrolled in the SSLC records in block letters)

... Bhagyashree, A. S

2. Father's Name: ... Anil Kumar, P. S

3. Caste & Category ... Lingayth, III<sup>rd</sup> B.B

4. Date of Birth: ... 24.10.2000

5. Sex: Male/Female: ... female

6. Percentage of SSLC & PUC Examination : 75 & 72

7. Present Academic status: Marks obtained in Mathematics  
Isem: 72, IIsem: 81, IIIsem: 80, IVsem: ..., Vsem: ...

8. University Reg.No: 91949850, Roll No: 171

9. Combination : P.M.C.S.

10. Address of the candidate with Pin code (in block letters)

... Basveshwar Colony, M.G. Road, M.B. Nagar, Kalburgi

11. Mobile No: 6.3.63.018.336 E - mail address: bhagyashree.sabli@ gmail.com

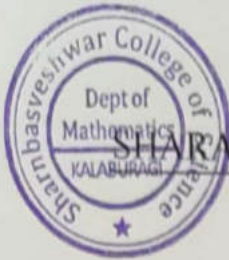
Candidate's Signature

Father/Mother/Guardian Signature

Hod & Coordinator  
1) Dr.T.V.Biradar  
2) Sri.Manjunath S.Kore

Principal  
Dr.S.G.Dollegoudru  
PRINCIPAL  
SHARNBASVESHWAR COLLEGE  
OF SCIENCE, GULBARGA

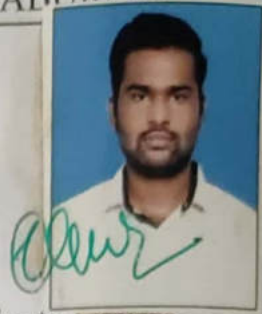
\* Certificate courses:  
Mathematical software( Maxima and Scilab)



8

# SHARNBASVESHWAR COLLEGE OF SCIENCE, KALABURAGI

## Application Form (To be filled by the Candidate)



Application.no: \_\_\_\_\_

Date: \_\_\_\_\_

Application for the .....Certificate Course

1. Name of the Candidate (as enrolled in the SSLC records in block letters)

... SOURABH S. PATIL .....

2. Father's Name: ... SHARAN GOUDA PATIL .....

3. Caste & Category ... HINDU HANIYA (2A) .....

4. Date of Birth: ... 1/10/1999 .....

5. Sex: Male/Female: ... MALE .....

6. Percentage of SSLC & PUC Examination : 64.32% & 60.33%

7. Present Academic status: Marks obtained in Mathematics

Isem: ... 109 ... Isem: 68 ... IIIsem: 86 ... IVsem: ... Vsem: .....

VIsem: .....

8. University Reg.No.: 91949987 Roll No: 324 .....

9. Combination : ... P.M.D. ....


10. Address of the candidate with Pin code (in block letters)


... H.No. 2/477 Hanuman Temple Road .....

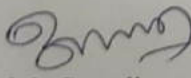
... Jagat Gulbarga .....

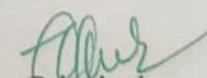
11. Mobile No: 9035367679 .....

E - mail address: SourabhPatil17679@gmail.com

  
Candidate's Signature

  
Father/Mother/Guardian Signature

  
Hod & Coordinator  
1) Dr.T.V.Biradar  
2) Sri.Manjunath S.Kore

  
Principal  
Dr.S.G.Dollegoudru  
PRINCIPAL  
SHARNBASVESHWAR COLLEGE  
OF SCIENCE, GULBARGA

\* Certificate courses:  
Mathematical software (Maxima and Scilab)



Application Form  
(To be filled by the Candidate)

Application.no:

Date: 15/12/2019

Application for the ..... Certificate Course

1. Name of the Candidate (as enrolled in the SSLC records in block letters)

..VIJAY...G...UDNOOR.....

2. Father's Name: .....GURUNATH.....UDNOOR.....

3. Caste & Category .HINDU.....LINGAYAT.....III B.....

4. Date of Birth: ...04-09-1999.....

5. Sex: Male/Female: .....MALE.....

6. Percentage of SSLC & PUC Examination : 86.88% & 78.6%

7. Present Academic status: Marks obtained in Mathematics

Isem:..11.5..... IIsem:..47...IIIsem:..110....IVsem:.....Vsem:.....  
VIsem:.....

8. University Reg.No.: 91949832..... Roll No:..325.....

9. Combination :...P.M.D....

10. Address of the candidate with Pin code (in block letters)

..H.No:..8-1065...FAZAL...PUR...GALLI...BEHIND.....  
..BAMBOO...BAZAR...ASIF...GUNT...GULBARGA.....  
.....585101.....

11. Mobile No: 9741216613

E - mail address: VIJAY.UDNOOR@gmail

Candidate's Signature

Father/Mother/Guardian Signature

Hod & Coordinator

- 1) Dr.T.V.Biradar
- 2) Sri.Manjunath S.Kore

Principal

Dr.S.G.Dollegoudru

**PRINCIPAL**  
**SHARNBASVESHWAR COLLEGE**  
**OF SCIENCE, GULBARGA**

\* Certificate courses:

Mathematical software( Maxima and Scilab)



# SHARNBASVESHWAR COLLEGE OF SCIENCE, KALABURAGI

Application Form  
(To be filled by the Candidate)



Application.no:

Date: 14/12/2019

Application for the ..... Certificate Course

1. Name of the Candidate (as enrolled in the SSLC records in block letters)

..... Ashwini... Somashekhar .....

2. Father's Name: ... Somashekhar .....

3. Caste & Category ... II B .....

4. Date of Birth: ... 21-04-2000 .....

5. Sex: Male/Female: ... Female .....

6. Percentage of SSLC & PUC Examination : 85.28 & 57.58

7. Present Academic status: Marks obtained in Mathematics

Isem:.....100... IIsem:104...IIIsem:138.....IVsem:.....Vsem:.....

VIsem:.....

8. University Reg.No.:... 91949847..... Roll No:..169.....

9. Combination : ... PMCs .....

10. Address of the candidate with Pin code (in block letters)

..... At Post Balabatti .....

..... Tq: Tewangi..... Dist: Kalaburagi .....

..... Pin Code: 585309 .....

11. Mobile No: 7349396255..

E - mail address: ashus194399@gmail.com

Candidate's Signature

Father/Mother/Guardian Signature

Hod & Coordinator

- 1) Dr.T.V.Biradar
- 2) Sri.Manjunath S.Kore

Principal

Dr.S.G.Dollegoudru

**PRINCIPAL**  
**SHARNBASVESHWAR COLLEGE**  
**OF SCIENCE, GULBARGA**

\* Certificate courses:

Mathematical software( Maxima and Scilab)



# SHARNBASVESHWAR COLLEGE OF SCIENCE, KALABURAGI

Application Form  
(To be filled by the Candidate)



Application.no:

Date:

Application for the ..... Certificate Course

- Name of the Candidate (as enrolled in the SSLC records in block letters)  
..... ARUN KUMAR BIRADAR .....
- Father's Name: .. PRABHULING .....
- Caste & Category ...*Veerashaiv Lingayat & TH B* .....
- Date of Birth: .....*10.10.1999* .....
- Sex: Male/Female: .....*Male* .....
- Percentage of SSLC & PUC Examination : *68.64% and 50%*
- Present Academic status: Marks obtained in Mathematics  
Isem:.....*55*..... IIsem:.....*60*..... IIIsem:.....*47*..... IVsem:..... Vsem:.....  
VIsem:.....
- University Reg.No.:.....*91949722*..... Roll No:.....*14*.....
- Combination : ..*PCM*.....
- Address of the candidate with Pin code (in block letters)  
.....*BIRADAR NIVAS MAHABAN ROAR MAHABAN*.....  
.....*CROSS KALABURAGI 585316*.....
- Mobile No:.....*9380375003*..... E - mail address:.....*arunbiradar10@gmail.com*.....

*Arun*  
Candidate's Signature

*Manjunath*  
Father/Mother/Guardian Signature

*[Signature]*  
Hod & Coordinator  
1) Dr.T.V.Biradar  
2) Sri.Manjunath S.Kore

*[Signature]*  
Principal  
Dr.S.G.Dollegoudru  
PRINCIPAL  
SHARNBASVESHWAR COLLEGE  
OF SCIENCE, GULBARGA

\* Certificate courses:  
Mathematical software( Maxima and Scilab)





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# SHARNBASVESHWAR COLLEGE OF SCIENCE, KALABURAGI

## Application Form (To be filled by the Candidate)



Application.no: \_\_\_\_\_

Date: \_\_\_\_\_

*(Handwritten initials)*

Application for the ..... Certificate Course

- Name of the Candidate (as enrolled in the SSLC records in block letters)  
.. GAYATRI ..
- Father's Name: .. KALYAN RAO ..
- Caste & Category .. OBC III B ..
- Date of Birth: .. 12/2/2000 ..
- Sex: Male/Female: .. Female ..
- Percentage of SSLC & PUC Examination : 83.68% and 82%
- Present Academic status: Marks obtained in Mathematics  
Isem: .. 141 .. IIsem: .. 134 .. IIIsem: .. 123 .. IVsem: .. - .. Vsem: .. - ..  
VIsem: .. - ..
- University Reg.No.: 91949741 .. Roll No.: 33 ..
- Combination : .. PCM ..
- Address of the candidate with Pin code (in block letters)  
.. SHIVAJI NAGAR KALBURGI - 585104 ..

11. Mobile No.: 9391510640

E - mail address: gumthe.gayatri.741@gmail.com

*(Handwritten signature)*  
Candidate's Signature

*(Handwritten signature)*  
Father/Mother/Guardian Signature

*(Handwritten signature)*  
Hod & Coordinator  
1) Dr.T.V.Biradar  
2) Sri.Manjunath S.Kore

*(Handwritten signature)*  
Principal  
Dr.S.G.Dollegoudru  
PRINCIPAL  
SHARNBASVESHWAR COLLEGE  
OF SCIENCE, GULBARGA

\* Certificate courses:  
Mathematical software( Maxima and Scilab)



# SHARNBASVESHWAR COLLEGE OF SCIENCE, KALABURAGI

## Application Form (To be filled by the Candidate)



Application.no:

Date:

Application for the .....Certificate Course

1. Name of the Candidate (as enrolled in the SSLC records in block letters)  
..AKSHATA.....
2. Father's Name: ..ASHOK - KUMAR BHALKIKAR.....
3. Caste & Category ..III B.....
4. Date of Birth: ..15/08/2000.....
5. Sex: Male/Female: ..Female.....
6. Percentage of SSLC & PUC Examination : 87.04 & 67.33
7. Present Academic status: Marks obtained in Mathematics  
Isem: 77 .. IIsem: 69 .. IIIsem: <sup>with</sup> held: .. IVsem: ..... Vsem: .....  
VIsem: .....
8. University Reg.No.: 91947414 ..... Roll No.: 07.....
9. Combination : ..PCM.....
10. Address of the candidate with Pin code (in block letters)  
..Humnabad (Near Sai baba temple).....  
..Dist -> Bidar.....  
..PIN code -> 585330.....

11. Mobile No.: 9632845609

E - mail address: akshatabhalkikal22@gmail.com

Candidate's Signature

Father/Mother/Guardian Signature

Hod & Coordinator  
1) Dr.T.V.Biradar  
2) Sri.Manjunath S.Kore

Principal  
Dr.S.G.Dollegoudru  
PRINCIPAL  
SHARNBASVESHWAR COLLEGE  
OF SCIENCE, GULBARGA

\* Certificate courses:  
Mathematical software( Maxima and Scilab)



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# SHARNBASVESHWAR COLLEGE OF SCIENCE, KALABURAGI

Application Form  
(To be filled by the Candidate)



Application.no:

Date:

*[Handwritten signature]*

Application for the .....Certificate Course

1. Name of the Candidate (as enrolled in the SSLC records in block letters)  
.. ASHWINI .....
2. Father's Name: NAGENDRA .....
3. Caste & Category III B .....
4. Date of Birth: 18/12/2000 .....
5. Sex: Male/Female: Female .....
6. Percentage of SSLC & PUC Examination : 57.44% & 62%
7. Present Academic status: Marks obtained in Mathematics  
Isem:.....52..... IIsem: 35..... IIIsem: 17..... IVsem:..... Vsem:.....  
VIsem:.....
8. University Reg.No.: 91949726 ..... Roll No: 19 .....
9. Combination : PCM .....
10. Address of the candidate with Pin code (in block letters)  
"Mahalaxmi Nivas" Aland Road Vijay Nagar Colony Kalaburagi.  
.....  
.....
11. Mobile No: 7676712121 ..... E - mail address: devangaonashwinii@gmail.com

*Ashwini*

Candidate's Signature

*[Handwritten signature]*

Hod & Coordinator

- 1) Dr.T.V.Biradar
- 2) Sri.Manjunath S.Kore

*Nd*

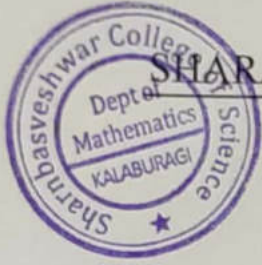
Father/Mother/Guardian Signature

*[Handwritten signature]*

Principal

Dr.S.G.Dollegoudru  
**PRINCIPAL**  
**SHARNBASVESHWAR COLLEGE**  
**OF SCIENCE, GULBARGA**

\* Certificate courses:  
Mathematical software( Maxima and Scilab)



# SHARNBASVESHWAR COLLEGE OF SCIENCE, KALABURAGI



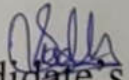
## Application Form (To be filled by the Candidate)

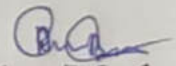
Application.no: .....

