



'Dissemination of Education through Knowledge, Science and Culture'
-Shikshanmaharshi Dr. Bapuji Salunkhe

**Shri Swami Vivekanand Shikshan
Sanstha, Kolhapur's**



**PADMABHUSHAN DR. VASANTRAODADA PATIL
MAHAVIDYALAYA, TASGAON**

Tal. Tasgaon, Dist.: Sangli.

DEPARTMENT OF MATHEMATICS

A Report On

A CERTIFICATE COURSE IN
OPTIMIZATION PROBLEMS

Submitted To
Internal Quality Assurance Cell
Year 2016-17

Shri Swami Vivekanand Shikshan Sanstha Kolhapur
Padmabhushan Dr. Vasantodada Patil Mahavidyalaya, Tasgaon
Tal-Tasgaon, Dist-Sangli-416312 (Maharashtra)
(Affiliated to Shivaji University, Kolhapur)


Department of Mathematics

Academic year 2016-2017

Notice


19/09/2016

All the students of are here by inform that, our college is going to start a certificate course entitled "A CERTIFICATE COURSE IN OPTIMIZATION PROBLEMS" for this current academic year. All the students take admission as earlier.



(Mr.P.V.Patil)

Course Coordinator

Yours Faithfully,

HEAD
Department OF MATHS
P. D. V P. Mahavidyalaya
TASGAON (Sangli)

Shri Swami Vivekanand Shikshan Sanstha Kolhapur
Padmabhushan Dr. Vasanthaodada Patil Mahavidyalaya, Tasgaon
Tal-Tasgaon, Dist-Sangli-416312 (Maharashtra)
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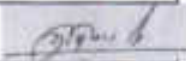
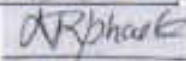
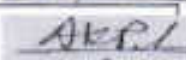
Department of Mathematics

Academic year 2016-2017

MEETING FOR SYLLABUS PREPARATION

(B.O.S)

The meeting for preparation of syllabus of a certificate course in A CERTIFICATE COURSE IN OPTIMIZATION PROBLEMS was held on 19/09/2016. The following members of the committee were present for the preparation of syllabus.

Sr.No	Name	Designation	College name	Sign
1	Mr.P.V.Patil	Chairman	P.D.V.P.College,Tasgaon	
2	Miss.N.R.Dhaske	Member	P.D.V.P.College,Tasgaon	
3	Miss.A.K.Patil	Member	P.D.V.P.College,Tasgaon	

The syllabus for said course has been prepared and the copy of the same is enclosed here with for your kind information and further action.

Thanking you,



(Mr.P.V.Patil)

Course Coordinator



Yours Faithfully,

HEAD

Department OF MATHS
P. D. V. P. Mahavidyalaya
TASGAON (Sangli)



"ज्ञान, विज्ञान आणि सुसंस्कार यांसाठी शिक्षणप्रसार" - शिक्षणमहर्षी डॉ. बापूजी साबुंखे

Shri Swami Vivekanand Shikshan Sanstha, Kolhapur's

PADMABHUSHAN DR. VASANTODADA PATIL MAHAVIDYALAYA

TASGAON, Dist. Sangli, Pin- 416 312 ☎ - STD : 02346-250665, 250575 FAX : 250575

● **Affiliated to Shivaji University, Kolhapur** ●

E-mail : san.pdvpm.tas@gmail.com Website : www.pdvpmtasgaon.edu.in

Established Year : June 1962 ▶ P. B. No. : 14 ▶ Jr. College No. : J22-10-001 ▶ Sr. College Code No. : $\frac{SIAC/4}{X}$ Jr.: C-8



NAAC Reaccredited 'B' (2.76)

Shikshanmaharshi
Dr. Bapuji Salunkhe
B.A., B.T., D.Lit.
FOUNDER

Hon. Chandrakant (Dada) Patil
PRESIDENT
B.Com.
Minister of Revenue, Public Works
Govt. of Maharashtra

Prin. Abhaykumar Salunkhe
CHAIRMAN
M.A.

Prin. Mrs. Shubhangi Gawade
SECRETARY
M.Sc. B.Ed.

Dr. R. R. Kumbhar
PRINCIPAL
M.Sc. M.Phil., Ph.D.