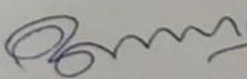
Date: .....

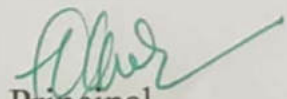
Application for the .....Certificate Course

1. Name of the Candidate (as enrolled in the SSLC records in block letters)  
.....SUDHARANI.....
2. Father's Name: ..PARMESHWAR.....
3. Caste & Category ..REDDY ~~IA~~ 3A.....
4. Date of Birth: ....01-05-2001.....
5. Sex: Male/Female: ....FEMALE.....
6. Percentage of SSLC & PUC Examination : 91.52% , 89.33%
7. Present Academic status: Marks obtained in Mathematics  
Isem: ...85..... Isem: 92.....IIIsem: 84.....IVsem:.....Vsem:.....  
VIsem:.....
8. University Reg.No.: 91950031..... Roll No: ...112.....
9. Combination : ..PCM.....
10. Address of the candidate with Pin code (in block letters)  
.....PANDERGERA TQ. BASAVAKALYAN DIST. BIDAR.....  
.....585327.....
11. Mobile No: 6362007290..... E - mail address: sudhareddy849@gmail.com

  
Candidate's Signature

  
Father/Mother/Guardian Signature

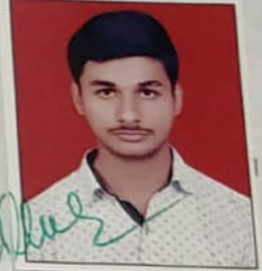
  
Hod & Coordinator  
1) Dr.T.V.Biradar  
2) Sri.Manjunath S.Kore

  
Principal  
Dr.S.G.Dollegoudru  
PRINCIPAL  
SHARNBASVESHWAR COLLEGE  
OF SCIENCE, GULBARGA

\* Certificate courses:  
Mathematical software( Maxima and Scilab)



Application Form  
(To be filled by the Candidate)



Application.no:

Date:

Application for the ..... Certificate Course

- Name of the Candidate (as enrolled in the SSLC records in block letters)  
..... MANJUNATH .....
- Father's Name: ... KASHINATH HARKE .....
- Caste & Category ... II(A) .....
- Date of Birth: ..... 20-03-2000 .....
- Sex: Male/Female: ... Male .....
- Percentage of SSLC & PUC Examination : 95.21 & 75.16%
- Present Academic status: Marks obtained in Mathematics  
Isem:.....118..... IIsem:.....130..... IIIsem:.....112..... IVsem:..... Vsem:.....  
VIsem:.....
- University Reg.No.: 91999764 ..... Roll No.: 53 .....
- Combination : PCM .....
- Address of the candidate with Pin code (in block letters)  
OGS. AT POST HIROLLI . TQ. ALAND. DT. KALABURAGI  
.....  
.....
- Mobile No: 7259527204 ..... E - mail address: harkemarye014@gmail.com

Manju  
Candidate's Signature

Harkemarye  
Father/Mother/Guardian Signature

Dr. T.V. Biradar  
Hod & Coordinator  
1) Dr.T.V.Biradar  
2) Sri.Manjunath S.Kore

Dr. S.G. Dollegoudru  
Principal  
Dr.S.G.Dollegoudru  
PRINCIPAL  
SHARNBASVESHWAR COLLEGE  
OF SCIENCE, GULBARGA

\* Certificate courses:  
Mathematical software( Maxima and Scilab)



SHARNBASVESHWAR COLLEGE OF SCIENCE, KALABURAGI

Application Form  
(To be filled by the Candidate)



Application.no: \_\_\_\_\_

Date: \_\_\_\_\_

Application for the ..... Certificate

1. Name of the Candidate (as enrolled in the SSLC records in block letters)  
..... CHANNAMMA ULLAS .....
2. Father's Name: ..... ULLAS .....
3. Caste & Category ..... III B .....
4. Date of Birth: ..... 15/07/2000 .....
5. Sex: Male/Female: ..... FEMALE .....
6. Percentage of SSLC & PUC Examination : 86.41 and 82.16.
7. Present Academic status: Marks obtained in Mathematics  
Isem: 85+50.. IIsem: 88+50.IIIsem: 84+49.IVsem:..... Vsem:.....  
VIsem:.....
8. University Reg.No.: 99949998..... Roll No:.....
9. Combination : ... PMCS .....
10. Address of the candidate with Pin code (in block letters)  
..... A/P:- KALBURGI .....
- ..... P.C: 585103 .....
- .....
11. Mobile No: 8431372936 E - mail address: channamma.khayisa@gmail.com

Candidate's Signature

Father/Mother/Guardian Signature

Hod &amp; Coordinator

- 1) Dr.T.V.Biradar
- 2) Sri.Manjunath S.Kore

Principal

Dr.S.G.Dollegoudru  
PRINCIPALSHARNBASVESHWAR COLLEGE  
OF SCIENCE, GULBARGA

\* Certificate courses:

Mathematical software( Maxima and Scilab)



# SHARNBASVESHWAR COLLEGE OF SCIENCE, KALABURAGI

## Application Form (To be filled by the Candidate)

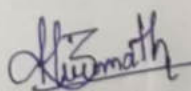


Application.no: \_\_\_\_\_

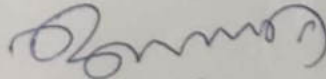
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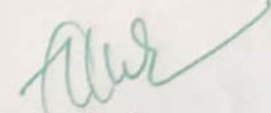
Application for the ..... Certificate

1. Name of the Candidate (as enrolled in the SSLC records in block letters)  
..... BRUNDA HIEMATH .....
2. Father's Name: VEERAYYA HIEMATH .....
3. Caste & Category OBC III B .....
4. Date of Birth: 29/03/2000 .....
5. Sex: Male/Female: FEMALE .....
6. Percentage of SSLC & PUC Examination : 86.24% & 77.83%
7. Present Academic status: Marks obtained in Mathematics  
Isem: 13.1 ... IIsem: 12.7 ... IIIsem: 11.2 ... IVsem: - ... Vsem: - ...  
VIsem: - .....
8. University Reg.No.: 91949730 ..... Roll No.: 24 .....
9. Combination : PCM .....
10. Address of the candidate with Pin code (in block letters)  
H.No: 2-104 "GURU BHAVAN" OPP VELLAMMA TEMPLE .....  
SHAHABAD ROAD RAJAPUR, KALABURAGI, - 585-105, .....
11. Mobile No: 8951907792 E - mail address: brunda.h03@gmail.com

  
Candidate's Signature

  
Father/Mother/Guardian Signature

  
Hod & Coordinator  
1) Dr.T.V.Biradar  
2) Sri.Manjunath S.Kore

  
Principal  
Dr.S.G.Dollegoudru  
PRINCIPAL  
SHARNBASVESHWAR COLLEGE  
OF SCIENCE, GULBARGA

\* Certificate courses:  
Mathematical software( Maxima and Scilab)



SHARNBASVESHWAR COLLEGE OF SCIENCE, KALABURAGI

Application Form  
(To be filled by the Candidate)



Application.no:

Date:

Application for the .....Certificate Course

1. Name of the Candidate (as enrolled in the SSLC records in block letters)

.....AKSHATA KATTI.....

2. Father's Name: ...BASAVARAJ.....

3. Caste & Category .....III.B.....

4. Date of Birth: ....06.10.71/2000.....

5. Sex: Male/Female: ..FEMALE.....

6. Percentage of SSLC & PUC Examination : 89.12% AND 66.6%

7. Present Academic status: Marks obtained in Mathematics

Isem: 83+49... IIsem: 72+45... IIIsem:..... IVsem:..... Vsem:.....

VIsem:.....

8. University Reg.No.:...91949716..... Roll No:....07.....

9. Combination :...P.C.M.....

10. Address of the candidate with Pin code (in block letters)

.....Near Govt. hospital Alt: Kadani.....

.....T.O: SINDAGI.....

.....DIST: VIJAJAPUR..... Pin code: 586209.....

11. Mobile No:..9663211670..

E - mail address:..akatti096@gmail.com

Candidate's Signature

Hod & Coordinator

- 1) Dr.T.V.Biradar
2) Sri.Manjunath S.Kore

Father/Mother/Guardian Signature

J. B. Katti
Principal
Dr.S.G.Dollegoudru
PRINCIPAL
SHARNBASVESHWAR COLLEGE OF SCIENCE, GULBARGA

\* Certificate courses:
Mathematical software( Maxima and Scilab)





SHARNBASVESHWAR COLLEGE OF SCIENCE, KALABURAGI

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Application Form  
(To be filled by the Candidate)



Application.no:

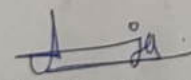
Date:


Application for the .....Certificate Course

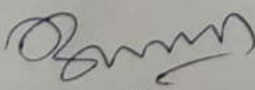
- Name of the Candidate (as enrolled in the SSLC records in block letters)  
..... ANVITA KARMUSHE .....
- Father's Name: ..... ANIL .....
- Caste & Category ..... IIA .....
- Date of Birth: ..... 27.10.2000 .....
- Sex: Male/Female: ..... FEMALE .....
- Percentage of SSLC & PUC Examination : 83.5% And 62.5%
- Present Academic status: Marks obtained in Mathematics  
Isem: 52.47 IIsem: 55.41 IIIsem: 65.43 IVsem: ..... Vsem: .....
- VIsem: .....
- University Reg.No.: 91949845 ..... Roll No: 166 .....
- Combination : PMCS .....
- Address of the candidate with Pin code (in block letters)  
..... NOORANDESHWARA COLONY .....
- ..... A.P: MORATAGI ..... DI: VIJAYAPURA .....
- ..... TQ: SINDAGI ..... PIN C: 586223 .....


11. Mobile No: 7676407143..

E - mail address: amjannilb2728@gmail.co

  
Candidate's Signature

  
Father/Mother/Guardian Signature

  
Hod & Coordinator  
1) Dr.T.V.Biradar  
2) Sri.Manjunath S.Kore

  
Principal  
Dr.S.G.Dollegoudru  
PRINCIPAL  
SHARNBASVESHWAR COLLEGE  
OF SCIENCE, GULBARGA...

\* Certificate courses:  
Mathematical software( Maxima and Scilab)



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# SHARNBASVESHVAR COLLEGE OF SCIENCE, KALABURAGI

Application Form  
(To be filled by the Candidate)



Application.no:

Date:

Application for the .....Certificate

1. Name of the Candidate (as enrolled in the SSLC records in block letters)  
..... SUREKHA SHARANAPPA .....
2. Father's Name: ..... SHARANAPPA .....
3. Caste & Category ..... SC .....
4. Date of Birth: ..... 31/12/1999 .....
5. Sex: Male/Female: ..... FEMALE .....
6. Percentage of SSLC & PUC Examination : 63.04% and 47.05%
7. Present Academic status: Marks obtained in Mathematics  
Isem: 62+49.. IIsem: 88+39.. IIIsem: 58+41.. IVsem: ..... Vsem: .....  
VIsem: .....
8. University Reg.No.: 91949895 ..... Roll No: 227 .....
9. Combination : PMCS .....
10. Address of the candidate with Pin code (in block letters)  
..... K.E.B. COLONY, CHANDAPUR .....
- ..... A.P: CHANDAPUR ..... DI: KALBURGI .....
- ..... TO: CHINCHOLI .....

11. Mobile No: 6364170270...

E - mail address: surekha.chandapur@gmail.com

Surekha  
Candidate's Signature

B...  
Father/Mother/Guardian Signature

[Signature]  
Hod & Coordinator  
1) Dr.T.V.Biradar  
2) Sri.Manjunath S.Kore

[Signature]  
Principal  
Dr.S.G.Dollegoudru  
PRINCIPAL  
SHARNBASVESHVAR COLLEGE  
OF SCIENCE, GULBARGA

\* Certificate courses:  
Mathematical software( Maxima and Scilab)



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# SHARNBASVESHWAR COLLEGE OF SCIENCE, KALABURAGI

Application Form  
(To be filled by the Candidate)



Application.no: \_\_\_\_\_

Date: \_\_\_\_\_

Application for the ..... Certificate Course

1. Name of the Candidate (as enrolled in the SSLC records in block letters)

..... Channamma Patil .....

2. Father's Name: Sharanappa Patil .....

3. Caste & Category .... OBC III B .....

4. Date of Birth: 16/04/2001 .....

5. Sex: Male/Female: .....

6. Percentage of SSLC & PUC Examination : 78% · PU- 62%

7. Present Academic status: Marks obtained in Mathematics  
Isem: 75% · IIsem: 65% · IIIsem: 72 · IVsem: 72 · Vsem: .....

VIsem: .....

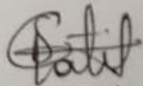
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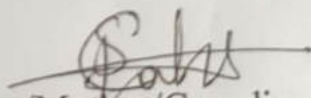
9. Combination : PCM .....

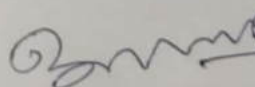
10. Address of the candidate with Pin code (in block letters)  
..... AT: post Ambalag Dist: Gulbarga Tq: Kamalapur .....

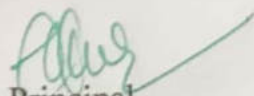
11. Mobile No.: 9900731082 .....

E - mail address: .....

  
Candidate's Signature

  
Father/Mother/Guardian Signature

  
Hod & Coordinator  
1) Dr.T.V.Biradar  
2) Sri.Manjunath S.Kore

  
Principal  
Dr.S.G.Dollegoudru  
PRINCIPAL  
SHARNBASVESHWAR COLLEGE  
OF SCIENCE, GULBARGA

\* Certificate courses:  
Mathematical software( Maxima and Scilab)



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SHARNBASVESHWAR COLLEGE OF SCIENCE, KALABURAGI



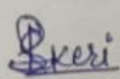
Application Form  
(To be filled by the Candidate)

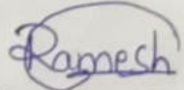
Application.no: \_\_\_\_\_ Date: \_\_\_\_\_

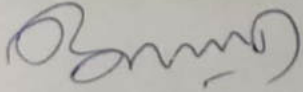
Application for the .....Certificate Course

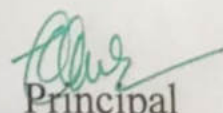
- Name of the Candidate (as enrolled in the SSLC records in block letters)  
.....SHREELAXMI.....
- Father's Name: .....RAMESH SHANKARKERT.....
- Caste & Category .....SC.....
- Date of Birth: .....15.10.2000.....
- Sex: Male/Female: .....FEMALE.....
- Percentage of SSLC & PUC Examination : 84.16% & 77.33%
- Present Academic status: Marks obtained in Mathematics  
Isem:....72.... IIsem:..79...IIIsem:..83....IVsem:..... Vsem:.....  
VIsem:.....
- University Reg.No.: 91949996..... Roll No:..98.....
- Combination :...PCM.....
- Address of the candidate with Pin code (in block letters)  
.....RAMJI NAGAR ROZA (K) KALABURAGI.....  
.....585104.....

11. Mobile No:..7625054488 E - mail address:shreelaxmi181@gmail.com

  
Candidate's Signature

  
Father/Mother/Guardian Signature

  
Hod & Coordinator  
1) Dr.T.V.Biradar  
2) Sri.Manjunath S.Kore

  
Principal  
Dr.S.G.Dollegoudru  
PRINCIPAL  
SHARNBASVESHWAR COLLEGE  
OF SCIENCE, GULBARGA

\* Certificate courses:  
Mathematical software( Maxima and Scilab)



SHARNBASVESHWAR COLLEGE OF SCIENCE, KALABURAGI

Application Form  
(To be filled by the Candidate)



Application.no:

Date:

Application for the ..... Certificate Course

1. Name of the Candidate (as enrolled in the SSLC records in block letters)

DEVARAJ

2. Father's Name: KALLAPPA BIRADAR

3. Caste & Category HINDU GANIGA 2A

4. Date of Birth: 01-07-2000

5. Sex: Male/Female: Male

6. Percentage of SSLC & PUC Examination : 89.76 & 73

7. Present Academic status: Marks obtained in Mathematics

Isem: ~~64.56~~ 129 IIsem: ~~65.6~~ 140 IIIsem: ~~72~~ 128 IVsem: ..... Vsem: .....

VIsem: .....

8. University Reg.No.: 91949738 Roll No.: 032

9. Combination : PCM

10. Address of the candidate with Pin code (in block letters)

AF POST WASTARI TB. JEWARGI DIST KALABURAGI

PIN: 585103

11. Mobile No: 9902561163

E - mail address: devarajbiradar696@gmail.com

Devaraj  
Candidate's Signature

Father/Mother/Guardian Signature

Hod & Coordinator  
1) Dr.T.V.Biradar  
2) Sri.Manjunath S.Kore

Principal  
Dr.S.G.Dollegoudru  
PRINCIPAL  
SHARNBASVESHWAR COLLEGE  
OF SCIENCE, GULBARGA

\* Certificate courses:  
Mathematical software( Maxima and Scilab)



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SHARNBASVESHWAR COLLEGE OF SCIENCE, KALABURAGI

Application Form  
(To be filled by the Candidate)



Application.no:

Date:

Application for the .....Certificate Course

1. Name of the Candidate (as enrolled in the SSLC records in block letters)

RAHUL

2. Father's Name: .....SOMANNA

3. Caste & Category .....MALAYAR

4. Date of Birth: .....4-08-2000

5. Sex: Male/Female: .....Male

6. Percentage of SSLC & PUC Examination : 88% & 73%

7. Present Academic status: Marks obtained in Mathematics

Isem: 90 Isem: 130 IIIsem: 145 IVsem: ..... Vsem: .....

VIsem: .....

8. University Reg.No.: 91949872 ..... Roll No: 206

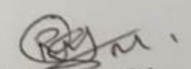
9. Combination : PMCS

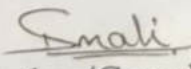
10. Address of the candidate with Pin code (in block letters)

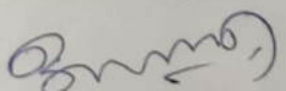
Plot no 20 New jewargi Road Ganesh Nagar  
opp KEB kalyan mantapa Gulbarga  
Kalaburagi Karnataka - 585102


11. Mobile No: 7996332419

E - mail address: rahulsmali9890@gmail.com

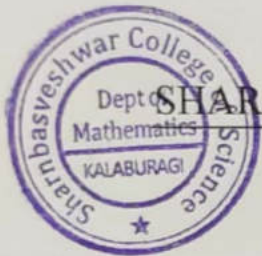
  
Candidate's Signature

  
Father/Mother/Guardian Signature

  
Hod & Coordinator  
1) Dr.T.V.Biradar  
2) Sri.Manjunath S.Kore

  
Principal  
Dr.S.G.Dollegoudru  
PRINCIPAL  
SHARNBASVESHWAR COLLEGE  
OF SCIENCE, GULBARGA

\* Certificate courses:  
Mathematical software( Maxima and Scilab)



SHARNBASVESHWAR COLLEGE OF SCIENCE, KALABURAGI

Application Form  
(To be filled by the Candidate)



Application.no:

Date:

Application for the .....Certificate Course

1. Name of the Candidate (as enrolled in the SSLC records in block letters)  
LAXMI
2. Father's Name: JEEVAN
3. Caste & Category UB
4. Date of Birth: 10/10/2000
5. Sex: Male/Female: Female
6. Percentage of SSLC & PUC Examination : 93.92% and 80%
7. Present Academic status: Marks obtained in Mathematics  
Isem: 83..... IIsem: 96...IIIsem: 79.....IVsem:..... Vsem:.....  
VIsem:.....
8. University Reg.No.: 91949759..... Roll No.: 48.....
9. Combination : PCM.....
10. Address of the candidate with Pin code (in block letters)  
AT. POST- CHINCHOLI(B)  
Tq:- ALAND Dist:- GULBARGA  
Pin. Code: 585302
11. Mobile No: 9380360737 E - mail address: mulogelaxmi098@gmail.com

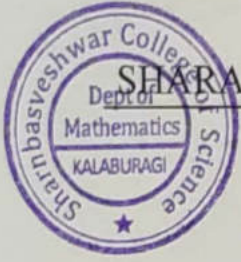
Laxmi  
Candidate's Signature

Mulogela  
Father/Mother/Guardian Signature

[Signature]  
Hod & Coordinator  
1) Dr.T.V.Biradar  
2) Sri.Manjunath S.Kore

[Signature]  
Principal  
Dr.S.G.Dollegoudru  
PRINCIPAL  
SHARNBASVESHWAR COLLEGE  
OF SCIENCE, GULBARGA

\* Certificate courses:  
Mathematical software( Maxima and Scilab)



SHARNBASVESHWAR COLLEGE OF SCIENCE, KALABURAGI

Application Form  
(To be filled by the Candidate)



Application.no:

Date:

Application for the .....Certificate Course

1. Name of the Candidate (as enrolled in the SSLC records in block letters)

BHAGYASHREE

2. Father's Name: SHIVASHARAN KALASHETTY

3. Caste & Category GANIGA & 2A

4. Date of Birth: 26-05-2000

5. Sex: Male/Female: Female

6. Percentage of SSLC & PUC Examination : 64%o

7. Present Academic status: Marks obtained in Mathematics

Isem: 66..... IIsem: 66...IIIsem: 64:9...IVsem:.....Vsem:.....  
VIsem:.....

8. University Reg.No.: 91949729..... Roll No: 22

9. Combination : PCM

10. Address of the candidate with Pin code (in block letters)

PL NO-18 DEVI NAGAR ALAND ROAD  
KALABURAGI - 585101

11. Mobile No: 9036781441

E - mail address: bhagya2652@gmail.com

*Kalashetty*  
Candidate's Signature

Father/Mother/Guardian Signature

Hod & Coordinator

- 1) Dr.T.V.Biradar
- 2) Sri.Manjunath S.Kore

*Dr.S.G.*  
Principal

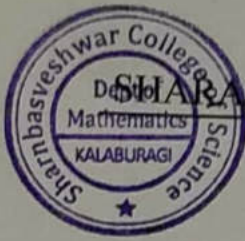
Dr.S.G.Dollegoudru

PRINCIPAL  
SHARNBASVESHWAR COLLEGE  
OF SCIENCE, GULBARGA

\* Certificate courses:

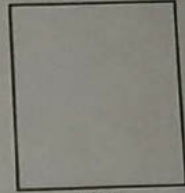
Mathematical software( Maxima and Scilab)





SHARNBASVESHWAR COLLEGE OF SCIENCE, KALABURAGI

Application Form  
(To be filled by the Candidate)



Photo

Application.no:

Date:

Application for the .....Certificate Course

1. Name of the Candidate (as enrolled in the SSLC records in block letters)

.....MAMATA.....

2. Father's Name: MAHJPAL REDDY.....

3. Caste & Category ...REDDY... & ... III - A .....

4. Date of Birth: ...10.08.2000.....

5. Sex: Male/Female: .....Female.....

6. Percentage of SSLC & PUC Examination : 93.92.1. & 77.1.

7. Present Academic status: Marks obtained in Mathematics

Isem: ...75... IIsem: ...73... IIIsem: ...80... IVsem: ..... Vsem: .....

VIsem: .....

8. University Reg.No.: 91949762..... Roll No: ...54.....

9. Combination : P.C.M.....

10. Address of the candidate with Pin code (in block letters)

.....MADEPALLI.....

.....POST: CHANDRIKI.....

.....Tq: Dist: YADAGIRI Pin: 585214.....

11. Mobile No: ...9108413459...

E - mail address: reddy.cm913@gmail.com

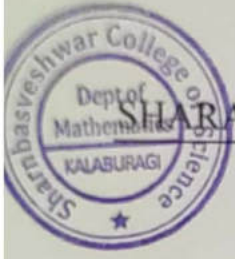
MR Reddy  
Candidate's Signature

[Signature]  
Father/Mother/Guardian Signature

[Signature]  
Hod & Coordinator  
1) Dr.T.V.Biradar  
2) Sri.Manjunath S.Kore

[Signature]  
Principal  
Dr.S.G.Dollegoudru  
PRINCIPAL  
SHARNBASVESHWAR COLLEGE  
OF SCIENCE, GULBARGA

\* Certificate courses:  
Mathematical software( Maxima and Scilab)



# SHARNBASVESHWAR COLLEGE OF SCIENCE, KALABURAGI

Application Form  
(To be filled by the Candidate)



Application.no: \_\_\_\_\_

Date: \_\_\_\_\_

Application for the ..... Certificate Course

- Name of the Candidate (as enrolled in the SSLC records in block letters) ..... P.Y.O.T.3 .....
- Father's Name: ..... CHANDRAKANTH .....
- Caste & Category ..... W.B .....
- Date of Birth: ..... 29-3-2001 .....
- Sex: Male/Female: ..... Female .....
- Percentage of SSLC & PUC Examination : 81% & 64%.
- Present Academic status: Marks obtained in Mathematics  
Isem:.....75..... IIsem:.....80..... IIIsem:.....77..... IVsem:.....77..... Vsem:.....  
VIsem:.....
- University Reg.No:.....91999749..... Roll No:.....40.....
- Combination :.....PCM.....
- Address of the candidate with Pin code (in block letters)  
.....AT Post - Ratnah.....  
.....Tq :- Kalagi.....  
.....Dist :- Kalburgi..... Pin code :- 585102.....

11. Mobile No:.....9108534336.....

E - mail address:.....pyotiboushetti6900@gmail.com.....

Syath  
Candidate's Signature

Chauhan  
Father/Mother/Guardian Signature

[Signature]  
Hod & Coordinator  
1) Dr.T.V.Biradar  
2) Sri.Manjunath S.Kore

[Signature]  
Principal  
Dr.S.G.Dollegoudru  
PRINCIPAL  
SHARNBASVESHWAR COLLEGE  
OF SCIENCE, GULBARGA

\* Certificate courses:  
Mathematical software( Maxima and Scilab)

## SHARANBASVESHWAR COLLEGE OF SCIENCE, KALABURGI

Application Form  
(To be filled by the Candidate)



Application.no:

Date:

Application for the Mathematics .....Certificate Course

1. Name of the Candidate (as enrolled in the SSLC records in block letters)

.....LAXMI.....

2. Father's Name: Jagadish Shelgi.....

3. Caste & Category II B.....

4. Date of Birth: 15/08/2000.....

5. Sex: Male/Female: Female.....

6. Percentage of SSLC & PUC Examination : 75% SSLC 70% PUC

7. Present Academic status: Marks obtained in Mathematics

Isem: 79%..... IIsem: 75%..... IIIsem: 70%..... IVsem:..... Vsem:.....

VIsem:.....