Ref.No. : PDVPMT /

Date : 15/09/2016

To,
Prof. P.V. Patil
Department of Mathematics
P.D.V.P. College, Tasgaon.

Sub.- BOS/Syllabus Committee Meeting

Sir,

You are appointed as Member of Board of Studies (BOS) in Certificate Course in **Optimization problems** to be conducted in our college during academic year 2016-17.

The meeting of BOS is conveyed on **19/09/2016** for the preparation of syllabus of Certification course in **Optimization problems** You are kindly requested to attend the meeting at 11:00 am in IQAC Office.

IQAC Director
IQAC Co-Ordinator,
P.D.V.P. Mahavidyalaya,
Tasgaon.

(Dr. R.R. Kumbhar)
Principal
Padmabhushan Dr. Vasantodada Patil
Mahavidyalaya, Tasgaon. (Sangli)



'ज्ञान, विज्ञान आणि सुसंस्कार यांसाठी शिक्षणप्रसार' - शिक्षणमहर्षी डॉ. बापूजी साळुंखे

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**Shikshanmaharshi
Dr. Bapuji Salunkhe**
B.A., B.T., D.Lit.
FOUNDER

Hon. Chandrakant (Dada) Patil
PRESIDENT
B.Com.
Minister of Revenue, Public Works
Govt. of Maharashtra

Prin. Abhaykumar Salunkhe
M.A.
CHAIRMAN

Prin. Mrs. Shubhangi Gawade
M.Sc. B.Ed.
SECRETARY

Dr. R. R. Kumbhar
M.Sc. M.Phil., Ph.D.
PRINCIPAL

Ref.No. : PDVPMT /

Date : 15/09/2016

To,
Prof. N.R. Dhaske
Department of Mathematics
P.D.V.P. College, Tasgaon.


Sub.:- BOS/Syllabus Committee Meeting

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Prin. Abhaykumar Salunkhe
M.A.
CHAIRMAN

Prin. Mrs. Shubhangi Gawade
M.Sc. B.Ed.
SECRETARY

Dr. R. R. Kumbhar
M.Sc. M.Phil., Ph.D.
PRINCIPAL

Ref.No. : PDVPMT /

Date : 15/09/2016

To,

Prof. A. K. Patil

Department of Mathematics

P.D.V.P. College, Tasgaon.


Sub:- BOS/Syllabus Committee Meeting

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IQAC Co-Ordinator,
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Tasgaon.


(Dr. R. R. Kumbhar)
Principal
Padmabhushan Dr. Vasantrodada Patil
Mahavidyalaya, Tasgaon. (Sangli)

Department of Mathematics
Certificate Course CMCE -2016-17

[A CERTIFICATE COURSE IN OPTIMIZATION PROBLEMS]

SYLLABUS

- [1] Decision theory
- [2] Assignment problem
- [3] Transportation problem
- [4] Travelling Sales-man problem
- [5] Minimax theorem
- [6] Dominance principle
- [7] Graphical method
- [8] Arithmetic theorem
- [9] Game theory
- [10] Optimization problem


HEAD
Department OF MATHS
P. D. V P. Mahavidyalaya
TASGAON. (Sangli)

Shri Swami Vivekanand Shikshan Sanstha Kolhapur

Padmabhushan Dr. Vasantodada Patil Mahavidyalaya, Tasgaon

Department of Mathematics

B.Sc.-III Certificate Course Admission 2016-2017

1	PATIL PALLAVI TANAJI	19	TUPE SANJAY SUBHASH
2	MANE NAMRATA SIDDHESHWAR	20	SANJUNKHE SHITAL SHIVAJI
3	MANE TEJSWI BALASO	21	KARATE PRIYANKA SUNIL
4	PATIL VIDYA PARASHARAM	22	JADHAV PRANOTI NIVAS
5	CHAVAN DIPALEE MAHADEV	23	SHINDE MAYURI MANOJ
6	LAD SNEHA SUNIL	24	SHINDE PRAGATI BHAIRU
7	PATIL SHWETA HRISHCHANDRA	25	PATIL KIRAN RAMESH
8	BAGAL POOJA CHANDRAKANT	26	SHINDE POONAM JAGANNATH
9	PATIL MRUNALI MAHADEO	27	KATE SHILESH SAHADEV
10	MORE ASHWINI RAGHUNATH	28	PATIL VAIBHAV BALASAHEB
11	ZAMBRE PRAJAKTA VISHWAS	29	THORAT CHHAYA BALASO
12	JAGTAP KIRTI GAJANAN	30	GAVALI SHITAL RAMCHANDRA
13	BABAR SHITAL TANAJI	31	TIKOLE ASHWINI SANJAY
14	PATIL SAYALI SHANKARRAO	32	CHOUGULE ANKITA ASHOK
15	THITE PRIYANKA PRABHAKAR	33	MALI SHARDA JAGANNATH
16	PAWAR POONAM ASHOK	34	PATIL SHWETA BALASAHEB
17	SURYAWANSHI PRAJAKTA DINKAR	35	PATIL SNEHA BALASAHEB
18	SUTAR ROHIT BHAUSO	36	SURYAWANSHI SWATI MAHADEV