8. University Reg.No.: 91949758..... Roll No: 50.....

9. Combination : PCM.....

10. Address of the candidate with Pin code (in block letters)

.....Ganesh nagar Kalaburgi.....

11. Mobile No: 9632695231

E - mail address:.....

Jishelgi  
Candidate's Signature

[Signature]  
Father/Mother/Guardian Signature

Hod & Coordinator

1) Dr.T.V.Biradar

2) Sri.Manjunath S.Kore

Principal

Dr.S.G.Dollegoudru

\* Certificate courses:

Mathematical software( Maxima and Scilab)

SHARANBASVESHWAR COLLEGE OF SCIENCE, KALABURGI

Application Form  
(To be filled by the Candidate)



Application.no:

Date:

Application for the Mathematics Certificate Course

1. Name of the Candidate (as enrolled in the SSLC records in block letters)

SUGNYNI

2. Father's Name: Vivekanand

3. Caste & Category III B

4. Date of Birth: 20/07/2000

5. Sex: Male/Female: Female

6. Percentage of SSLC & PUC Examination : 71% SSLC 70% PUC

7. Present Academic status: Marks obtained in Mathematics  
Isem: 76 IIsem: 74 IIIsem: 72 IVsem: ..... Vsem: .....

8. University Reg.No.: 91949812 Roll No: 115

9. Combination : PCM

10. Address of the candidate with Pin code (in block letters)

Ganesh nagar kalaburgi 5

11. Mobile No: 9379109555

E - mail address: .....

Candidate's Signature

Father/Mother/Guardian Signature

Hod & Coordinator

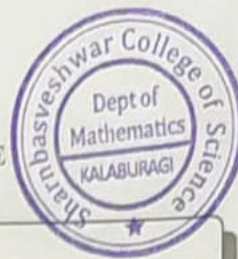
- 1) Dr.T.V.Biradar
- 2) Sri.Manjunath S.Kore

Principal  
Dr.S.G.Dollegoudru

\* Certificate courses:  
Mathematical software( Maxima and Scilab)



Centenary Celebrated Sharnbasveshwar Vidya Vardhak Sangha's  
**SHARNBASVESHWAR COLLEGE OF SCIENCE**  
 Vidya Nagar, Kalaburagi-585103



### Feedback from Teachers about Curriculum

Dear Teachers,

This form is intended to collect information relating to your satisfaction towards the curriculum, teaching, learning, and evaluation. The information provided by you will be kept confidential and will be used as important feedback for quality improvement of the course of studies and the institution.

For each item please indicate your level of agreement with the following statements by selecting appropriate option.

- The course objectives are clear and reflected in a syllabus

<input type="checkbox"/> Strongly Agree	<input checked="" type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
---	---	----------------------------------	-----------------------------------	--

- The Course is well organized (e.g. teaching hours, content flow etc.)

<input type="checkbox"/> Strongly Agree	<input type="checkbox"/> Agree	<input checked="" type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
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- Emphasis on fundamentals, coverage of modern/advanced topics, good balance between theory and application

<input type="checkbox"/> Strongly Agree	<input checked="" type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
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- Course well-structured to achieve the learning outcomes

<input type="checkbox"/> Strongly Agree	<input checked="" type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
---	---	----------------------------------	-----------------------------------	--

- The books/reference materials prescribed are relevant, updated and appropriate

<input checked="" type="checkbox"/> Strongly Agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
--	--------------------------------	----------------------------------	-----------------------------------	--

- The course/syllabus has enabled to update knowledge and perspective in the subject area

<input checked="" type="checkbox"/> Strongly Agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
--	--------------------------------	----------------------------------	-----------------------------------	--

- The course/program of studies carries sufficient number of optional papers

<input checked="" type="checkbox"/> Strongly Agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
--	--------------------------------	----------------------------------	-----------------------------------	--

- Assessments and instructional activities align to the learning and teaching objectives

<input type="checkbox"/> Strongly Agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
---	--------------------------------	----------------------------------	-----------------------------------	--

- Freedom to propose, modifies, suggest and incorporate new topics in the syllabus

<input type="checkbox"/> Strongly Agree	<input checked="" type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
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- Freedom to adopt new techniques/strategies of teaching.

<input checked="" type="checkbox"/> Strongly Agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
--	--------------------------------	----------------------------------	-----------------------------------	--

Name: Bhagyashree S. K

BSc IV sem

*[Signature]*

HEAD

Department of Mathematics  
 Sharnbasveshwar College of Science  
 KALABURAGI

*[Signature]*

PRINCIPAL  
 SHARNBASVESHWAR COLLEGE  
 OF SCIENCE, GULBARGA

*[Signature]*



Centenary Celebrated Sharnbasveshwar Vidya Vardhak Sangha's  
**SHARNBASVESHWAR COLLEGE OF SCIENCE**  
 Vidya Nagar, Kalaburagi-585103



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- The course objectives are clear and reflected in a syllabus

<input checked="" type="checkbox"/>	Strongly Agree	<input type="checkbox"/>	Agree	<input type="checkbox"/>	Neutral	<input type="checkbox"/>	Disagree	<input type="checkbox"/>	Strongly Disagree
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- The Course is well organized (e.g. teaching hours, content flow etc.)

<input type="checkbox"/>	Strongly Agree	<input checked="" type="checkbox"/>	Agree	<input type="checkbox"/>	Neutral	<input type="checkbox"/>	Disagree	<input type="checkbox"/>	Strongly Disagree
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- Emphasis on fundamentals, coverage of modern/advanced topics, good balance between theory and application

<input checked="" type="checkbox"/>	Strongly Agree	<input type="checkbox"/>	Agree	<input type="checkbox"/>	Neutral	<input type="checkbox"/>	Disagree	<input type="checkbox"/>	Strongly Disagree
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- Course well-structured to achieve the learning outcomes

<input checked="" type="checkbox"/>	Strongly Agree	<input type="checkbox"/>	Agree	<input type="checkbox"/>	Neutral	<input type="checkbox"/>	Disagree	<input type="checkbox"/>	Strongly Disagree
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- The books/reference materials prescribed are relevant, updated and appropriate

<input type="checkbox"/>	Strongly Agree	<input checked="" type="checkbox"/>	Agree	<input type="checkbox"/>	Neutral	<input type="checkbox"/>	Disagree	<input type="checkbox"/>	Strongly Disagree
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- The course/syllabus has enabled to update knowledge and perspective in the subject area

<input checked="" type="checkbox"/>	Strongly Agree	<input type="checkbox"/>	Agree	<input type="checkbox"/>	Neutral	<input type="checkbox"/>	Disagree	<input type="checkbox"/>	Strongly Disagree
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- The course/program of studies carries sufficient number of optional papers

<input checked="" type="checkbox"/>	Strongly Agree	<input type="checkbox"/>	Agree	<input type="checkbox"/>	Neutral	<input type="checkbox"/>	Disagree	<input type="checkbox"/>	Strongly Disagree
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- Assessments and instructional activities align to the learning and teaching objectives

<input checked="" type="checkbox"/>	Strongly Agree	<input type="checkbox"/>	Agree	<input type="checkbox"/>	Neutral	<input type="checkbox"/>	Disagree	<input type="checkbox"/>	Strongly Disagree
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- Freedom to propose, modifies, suggest and incorporate new topics in the syllabus

<input type="checkbox"/>	Strongly Agree	<input checked="" type="checkbox"/>	Agree	<input type="checkbox"/>	Neutral	<input type="checkbox"/>	Disagree	<input type="checkbox"/>	Strongly Disagree
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- Freedom to adopt new techniques/strategies of teaching.

<input checked="" type="checkbox"/>	Strongly Agree	<input type="checkbox"/>	Agree	<input type="checkbox"/>	Neutral	<input type="checkbox"/>	Disagree	<input type="checkbox"/>	Strongly Disagree
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Brundha. Hirumath

BSc IV Sem

*Hirumath*

*[Signature]*

HEAD

Department of Mathematics  
 Sharnbasveshwar College of Science  
 KALABURAGI

*[Signature]*

PRINCIPAL

SHARNBASVESHWAR COLLEGE  
 OF SCIENCE, GULBARGA



Centenary Celebrated Sharnbasveshwar Vidya Vardhak Sangha's  
**SHARNBASVESHWAR COLLEGE OF SCIENCE**  
 Vidya Nagar, Kalaburagi-585103



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- The course objectives are clear and reflected in a syllabus

<input type="checkbox"/> Strongly Agree	<input checked="" type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
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- The Course is well organized (e.g. teaching hours, content flow etc.)

<input checked="" type="checkbox"/> Strongly Agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
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- Emphasis on fundamentals, coverage of modern/advanced topics, good balance between theory and application

<input checked="" type="checkbox"/> Strongly Agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
--	--------------------------------	----------------------------------	-----------------------------------	--

- Course well-structured to achieve the learning outcomes

<input checked="" type="checkbox"/> Strongly Agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
--	--------------------------------	----------------------------------	-----------------------------------	--

- The books/reference materials prescribed are relevant, updated and appropriate

<input type="checkbox"/> Strongly Agree	<input checked="" type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
---	---	----------------------------------	-----------------------------------	--

- The course/syllabus has enabled to update knowledge and perspective in the subject area

<input checked="" type="checkbox"/> Strongly Agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
--	--------------------------------	----------------------------------	-----------------------------------	--

- The course/program of studies carries sufficient number of optional papers

<input checked="" type="checkbox"/> Strongly Agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
--	--------------------------------	----------------------------------	-----------------------------------	--

- Assessments and instructional activities align to the learning and teaching objectives

<input checked="" type="checkbox"/> Strongly Agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
--	--------------------------------	----------------------------------	-----------------------------------	--

- Freedom to propose, modifies, suggest and incorporate new topics in the syllabus

<input checked="" type="checkbox"/> Strongly Agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
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- Freedom to adopt new techniques/strategies of teaching.

<input type="checkbox"/> Strongly Agree	<input checked="" type="checkbox"/> Agree	<input type="checkbox"/> Neutral	<input type="checkbox"/> Disagree	<input type="checkbox"/> Strongly Disagree
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Dugnyani, V, B

BSc IV<sup>th</sup> sem

HEAD

Department of Mathematics  
 Sharnbasveshwar College of Science  
 KALABURAGI

PRINCIPAL  
 SHARNBASVESHWAR COLLEGE  
 OF SCIENCE, GULBARGA



Centenary Celebrated Sharnbasveshwar Vidya Vardhak Sangha's  
**SHARNBASVESHWAR COLLEGE OF SCIENCE**  
 Vidya Nagar, Kalaburagi-585103



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<input type="checkbox"/>	Strongly Agree	<input checked="" type="checkbox"/>	Agree	<input type="checkbox"/>	Neutral	<input type="checkbox"/>	Disagree	<input type="checkbox"/>	Strongly Disagree
--------------------------	----------------	-------------------------------------	-------	--------------------------	---------	--------------------------	----------	--------------------------	-------------------

- The Course is well organized (e.g. teaching hours, content flow etc.)

<input checked="" type="checkbox"/>	Strongly Agree	<input type="checkbox"/>	Agree	<input type="checkbox"/>	Neutral	<input type="checkbox"/>	Disagree	<input type="checkbox"/>	Strongly Disagree
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- Emphasis on fundamentals, coverage of modern/advanced topics, good balance between theory and application

<input checked="" type="checkbox"/>	Strongly Agree	<input type="checkbox"/>	Agree	<input type="checkbox"/>	Neutral	<input type="checkbox"/>	Disagree	<input type="checkbox"/>	Strongly Disagree
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- Course well-structured to achieve the learning outcomes

<input checked="" type="checkbox"/>	Strongly Agree	<input type="checkbox"/>	Agree	<input type="checkbox"/>	Neutral	<input type="checkbox"/>	Disagree	<input type="checkbox"/>	Strongly Disagree
-------------------------------------	----------------	--------------------------	-------	--------------------------	---------	--------------------------	----------	--------------------------	-------------------

- The books/reference materials prescribed are relevant, updated and appropriate

<input type="checkbox"/>	Strongly Agree	<input checked="" type="checkbox"/>	Agree	<input type="checkbox"/>	Neutral	<input type="checkbox"/>	Disagree	<input type="checkbox"/>	Strongly Disagree
--------------------------	----------------	-------------------------------------	-------	--------------------------	---------	--------------------------	----------	--------------------------	-------------------

- The course/syllabus has enabled to update knowledge and perspective in the subject area

<input checked="" type="checkbox"/>	Strongly Agree	<input type="checkbox"/>	Agree	<input type="checkbox"/>	Neutral	<input type="checkbox"/>	Disagree	<input type="checkbox"/>	Strongly Disagree
-------------------------------------	----------------	--------------------------	-------	--------------------------	---------	--------------------------	----------	--------------------------	-------------------

- The course/program of studies carries sufficient number of optional papers

<input checked="" type="checkbox"/>	Strongly Agree	<input type="checkbox"/>	Agree	<input type="checkbox"/>	Neutral	<input type="checkbox"/>	Disagree	<input type="checkbox"/>	Strongly Disagree
-------------------------------------	----------------	--------------------------	-------	--------------------------	---------	--------------------------	----------	--------------------------	-------------------

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<input checked="" type="checkbox"/>	Strongly Agree	<input type="checkbox"/>	Agree	<input type="checkbox"/>	Neutral	<input type="checkbox"/>	Disagree	<input type="checkbox"/>	Strongly Disagree
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<input type="checkbox"/>	Strongly Agree	<input checked="" type="checkbox"/>	Agree	<input type="checkbox"/>	Neutral	<input type="checkbox"/>	Disagree	<input type="checkbox"/>	Strongly Disagree
--------------------------	----------------	-------------------------------------	-------	--------------------------	---------	--------------------------	----------	--------------------------	-------------------

- Freedom to adopt new techniques/strategies of teaching.

<input type="checkbox"/>	Strongly Agree	<input checked="" type="checkbox"/>	Agree	<input type="checkbox"/>	Neutral	<input type="checkbox"/>	Disagree	<input type="checkbox"/>	Strongly Disagree
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Laxmi, J. S

B.Sc IV<sup>th</sup> Sem

*[Signature]*

*[Signature]*

HEAD

Department of Mathematics

Sharnbasveshwar College of Science  
 KALABURAGI

*[Signature]*

PRINCIPAL

SHARNBASVESHWAR COLLEGE  
 OF SCIENCE, GULBARGA



**Sharanbasveshwar College of Science, Kalaburagi**

**Department of Mathematics**

**Certificate Course Internal Assessment**

**Course Code: SBMAT02**

**D) Answer any two of the following**

1. Create the matrix  $A = \begin{bmatrix} 1 & 2 & 3 & 4 \\ 0 & 3 & 5 & 7 \\ 2 & 0 & 1 & 4 \\ 3 & 2 & 0 & 5 \end{bmatrix}$  and the identity matrix

$$I = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

i) Show that  $AI = IA = A$ .

ii) Evaluate  $A^3 - 4A^2 + 2A - 3I$ .

2. Create the matrix  $A = \begin{bmatrix} -2 & 4 & 4 \\ 4 & -2 & 4 \\ 4 & 4 & -2 \end{bmatrix}$  Show that  $\frac{1}{6} A$  is orthogonal matrix.

3. Create the matrix  $A = \begin{bmatrix} 7 & 4 & -1 \\ 4 & 7 & -1 \\ -4 & -4 & 4 \end{bmatrix}$  Find the inverse of A using Cayley-

Hamilton Theorem.

**HEAD**

Department of Mathematics  
Sharanbasveshwar College of Science  
KALABURAGI



# Sharanbasveshwar College of Science, Kalaburagi

DEPARTMENT OF MATHEMATICS

Certificate Course External Examination

Course Name: Concepts of Maxima and Sci-I

Duration: 3hours

Max Marks: 80

## I. Answer the following Question

1. By using the Maxima command compute the following. (10)

i.  $56+1238$

ii.  $135+1835$

iii.  $9^3$

iv.  $123^{18}$

v.  $5332-813$

2. By using the Maxima command compute the following operation (10)

Of matrices & Give regions

$$A = \begin{bmatrix} 3 & 5 & 2 \\ 2 & 1 & 8 \end{bmatrix} B = \begin{bmatrix} 2 & 8 & 7 \\ 3 & 4 & 9 \end{bmatrix} \text{ Compute}$$

i.  $A+B$

ii.  $A-B$

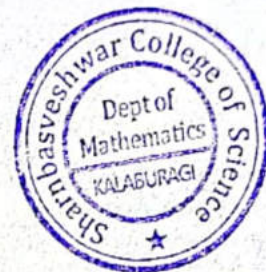
iii.  $A.B$

iv.  $2A+3B$

iv.  $5A-8B$

3. Create the matrix and calculate  $A^2$ ,  $A^3$  and  $2B+3A$  (10)

$$A = \begin{bmatrix} 4 & 8 & 6 \\ 3 & 6 & 1 \\ 8 & 1 & 5 \end{bmatrix}, B = \begin{bmatrix} 2 & 4 & 6 \\ 3 & 5 & 1 \\ 4 & 7 & 2 \end{bmatrix}$$



4. Enter the matrix  $A = \begin{bmatrix} 3 & 1 & 2 \\ 1 & 3 & 5 \\ 2 & 4 & 1 \end{bmatrix}$ ,  $B = \begin{bmatrix} 2 & 5 & 1 \\ 1 & 3 & 5 \\ 2 & 4 & 3 \end{bmatrix}$ ,  $C = \begin{bmatrix} 1 & 0 & 1 \\ 0 & 2 & 1 \\ 3 & 1 & 0 \end{bmatrix}$  Show that

i.  $AC + BC = (A+B).C$

ii.  $AB - AC = A(B-C)$

5. Enter the matrix  $A = \begin{bmatrix} 1 & 5 & 3 \\ -2 & 3 & 6 \\ 7 & -1 & 1 \end{bmatrix}$  Find  $A'$ ,  $A+A'$ , and trace of  $A$ . Also show that  $A+A'$  is symmetric and  $A-A'$  is skew-symmetric.

6. Create the matrix  $A = \begin{bmatrix} 2 & 1 & 3 \\ 4 & 1 & 2 \\ 6 & 2 & 5 \end{bmatrix}$  Find the inverse of  $A$  using Coyle-Hamilton theorem

7. To trace the sphere  $x^2 + y^2 + z^2 = a^2$  with  $a=5$ .

8. To trace the curve asteroid  $x^{2/3} + y^{2/3} + z^{2/3} = a^{2/3}$  with  $a=4$ .

9. To find the order of each elements of an additive group of integer modulo 4  
 $Z_4 = \{0, 1, 2, 3\}$

10. Find the value of  $\lambda$  for which the system equation

$$x + 3y + 2z = 0;$$

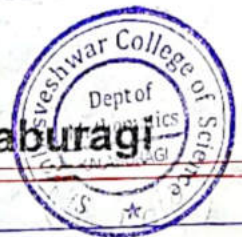
$$x + \lambda y + 3z = 0;$$

$$x + 5y + 4z = 0$$

HEAD

Department of Mathematics  
Shri Basveshwar College of Science  
KALABURAGI

# Sharnbasveshwar College of Science, Kalaburagi



## INTERNAL ASSESSMENT TEST I / II

Class B.Sc. Semester IV Sem Subject Mathematics

Date: ..... Time: .....

College Roll No. 24

University Register No. 91949730

Sign. of the Supervisor With Date. Prateek

HEAD

Department of Mathematics

Sharnbasveshwar College of Science

KALABURAGI

IA: Mathematics - 2019-20

Code: SBMAT02

Max Marks: 20 M

Q1) Create the matrix  $A = \begin{bmatrix} 1 & 2 & 3 & 4 \\ 0 & 3 & 5 & 7 \\ 2 & 0 & 1 & 4 \\ 3 & 2 & 0 & 5 \end{bmatrix}$  and the

identity matrix  $I = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$

i) Show that  $AI = IA = A$   
 ii) Evaluate  $A^3 - 4A^2 + 2A - 3I$

Maxima Program:

```
(%i1) kill(all)$
/* Enter the Matrix A */
A:matrix([1, 2, 3, 4],[0, 3, 5, 7],[2, 0, 1, 4],[3, 2, 0, 5])
```

(A)  $\begin{bmatrix} 1 & 2 & 3 & 4 \\ 0 & 3 & 5 & 7 \\ 2 & 0 & 1 & 4 \\ 3 & 2 & 0 & 5 \end{bmatrix}$

```
(%i2) I:ident(4)
```

(I)  $\begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$

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(%i3) A.I;

(%o3)	1	2	3	4
	0	3	5	7
	2	0	1	4
	3	2	0	5

(%i4) I.A;

(%o4)	1	2	3	4
	0	3	5	7
	2	0	1	4
	3	2	0	5

(%i5) A<sup>2</sup>;

(%o5)	19	16	16	50
	31	23	20	76
	16	12	7	32
	18	22	19	51

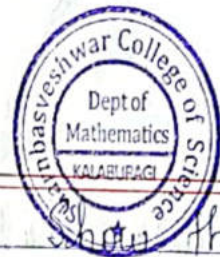
(%i6) A<sup>3</sup>;

5 \* A + I

(%o6)	201	186	153	502
	299	283	228	745
	126	132	115	336
	209	204	183	557

(%i7) A<sup>3</sup> - 4 \* (A<sup>2</sup>) + 2 \* A - 3 \* I;

(%o7)	124	126	95	310
	175	194	158	455
	66	84	86	216
	143	120	107	360



Q2) Create the matrix  $\begin{bmatrix} -2 & 4 & 4 \\ 4 & -2 & 4 \\ 4 & 4 & -2 \end{bmatrix}$ . Show that

$\frac{1}{6}A$  is orthogonal matrix.

Maxima Program

```
(%i1) kill(all)$  
/* Enter the Matrix A */  
A: matrix([-2, 4, 4], [4, -2, 4], [4, 4, -2]);
```

$$(A) \begin{bmatrix} -2 & 4 & 4 \\ 4 & -2 & 4 \\ 4 & 4 & -2 \end{bmatrix}$$

```
(%i2) B: (1/6)*A;
```

$$(B) \begin{bmatrix} -1/3 & 2/3 & 2/3 \\ 2/3 & -1/3 & 2/3 \\ 2/3 & 2/3 & -1/3 \end{bmatrix}$$

```
(%i3) Bt: transpose(B);
```

$$(Bt) \begin{bmatrix} -1/3 & 2/3 & 2/3 \\ 2/3 & -1/3 & 2/3 \\ 2/3 & 2/3 & -1/3 \end{bmatrix}$$

```
(%i4) P: B.Bt
```

$$(P) \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

```
(%i5) /* Observe that (B.Bt) is identity matrix. Thus B = A/6 is orthogonal. */  
TRACE: mat_trace(A);
```

$$(TRACE) -6$$

Q3) Create the matrix  $\begin{bmatrix} 7 & 4 & -1 \\ 4 & 7 & -1 \\ -4 & 4 & 4 \end{bmatrix}$ . Find the inverse of A using Cayley-Hamilton Theorem.

Maxima Program.

```
(%i1) kill(all);
/* Enter the matrix A */
A: matrix ([7, 4, -1], [4, 7, -1], [-4, -4, 4]);
```

$$(A) \begin{bmatrix} 7 & 4 & -1 \\ 4 & 7 & -1 \\ -4 & -4 & 4 \end{bmatrix}$$

```
(%i2) I: ident(3);
```

$$(I) \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

```
(%i3) Chpoly: expand (charpoly (A, lambda));
```

$$(Chpoly) -\lambda^3 + 18\lambda^2 - 81\lambda + 108$$

```
(%i4) subst (A, lambda, Chpoly);
```

$$(%o4) -A^3 + 18A^2 - 81A + 108$$

/\* Equating it to Zero we can write \*/

```
(%i5) Inv1: (1/108) * (A^2 - 18 * A + 81 * I);
```

$$(Inv1) \begin{bmatrix} 2/9 & -1/9 & 1/36 \\ -1/9 & 2/9 & 1/36 \\ 1/9 & 1/9 & 1/36 \end{bmatrix}$$



INTERNAL ASSESSMENT TEST I / II

Class..... Semester..... Subject.....

Date..... Time.....

College Roll No..... University Register No.....

Sign. of the Supervisor With Date.....

\* To find the Inverse of A directly, we can use the following command \*/

(%i6) Inv2:invert(A);

$$(Inv2) \begin{bmatrix} 2/9 & -1/9 & 1/36 \\ -1/9 & 2/9 & 1/36 \\ 1/9 & 1/9 & 1/36 \end{bmatrix}$$

\* Observe that Inv1 and Inv2 are same \*/





20/20 Sem

# Sharnbasveshwar College of Science, Kalaburagi

## INTERNAL ASSESSMENT TEST I / II

Class B.Sc Semester IV Sem Subject Mathematics

Date ..... Time .....

College Roll No. 1079 University Register No. 91949805

Sign. of the Supervisor With Date 17/12/20

HEAD Code : SBMAT08 Max Marks : 20M

Department of Mathematics  
Sharnbasveshwar College of Science  
KALABURAGI  
IA : Mathematics - 2019-2020

Q.1 Create the matrix  $A = \begin{bmatrix} 1 & 2 & 3 & 4 \\ 0 & 3 & 5 & 7 \\ 2 & 0 & 1 & 4 \\ 3 & 2 & 0 & 5 \end{bmatrix}$  and the

identity matrix  $I = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$

i) Show that  $AI = IA = A$

ii) Evaluate  $A^{11}3 - 4(A^{11}2) + 2A - 3AI$

### Maxima Programm

```
(%i1) kill(all)$
*Enter the Matrix A*
A:matrix([1,2,3,4],[0,3,5,7],[2,0,1,4],[3,2,0,5]);
```

```
(A)
| 1 2 3 4 |
| 0 3 5 7 |
| 2 0 1 4 |
| 3 2 0 5 |
```

```
(%i2) I:ident(4);
```

```
(I)
| 1 0 0 0 |
| 0 1 0 0 |
| 0 0 1 0 |
| 0 0 0 1 |
```

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(%13) A.I ;

(%03)	1	2	3	4
	0	3	5	7
	2	0	1	4
	3	2	0	5

(%14) I.A ;

(%04)	1	2	3	4
	0	3	5	7
	2	0	1	4
	3	2	0	5

(%15)  $A^{11}R$  ;

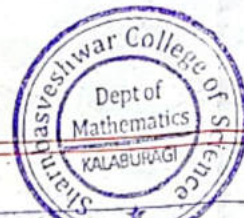
(%05)	19	16	16	50
	31	23	20	76
	16	12	7	32
	18	22	19	51

(%16)  $A^{11}3$  ;

(%06)	201	186	153	502
	299	283	228	745
	126	132	115	336
	209	204	183	557

(%17)  $A^{11}3 - 4 \times (A^{11}R) + 2 \times A - 3 \times I$  ;

(%07)	124	126	95	310
	175	194	158	455
	66	84	86	216
	143	120	107	360



1] Create the matrix  $\begin{bmatrix} 7 & 4 & -1 \\ 4 & 7 & -1 \\ -4 & 4 & 4 \end{bmatrix}$  Find the inverse

matrix of A using Cayley-Hamilton theorem.