HEAD
Department OF MATHEMATICS
P. D. V. P. Mahavidyalaya
TASGAON. (Sangli)

37	VIBHUTE VRUSHALI RAMESH	60	THORVAT PRAJAKTA SADASHIV
38	PATIL SANDEEP SUKHADEV	61	PATIL MOHINI ADHIK
39	NAGARE SHUBHANGI POPAT	62	PATIL SHRADDHA DILIP
40	KADAM SWATI MAHADEV	63	SALUNKHE ABHISHEK ADHIKRAO
41	SURYAWANSHI PRAJAKTA DATTATRAY	64	SHINDE SNEHA SUDHIR
42	SAWANT RUTUJA RAJENDRA	65	JAMDADE PRIYANKA MANIKRAO
43	GAIKWAD SONAM SHRIKANT	65	JAMDADE PRIYANKA MANIKRAO
44	PATOLE BHAGYASHREE MANOHAR	67	PATIL MAYURI BHUPAL
45	PATIL TEJASWINI PRAKASH	68	CHAVAN SARITA RAGHUNATH
46	PATIL AKSHAY PANDURANG	69	MANDALE KIRAN VILAS
47	DEVKULE SHITAL VIJAY	70	SHINDE ARTI SUBHASH
48	PATIL SARSVATI MANOHAR	71	SAKHARE PRIYANKA MAHADEV
49	PATIL POONAM DILIP	72	SHINDE SONALI MOHAN
50	MANE RAM DADASO	73	SURYAWANSHI AISHWARYA PANDURANG
51	ZAMBRE VARSHARANI NANASO	74	TAPASE NAYANA SUNIL
52	SURYAWANSHI ANIKET SURESH	75	SUTAR PRASHANT RAJENDRA
53	PAWAR RUTUJA SARJERAO	76	KUNURE PRIYANKA PANDIT
54	JAMDADE VARSHARANI SANJAY	77	GHOLAP HARDIK BALKRUSHNA
55	JAMDADE PRANALI MADHUKAR	78	JADHAV VISHAL BAPUSAHEB
56	PAWAR ANJALI BALASO	79	WADKAR SWAROOPA APPASO
57	PAWAR PRANALI BHAGWAN		
58	PAWAR SONALI ADHIK		
59	KILLEDAR PRITAM BIPINCHANDRA		


HEAD
 Department OF MATHS
 P. D. V. P. Mahavidyalaya
 TASEGAON (Sangli)

Shri Swami Vivekanand Shikshan Sanstha Kolhapur
Padmabhushan Dr. Vasanttraodada Patil Mahavidyalaya, Tasgaon

Department of Mathematics

Title of Course: A CERTIFICATE COURSE IN OPTIMIZATION PROBLEMS

Time Table for Certificate Course

Academic year 2016-17

Three Week Course [04 /02/ 2017 to 24/02/ 2017]


Time Table

18 Lectures 4.30 pm to 5.30 pm

04/02/2017 – PVP	05/02/2017 – AKP
06/02/2017 – NRD	07/02/2017 – PVP
08/02/2017 – PVP	09/02/2017 – AKP
10/02/2017 – NRD	11/02/2017 – PVP
13/02/2017 – PVP	14/02/2017 – AKP
15/02/2017 – NRD	17/02/2017 – PVP
18/02/2017 – PVP	19/02/2017 – AKP
21/02/2017 – NRD	22/02/2017 – PVP
23/02/2017 – PVP	24/02/2017 – AKP