### Maxima Program

```
(%i1) kill(all)$  
/* Enter the matrix A */  
A: matrix([7, 4, -1], [4, 7, -1], [-4, -4, 4]);
```

```
(A)  $\begin{bmatrix} 7 & 4 & -1 \\ 4 & 7 & -1 \\ -4 & -4 & 4 \end{bmatrix}$ 
```

```
(%i2) I: ident(3);
```

```
(I)  $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ 
```

```
(%i3) Chpoly: expand(Charpoly(A, lambda));
```

```
(Chpoly)  $-\lambda^3 + 18\lambda^2 - 81\lambda + 108$ 
```

```
(%i4) subst(A, lambda, Chpoly);
```

```
(%o4)  $-A^3 + 18A^2 - 81A + 108$ 
```

/\* Equating it to zero we can write \*/;

```
(%i5) Inv1: (1/108)*(A**2 - 18*A + 81*I);
```

(Inv1)	2/9	-1/9	1/36
	-1/9	2/9	1/36
	1/9	1/9	11/36

/\* To find the Inverse of A directly, we can use the following command \*/

```
(%i6) InvR : invert(A);
```

(InvR)	2/9	-1/9	1/36
	-1/9	2/9	1/36
	1/9	1/9	11/36

/\* Observe that Inv1 and Inv2 are same

Q.3] Create the matrix  $\begin{bmatrix} -2 & 4 & 4 \\ 4 & -2 & 4 \\ 4 & 4 & -2 \end{bmatrix}$  show that

$\frac{1}{6}A$  is orthogonal matrix.

### Maxima Program

```
(%i1) kill(all)$
```

/\* Enter the Matrix A \*/

```
A:matrix([-2,4,4],[4,-2,4],[4,4,-2]);
```

(A)	-2	4	4
	4	-2	4
	4	4	-2



## INTERNAL ASSESSMENT TEST I / II

Class B.Sc

Semester IV Sem

Subject Mathematics

Date.....

Time.....

College Roll No. 104

University Register No. 91949805

Sign. of the Supervisor With Date.....

(%i2)  $B = (1/6) * A;$

(B) 
$$\begin{bmatrix} -1/3 & 2/3 & 2/3 \\ 2/3 & -1/3 & 2/3 \\ 2/3 & 2/3 & -1/3 \end{bmatrix}$$

(%i3)  $B^t = \text{transpose}(B);$

(B<sup>t</sup>) 
$$\begin{bmatrix} -1/3 & 2/3 & 2/3 \\ 2/3 & -1/3 & 2/3 \\ 2/3 & 2/3 & -1/3 \end{bmatrix}$$

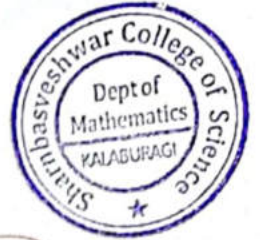
(%i4)  $P = B \cdot B^t$

(P) 
$$\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

*Extra* /\* Observe that  $(B \cdot B^t)$  is identity matrix. Thus  $B = A/6$  is orthogonal \*/

(%i5) TRACE:  $\text{mat\_trace}(A);$

(TRACE)  $-6$



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$\frac{98}{100}$  seen

B.Sc. ...IV.....SEMESTER

**FIRST / SECOND INTERNAL EXAMINATION-20 -20**

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HEAD

**ANSWER BOOK**

Department of Mathematics Sharnbasveshwar College of Science KALABURAGI	Subject <b>Mathematics</b>	Roll No. <b>1 0 4</b>	University Register No. <b>9 1 9 4 9 8 0 5</b>	Date
---	-------------------------------	--------------------------	---	------

Name : **Simra Nishath**

*[Signature]*  
Signature of the Invigilator with date

*[Signature]*  
**PRINCIPAL**  
SHARNBASVESHWAR COLLEGE  
OF SCIENCE, GULBARGA

Start from here  
↓

**I** Answer the following questions :

1. By using the maxima command compute the following :

i)  $56 + 1238$

A :  $56 + 1238 ;$

(A)  $1294$

ii)  $135 + 1835 ;$

(B)  $1970$

iii)  $9^1 3$

C:  $9^1 3$ ;

(C) 729

iv)  $123^1 18$

D:  $123^1 18$ ;

(D) 4.152331385

v)  $5332 - 813$

E:  $5332 - 813$ ;

(E) 4519

2] By using Maxima command compute the following operation of matrices and give regions compute.

$$A = \begin{bmatrix} 3 & 5 & 2 \\ 2 & 1 & 8 \end{bmatrix}$$

$$B = \begin{bmatrix} 2 & 8 & 7 \\ 3 & 4 & 9 \end{bmatrix}$$

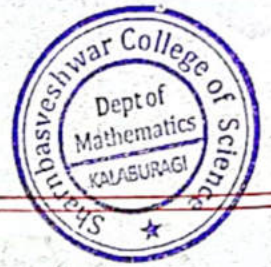
i)  $A + B$

ii)  $A - B$

iii)  $A \cdot B$

iv)  $2A + 3B$

v)  $5A - 8B$



kill (all) \$

A: matrix  $([3, 5, 2], [2, 1, 8])$ ;

B: matrix  $([2, 8, 7], [3, 4, 9])$ ;

$$(A) \begin{bmatrix} 3 & 5 & 2 \\ 2 & 1 & 8 \end{bmatrix}$$

$$(B) \begin{bmatrix} 2 & 8 & 7 \\ 3 & 4 & 9 \end{bmatrix}$$

(%i2)  $A+B$ ;

$$(%o2) \begin{bmatrix} 5 & 13 & 9 \\ 5 & 5 & 17 \end{bmatrix}$$

(%i3)  $A-B$ ;

$$(%o3) \begin{bmatrix} 1 & -3 & -5 \\ -1 & -3 & -1 \end{bmatrix}$$

(%i4)  $2*A + 3*B$ ;

$$(%o4) \begin{bmatrix} 12 & 34 & 25 \\ 13 & 14 & 43 \end{bmatrix}$$

(%i5)  $5*A - 8*B$ ;

$$(%o5) \begin{bmatrix} -1 & -39 & -46 \\ -14 & -27 & -32 \end{bmatrix}$$

(%i6)  $A.B$

Multiplication of matrix donot take place.



3] Enter the matrices  $A = \begin{bmatrix} 3 & 1 & 2 \\ 1 & 3 & 5 \\ 2 & 4 & 1 \end{bmatrix}$ ,  $B = \begin{bmatrix} 2 & 5 & 1 \\ 1 & 3 & 5 \\ 2 & 4 & 3 \end{bmatrix}$

$$C = \begin{bmatrix} 1 & 0 & 1 \\ 0 & 2 & 1 \\ 3 & 1 & 0 \end{bmatrix}$$

Show that i)  $AC + BC = (A+B)C$   
 ii)  $AB - AC = A(B-C)$

(%i1)

kill(all) \$

/\* Enter the matrix A \*/

A: matrix([3, 1, 2], [1, 3, 5], [2, 4, 1]);

B: matrix([2, 5, 1], [1, 3, 5], [2, 4, 3]);

C: matrix([1, 0, 1], [0, 2, 1], [3, 1, 0]);

(A)

$$\begin{bmatrix} 3 & 1 & 2 \\ 1 & 3 & 5 \\ 2 & 4 & 1 \end{bmatrix}$$

(B)

$$\begin{bmatrix} 2 & 5 & 1 \\ 1 & 3 & 5 \\ 2 & 4 & 3 \end{bmatrix}$$

(C)

$$\begin{bmatrix} 1 & 0 & 1 \\ 0 & 2 & 1 \\ 3 & 1 & 0 \end{bmatrix}$$

(%i2) /\* To find  $AC + BC$ ,  $(A+B)C$ ,  $AB - AC$ ,  
 $A \cdot (B - C)$  \*/

A.C + B.C ;

$$(\%02) \begin{bmatrix} 14 & 15 & 11 \\ 32 & 22 & 8 \\ 16 & 20 & 12 \end{bmatrix}$$

$$(\%03) \quad (A+B) \cdot C$$

$$(\%03) \begin{bmatrix} 14 & 15 & 11 \\ 32 & 22 & 8 \\ 16 & 20 & 12 \end{bmatrix}$$

$$(\%04) \quad A \cdot B - A \cdot C$$

$$(\%04) \begin{bmatrix} 2 & 22 & 10 \\ -1 & 23 & 27 \\ 5 & 17 & 19 \end{bmatrix}$$

$$(\%05) \quad A \cdot (B-C)$$

$$(\%05) \begin{bmatrix} 2 & 22 & 10 \\ -1 & 23 & 27 \\ 5 & 17 & 19 \end{bmatrix}$$

4] Create the matrix and calculate  $A^{11}2$  and  $A^{11}3$ ,  $2B + 3A$

$$A = \begin{bmatrix} 4 & 8 & 6 \\ 3 & 6 & 1 \\ 8 & 1 & 5 \end{bmatrix}$$

$$B = \begin{bmatrix} 2 & 4 & 6 \\ 3 & 5 & 1 \\ 4 & 7 & 2 \end{bmatrix}$$

12. Kill (all) \$

A: matrix  $([4, 8, 6], [3, 6, 1], [8, 1, 5])$ ;

B: matrix  $([2, 4, 6], [3, 5, 1], [4, 7, 2])$ ;

$$(A) \begin{bmatrix} 4 & 8 & 6 \\ 3 & 6 & 1 \\ 8 & 1 & 5 \end{bmatrix}$$

$$(B) \begin{bmatrix} 2 & 4 & 6 \\ 3 & 5 & 1 \\ 4 & 7 & 2 \end{bmatrix}$$

(%02)  $A^m 2$

$$(\%02) \begin{bmatrix} 88 & 86 & 62 \\ 38 & 61 & 29 \\ 75 & 75 & 74 \end{bmatrix}$$

(%03)  $A^m 3$

9

$$(\%03) \begin{bmatrix} 1106 & 1282 & 924 \\ 567 & 639 & 434 \\ 1117 & 1124 & 895 \end{bmatrix}$$

(%04)  $2*B + 3*A$

$$(\%04) \begin{bmatrix} 16 & 32 & 30 \\ 15 & 28 & 5 \\ 32 & 17 & 19 \end{bmatrix}$$



Q.5. Enter the matrix  $A = \begin{bmatrix} 1 & 5 & 3 \\ -2 & 3 & 6 \\ 7 & -1 & 1 \end{bmatrix}$  Find  $A'$ ,

$A+A'$  and trace of  $A$ , also show that  $A+A'$  is symmetric and  $A-A'$  is skew-symmetric

Sol<sup>n</sup>:  

```
(%i1) kill(all) $
/* Enter the Matrix A */
A : matrix([1,5,3],[-2,3,6],[7,-1,1]);
```

(A)  $\begin{bmatrix} 1 & 5 & 3 \\ -2 & 3 & 6 \\ 7 & -1 & 1 \end{bmatrix}$

(%i2) At : transpose(A);

(At)  $\begin{bmatrix} 1 & -2 & 7 \\ 5 & 3 & -1 \\ 3 & 6 & 1 \end{bmatrix}$

(%i3) P : A + At;

(P)  $\begin{bmatrix} 2 & 3 & 10 \\ 3 & 6 & 5 \\ 10 & 5 & 2 \end{bmatrix}$

```
(%i4) P1: transpose(P);
```

```
(P1)  | 2  3  10 |  
      | 3  6  5  |  
      | 10 5  2  |
```

*/\* Observe that  $P = P1$ , Thus  $P$  is symmetric \*/*

```
(%i5) Q: A - A1;
```

```
(Q)  | 0  7  -4 |  
     | -7 0  7  |  
     | 4  -7  0  |
```

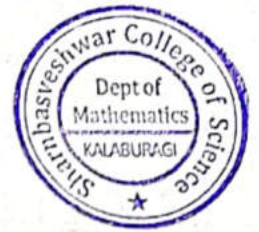
```
(%i6) Q1: transpose(Q);
```

```
(Q1)  | 0  7  -4 |  
     | 7  0  -7  |  
     | -4  7  0  |
```

*/\* Observe that  $Q = -Q1$ , Thus  $Q$  is skew-symmetric \*/*

```
(%i7) /* To find the trace of A */  
TRACE: mat_trace(A);
```

```
(TRACE) 5
```



# Sharnbasveshwar

College of Science, Kalaburagi - 585 103

B.Sc. ....SEMESTER

FIRST / SECOND INTERNAL EXAMINATION-20 -20

## ANSWER BOOK

Subject	Mathematics	Roll No.	University Register No.				Date					
Paper No.		1 0 4	9	1	9	4	9	8	0	5		

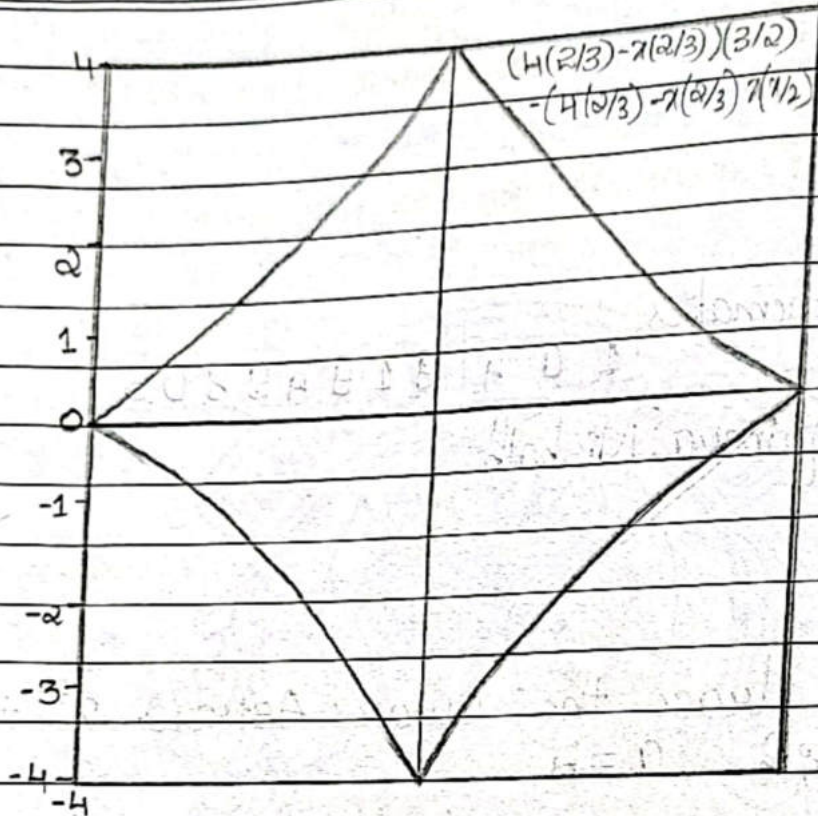
Name : Simra Nishath

Signature of the Invigilator with date

Start from here

Q. 6 To trace the curve Astroid  $x^{2/3} + y^{2/3} = a^{2/3}$  with  $a = 4$ .

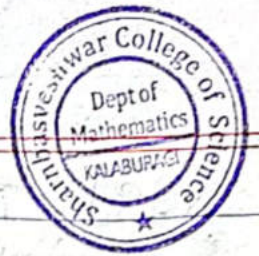
Sol<sup>n</sup>: `kill(0)`  
 /\* Enter the equation of curve  $x^{(2/3)} + y^{(2/3)} = a^{(2/3)}$  with  $a = 4$  \*/  
 $y(x) := (4^{(2/3)} * x^{(2/3)})^{(3/2)}$   
 /\* Enter the points  $(x_0, x_n)$  between which the curve is to be traced \*/  
 $x_0 : -4$   
 $x_n : 4$   
 /\* Use the following command to draw the 2-dimensional curve  $y = f(x)$  \*/  
`wxplot ad ([y(x), -y(x)], [x, x0, xn]);`



-10

Q. 7] Find the value of  $\lambda$  for which the system equations  $x + 3y + 2z = 0$ ;  
 $x + \lambda y + 3z = 0$ ;  
 $x + 5y + 4z = 0$ ;  
 has non-zero solutions. Hence find the complete solution.

Sol<sup>n</sup>: (%i1) kill(all)\$  
 /\*Enter the system of equation\*/  
 eq1: x + 3\*y + 2\*z = 0;  
 eq2: x + lambda\*y + 3\*z = 0;  
 eq3: x + 5\*y + 4\*z = 0;



$$(eq1) \quad 2z + 3y + x = 0$$

$$(eq2) \quad y\lambda + 3z + x = 0$$

$$(eq3) \quad 4z + 5y + x = 0$$

/\* Rewriting the co-efficient matrix A \*/

(%i2) A: Coeff matrix([eq1, eq2, eq3], [x, y, z]);

$$(A) \quad \begin{bmatrix} 1 & 3 & 2 \\ 1 & \lambda & 3 \\ 1 & 5 & 4 \end{bmatrix}$$

(%i3) det: determinant(A);

$$(det) \quad 4\lambda + 2(5 - \lambda) - 18$$

(%i4) solve(det = 0, \lambda);

$$(\%04) \quad [\lambda = 4]$$

-9 /\* For this value of  $\lambda$  the given system has non-zero solution \*/

$$(\%i5) \quad \lambda : 4$$

/\* Re-writing the equation in which  $\lambda$  is present \*/

$$(\%i6) \quad eq2: x + \lambda y + 3z = 0;$$

$$(eq2) \quad 3z + 4y + x = 0$$

(%i7) linsolve([eq1, eq2, eq3], [x, y, z]);

$$(\%07) \quad [x = \%r1, y = -\%1, z = \%r1]$$



Q.8] To find the order of each elements of an additive group of integers module  
i.e.  $Z_4 = \{0, 1, 2, 3\}$

Sol<sup>n</sup>:  
kill(all) \$  
/\* Enter the equations \*/  
a[1] : 0 \$  
a[2] : 1 \$  
a[3] : 2 \$  
a[4] : 3 \$  
/\* Specify the identity elements \*/  
e : a[1] \$  
/\* Define the binary operation (addition modulo 4) \*/  
+m4(x, y) : remainder(x+y, 4) \$  
/\* To find the order of element \*/  
for i:1 while i <= 4 do  
-10- block (n:2,  
loop,  
b[1] : a[i],  
if b[1] = e then print("order of", a[i], "=", 1) else  
(b[n] : +m4(b[n-1], a[i]),  
if b[n] = e then print("order of", a[i], "=", n) else  
(n : n+1,  
if n <= 4 then go(loop)))) \$

OUTPUT

Order of 0 = 1  
Order of 1 = 4  
Order of 2 = 2  
Order of 3 = 4

Q.9]  
Sol<sup>n</sup>:

To trace the sphere  $x^2 + y^2 + z^2 = a^2$  with  $a=5$

`kill(all) $`  
 /\*Enter the equation of curve  $x^2 + y^2 + z^2 = a^2$  with  $a=5$ \*/  
 $z(x,y) := (25 - x^2 - y^2)^{1/2}$  \$

/\*Enter the points between which the curve is to be traced \*/

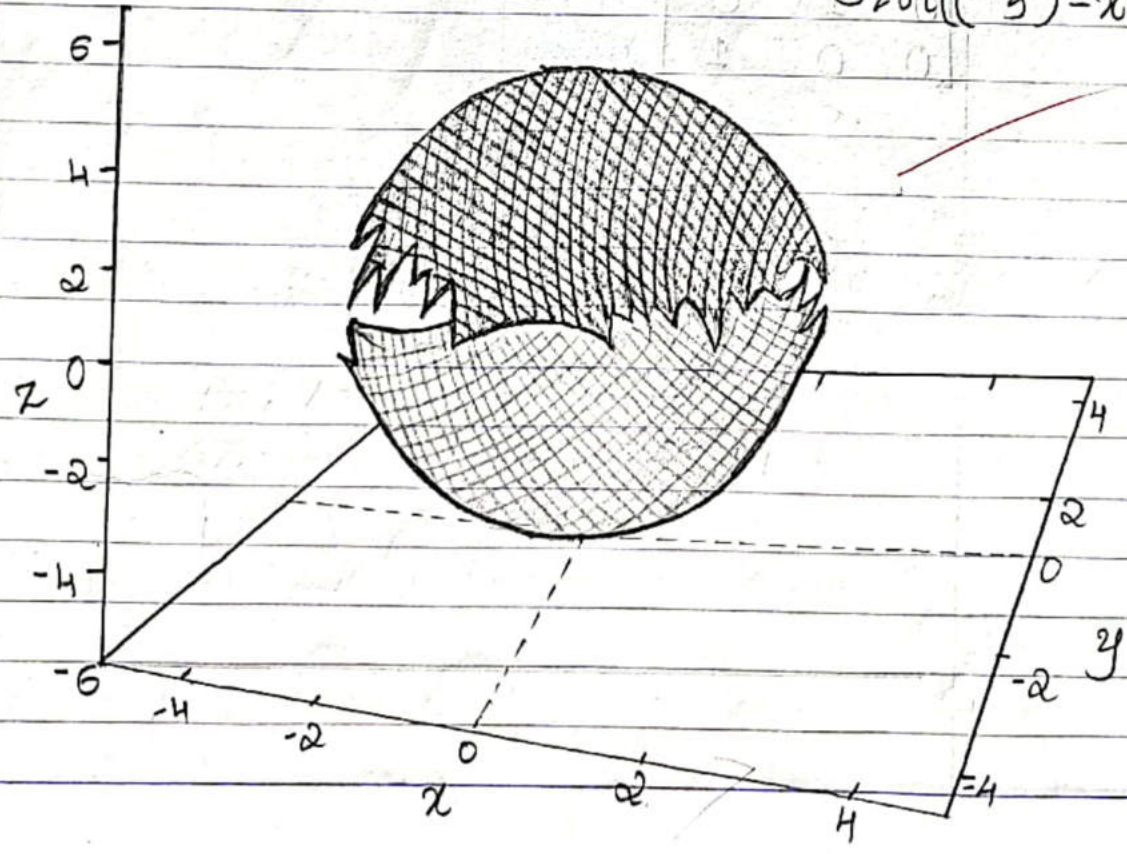
$x_0 : -5$  \$  
 $x_n : 5$  \$  
 $y_0 : -5$  \$  
 $y_n : 5$  \$

/\*Use the following command to draw the 3-dimensional curve  $z = f(x,y)$  \*/

`wxplot 3d([z(x,y), -z(x,y), (x, x_0, x_n), (y, y_0, y_n)]) $`

10

$$\begin{aligned} & -\sqrt{25 - x^2 - y^2} \\ & \sqrt{25 - x^2 - y^2} \end{aligned}$$



Q. 10) Create the matrix  $A = \begin{bmatrix} 2 & 1 & 3 \\ 4 & 1 & 2 \\ 6 & 2 & 5 \end{bmatrix}$  Find the inverse of A using Cayley-Hamilton theorem

Sol<sup>n</sup>: (%i1) kill(all)\$  
/\*Enter the matrix A\*/  
A: matrix([2, 1, 3], [4, 1, 2], [6, 2, 5]);

~~Extra~~

$$(A) = \begin{bmatrix} 2 & 1 & 3 \\ 4 & 1 & 2 \\ 6 & 2 & 5 \end{bmatrix}$$

I: ident(3);

$$(I) = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$



**Sharnbasveshwar**  
College of Science, Kalaburagi - 585 103

83  
100 *See*

B.Sc. ....SEMESTER

**FIRST / SECOND INTERNAL EXAMINATION-20 -20**

*Bruno*  
HEAD  
Department of Mathematics  
Sharnbasveshwar College of Science

**ANSWER BOOK**

Subject	Mathematics	Roll No.	University Register No.	Date
Paper No.		024	91949730	

Name: Bruno. Hivemath

*Mose*  
Signature of the Invigilator with date

Start from here  
↓

PRINCIPAL  
SHARNBASVESHWAR COLLEGE  
OF SCIENCE, GULBARGA

I Answer the following Questions

1) By Using the maxima command compute the following:

i)  $56 + 1238$

A:  $56 + 1238$ ;  
(A) 1294

ii)  $B : 135 + 1835 ;$

(B) 1970

iii)

iii)  $9^3$

C:  $9^3$ ;

(C) 729

iv)  $123^{18}$

D:  $123^{18}$ ;

(D) 4.152331385

v)  $5332 - 813$

(E):  $5332 - 813$ ;

(E) 4519

2) By using Maxima command compute the following operation of Matrices & give regions compute

$$A = \begin{bmatrix} 3 & 5 & 2 \\ 2 & 1 & 8 \end{bmatrix}$$

$$B = \begin{bmatrix} 2 & 8 & 7 \\ 3 & 4 & 9 \end{bmatrix}$$

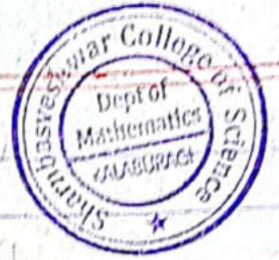
i)  $A + B$

ii)  $A - B$

iii)  $A \cdot B$

iv)  $2A + 3B$

v)  $5A - 8B$



kill (all)

A: matrix  $([3, 5, 2], [2, 1, 8]);$

B: matrix  $([2, 8, 7], [3, 4, 9]);$

$$(A) \begin{bmatrix} 3 & 5 & 2 \\ 2 & 1 & 8 \end{bmatrix}$$

$$(B) \begin{bmatrix} 2 & 8 & 7 \\ 3 & 4 & 9 \end{bmatrix}$$

(%i2)  $A+B;$

$$(%o2) \begin{bmatrix} 5 & 13 & 9 \\ 5 & 5 & 17 \end{bmatrix}$$

(%i3)  $A-B;$

$$(%o3) \begin{bmatrix} 1 & -3 & -5 \\ -1 & -3 & -1 \end{bmatrix}$$

(%i4)  $2 \times A + 3 \times B;$

$$(%o4) \begin{bmatrix} 12 & 34 & 25 \\ 13 & 14 & 43 \end{bmatrix}$$

(%i5)  $5 \times A - 8 \times B$

$$(%o5) \begin{bmatrix} -1 & -39 & -46 \\ -14 & -27 & -32 \end{bmatrix}$$

(%i6)  $A \cdot B$

Multiplication of matrix do not take place

3) Create the matrix and calculate  $A^2$  &  $A^3$

$$A = \begin{bmatrix} 4 & 8 & 6 \\ 3 & 6 & 1 \\ 8 & 1 & 5 \end{bmatrix} \quad B = \begin{bmatrix} 2 & 4 & 6 \\ 3 & 5 & 1 \\ 4 & 7 & 2 \end{bmatrix}$$

Kill (all) \$

A: matrix  $([4, 8, 6], [3, 6, 1], [8, 1, 5])$ ;

B: matrix  $([2, 4, 6], [3, 5, 1], [4, 7, 2])$ ;

$$(A) \begin{bmatrix} 4 & 8 & 6 \\ 3 & 6 & 1 \\ 8 & 1 & 5 \end{bmatrix}$$

$$(B) \begin{bmatrix} 2 & 4 & 6 \\ 3 & 5 & 1 \\ 4 & 7 & 2 \end{bmatrix}$$

(%i2)  $A^{^2}$

$$(%o2) \begin{bmatrix} 88 & 86 & 62 \\ 38 & 61 & 29 \\ 75 & 75 & 74 \end{bmatrix}$$

(%i3)  $A^{^3}$

$$(%o3) \begin{bmatrix} 1106 & 1282 & 924 \\ 567 & 699 & 434 \\ 1117 & 1124 & 895 \end{bmatrix}$$

$5 \times 4 \times 1 = 10$



(%i4)  $3 \times B + 3 \times A$

(%o4) 
$$\begin{bmatrix} 16 & 32 & 30 \\ 15 & 28 & 5 \\ 32 & 17 & 19 \end{bmatrix}$$

Q4) Enter the matrices  $A = \begin{bmatrix} 3 & 1 & 2 \\ 1 & 3 & 5 \\ 2 & 4 & 1 \end{bmatrix}$ ,  $B = \begin{bmatrix} 2 & 5 & 1 \\ 1 & 3 & 5 \\ 2 & 4 & 3 \end{bmatrix}$ .

$C = \begin{bmatrix} 1 & 0 & 1 \\ 0 & 2 & 1 \\ 3 & 1 & 0 \end{bmatrix}$

Show that i)  $AC + BC = (A+B)C$   
ii)  $AB - AC = A(B-C)$

(%i1) kill(all);

/\* Enter the Matrix A \*/

A: matrix([3,1,2],[1,3,5],[2,4,1]);

B: matrix([2,5,1],[1,3,5],[2,4,3]);

C: matrix([1,0,1],[0,2,1],[3,1,0]);

(A) 
$$\begin{bmatrix} 3 & 1 & 2 \\ 1 & 3 & 5 \\ 2 & 4 & 1 \end{bmatrix}$$

(B) 
$$\begin{bmatrix} 2 & 5 & 1 \\ 1 & 3 & 5 \\ 2 & 4 & 3 \end{bmatrix}$$

(C) 
$$\begin{bmatrix} 1 & 0 & 1 \\ 0 & 2 & 1 \\ 3 & 1 & 0 \end{bmatrix}$$



(%oi2) / To find  $AC+BC, (A+B)C, AB-AC, A \cdot (B-C)$

$$A.C + B.C;$$

$$(%o02) \begin{bmatrix} 14 & 15 & 11 \\ 32 & 22 & 8 \\ 16 & 20 & 12 \end{bmatrix}$$

(%oi3)  $(A+B) \cdot C$

$$(%o03) \begin{bmatrix} 14 & 15 & 11 \\ 32 & 22 & 8 \\ 16 & 20 & 12 \end{bmatrix}$$

(%oi4)  $A \cdot B - A \cdot C$

$$(%o04) \begin{bmatrix} 2 & 22 & 10 \\ -1 & 23 & 27 \\ 5 & 17 & 19 \end{bmatrix}$$

5+4  
29

(%oi5)  $A \cdot (B-C)$

$$(%o05) \begin{bmatrix} 2 & 22 & 10 \\ -1 & 23 & 27 \\ 5 & 17 & 19 \end{bmatrix}$$

Q5. Enter the matrix  $A = \begin{bmatrix} 1 & 5 & 3 \\ -2 & 3 & 6 \\ 7 & -1 & 1 \end{bmatrix}$  (Find  $A'$ ,

$A+A'$  & trace of  $A$ , Also show that  $A+A'$  is symmetric &  $A-A'$  is skew-symmetric.

Sol:- (%i1)

(%o11) kill(011)\$

/\*Enter the Matrix A\*/

A: matrix([1, 5, 3], [-2, 3, 6], [7, -1, 1]);

(A)  $\begin{bmatrix} 1 & 5 & 3 \\ -2 & 3 & 6 \\ 7 & -1 & 1 \end{bmatrix}$

(%o12) At: transpose (A);

(At)  $\begin{bmatrix} 1 & -2 & 7 \\ 5 & 3 & -1 \\ 3 & 6 & 1 \end{bmatrix}$

(%o13) P: A+At;

(P)  $\begin{bmatrix} 2 & 3 & 10 \\ 3 & 6 & 5 \\ 10 & 5 & 2 \end{bmatrix}$

(%oi4)

Pt: transpose(P);

$$(P_t) = \begin{bmatrix} 2 & 3 & 10 \\ 3 & 6 & 5 \\ 10 & 5 & 2 \end{bmatrix}$$

Observe that  $P = P_t$ . Thus P is symmetric

(%ois)

Q: A - A\_t;

$$(Q) = \begin{bmatrix} 0 & 7 & -4 \\ -7 & 0 & 7 \\ 4 & -7 & 0 \end{bmatrix}$$

(%oie)

Q\_t: transpose(Q);

$$(Q_t) = \begin{bmatrix} 0 & 7 & -4 \\ 7 & 0 & -7 \\ -4 & 7 & 0 \end{bmatrix}$$

Observe that  $Q = -Q_t$ . Thus Q is skew-Sy

(%oi7)

To find the trace of A

TRACE: mat\_trace(A);

(TRACE)

5

07



# Sharnbasveshwar College of Science, Kalaburagi - 585 103

B.Sc. ....SEMESTER

**FIRST / SECOND INTERNAL EXAMINATION-20 -20**

### ANSWER BOOK

Subject	Mathematics	Roll No.	University Register No.						Date			
Paper No.		024	9	1	9	4	9	7	3	0		

Name : Beunda. Himath

Signature of the Invigilator with date

Start from here

Q6) Create the Matrix  $A = \begin{bmatrix} 2 & 1 & 3 \\ 4 & 1 & 2 \\ 6 & 2 & 5 \end{bmatrix}$ . Find the

inverse of A using Cayley Hamilton Theorem.

Sol:-

(%i1) kill(%o1);

\*Enter the matrix A\*/

A: matrix ([2,1,3],[4,1,2],[6,2,5]);

(A)  $\begin{bmatrix} 2 & 1 & 3 \\ 4 & 1 & 2 \\ 6 & 2 & 5 \end{bmatrix}$

I: ident(3);

I  $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$



Q7) To trace the Sphere  $x^2 + y^2 + z^2 = a^2$  with  $a=5$

kill(all)\$

\* Enter the equation of curve  $x^2 + y^2 + z^2 = a^2$  with  $a=5$  /

$z(x,y) := (25 - x^2 - y^2)^{(1/2)}$ \$

\* Enter the points between which the curve is to be traced \* /

$x_0: -5$ \$

$x_n: 5$ \$

$y_0: -5$ \$

$y_n: 5$ \$

\* Use the following command to draw the 3-dimensional curve  $z = f(x,y)$  \* /

$wxplot3d([z(x,y), -z(x,y), [x, x_0, x_n], [y, y_0, y_n]])$ \$

8) To trace the curve astroid  $x^{2/3} + y^{2/3} = a^{2/3}$  with  $a=4$ .

Sol:-

kill(all)\$

\*Enter the equation of curve  $x^{(2/3)} + y^{(2/3)} = a^{(2/3)}$  with  $a=4$ \*/

$y(x) := (4^{(2/3)} * x^{(2/3)})^{(3/2)}$ \$

\*Enter the points  $(x_0, x_n)$  between which the curve is to be traced \*/

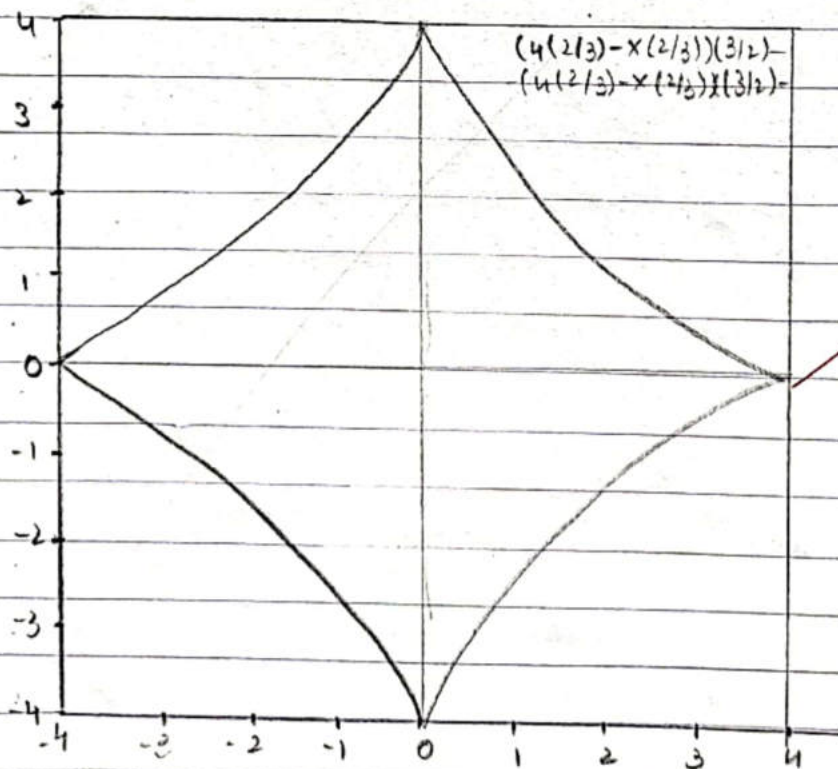
$x_0 := -4$ \$

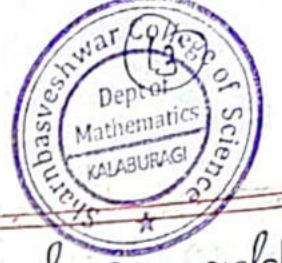
$x_n := 4$ \$

\*Use the following command to draw the 2-dimensional curve  $y=f(x)$ \*/

`wxplot2d([y(x), -y(x)], [x, x_0, x_n]);`

10





Q9) To find the order of each elements of an additive group of integers modulo. i.e  $Z_4 = \{0, 1, 2, 3\}$ .

```
kill(all)$
/* Enter the equations */
a[1]: 0$
a[2]: 1$
a[3]: 2$
a[4]: 3$
/* Specify the identity elements */
e: a[1]$
/* Define the binary operation (addition modulo 4) */
+mu(x,y): remainder(x+y,4)$
/* To find the order of element */
for i:1 while i<=4 do
block (n:2,
loop,
b[i]: a[i],
if b[i]=e then print ("Order of", a[i], "=", 1) else
(b[n]: +mu(b[n-1], a[i])),
if b[n]=e then print ("order of", a[i], "=", n) else
(n:n+1,
if n<=4 then go(loop))))$
```

Output

Order of 0 = 1

Order of 1 = 4

Order of 2 = 2

Order of 3 = 4

10) Find the value of  $\lambda$  for which the system Equations  $x + 3y + 2z = 0$ ,  
 $x + \lambda y + 3z = 0$ ;  
 $x + 5y + 4z = 0$ ; has non-zero solution  
 Hence find the complete solution.

```
(%i1) kill(all)$
/*Enter the system of Equation*/
eq1: x + 3*y + 2*z = 0;
eq2: x + lambda*y + 3*z = 0;
eq3: x + 5*y + 4*z = 0;
```

(eq1)  $2z + 3y + x = 0$   
 (eq2)  $y\lambda + 3z + x = 0$   
 (eq3)  $4z + 5y + x = 0$

/\*Writing the co-efficient matrix A\*/

```
(%i2) A:coefmatrix([eq1, eq2, eq3], [x, y, z]);
```

-9- (A)  $\begin{bmatrix} 1 & 3 & 2 \\ 1 & \lambda & 3 \\ 1 & 5 & 4 \end{bmatrix}$

```
(%i3) det: determinant(A);
(det)  $4\lambda + 2(5 - \lambda) - 18$ 
```

```
(%i4) solve(det=0, lambda);
(%o4)  $[\lambda = 4]$ 
```

/\*For this value of  $\lambda$  the given system has non-zero solution\*/





(%ois)  $\lambda: 4s$

\* Re-writing the equation in which  $\lambda$  is present \*

(%ois) eq 2:  $x + \lambda y + 3z = 0$ ;

(eq 2)  $3z + 4y + x = 0$

(%oi7) `lin solve (eq 1, eq 2, eq 3), [x, y, z]`;

(%o07)  $[x = \%r1, y = -\%1, z = \%r1]$ .

Centenary Celebrated Sharnbasveshwar Vidya Vardhak Sangh's



(Diamond jubilee Celebrated)

**SHARNBASVESHWAR COLLEGE OF SCIENCE, KALABURAGI**

**DEPARTMENT OF MATHEMATICS**

*Certificate of Completion*

Course Code: SBMAT01

This is to Certify that Mr./Miss. Simra Nishath.....  
of B.Sc...IV.....Sem. has Successfully Completed Certificate Course in "Concepts on Maxima and Scilab "

Grade...A<sup>+</sup>.....

Place: Kalaburagi

Date: 09.10.2020

Head of the Department

Principal