Name of the Teachers:

- 1] Mr.P.V.Patil [PVP]
- 2] Miss.A.K.Patil [AKP]
- 3] Miss.N.R.Dhaske [NRD]


HEAD
Department OF MATHS
P. D. V. P. Mahavidyalaya
TASGAON (Sangli)

Shri Swami Vivekanand Shikshan Sanstha Kolhapur
 Padmabhushan Dr. Vasantrodada Patil Mahavidyalaya, Tasgaon

Department of Mathematics

Title of Course: A CERTIFICATE COURSE IN OPTIMIZATION PROBLEMS

Attendance Sheets

Academic year 2016-17

Sr No	Name of the students	4/2	5/2	6/2	7/2	8/2	9/2	10/2	11/2	12/2	13/2	14/2	15/2	16/2	17/2	18/2	19/2	20/2
1	PATIL PALLAVI TANAJI	P	P	P	P	A	P	P	P	P	P	P	A	P	P	P	P	P
2	MANE NAMRATA SIDDHESHWAR	P	A	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P
3	MANE TEJSWI BALASO	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	A
4	PATIL VIDYA PARASHARAM	A	P	P	P	A	P	P	P	A	P	P	P	P	P	P	P	P
5	CHAVAN DIPALEE MAHADEV	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P
6	LAD SNEHA SUNIL	P	P	A	P	P	P	P	P	P	P	A	P	P	P	P	P	P
7	PATIL SHWETA HRISHCHANDRA	P	P	P	P	P	P	P	A	P	P	P	A	P	P	P	P	P
8	BAGAL POOJA CHANDRAKANT	A	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P
9	PATIL MRUNALI MAHADEO	P	P	P	A	P	P	P	P	A	P	P	P	P	P	P	P	P
10	MORE ASHWINI RAGHUNATH	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P
11	ZAMBRE PRAJAKTA VISHWAS	A	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P
12	JAGTAP KIRTI GAJANAN	P	P	P	P	P	P	A	P	P	P	A	P	P	P	P	P	P
13	BABAR SHITAL TANAJI	P	P	P	A	P	P	P	P	P	A	P	P	P	P	P	P	A
14	PATIL SAYALI SHANKARRAO	P	P	P	P	P	P	A	P	P	P	P	P	P	P	A	P	P
15	THITE PRIYANKA PRABHAKAR	A	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P
16	PAWAR POONAM ASHOK	A	P	P	A	P	P	P	P	P	A	P	P	P	P	P	P	P
17	SURYAWANSHI PRAJAKTA DINKAR	A	P	P	P	A	P	P	P	A	P	P	P	P	P	P	P	P
18	SUTAR ROHIT BHAUSO	P	A	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P

19	TUPE SANJAY SUBHASH	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
20	SALUNKHE SHITAL SHIVAJI	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
21	KORATE PRIYANKA SUNIL	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
22	JADHAV PRANOTI NIVAS	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
23	SHINDE MAYURI MANOJ	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
24	SHINDE PRAGATI BHAIRU	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
25	PATIL KIRAN RAMESH	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
26	SHINDE POONAM JAGANNATH	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
27	KATE SHILESH SAHADEV	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
28	PATIL VAIBHAV BALASAHEB	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
29	THORAT CHHAYA BALASO	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
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32	CHOUGULE ANKITA ASHOK	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
33	MALI SHARDA JAGANNATH	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
34	PATIL SHWETA BALASAHEB	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
35	PATIL SNEHA BALASAHEB	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
36	SURYAWANSHI SWATI MAHADEV	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
37	VIBHUTE VRUSHALI RAMESH	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
38	PATIL SANDEEP SUKHADEV	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
39	NAGARE SHUBHANGI POPAT	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
40	KADAM SWATI MAHADEV	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
41	SURYAWANSHI PRAJAKTA DATTATRAY	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P


HEAD
 Department OF MATHS
 P. D. V. P. Mahavidyalaya
 SANGLI (Sangli)

42	SAWANT RUTUJA RAJENDRA	P	P	P	P	A	P	P	P	P	P	P	P	A	P	P	P
43	GAIKWAD SONAM SHRIKANT	A	P	P	P	P	P	P	P	A	P	P	P	P	P	A	P
44	PATOLE BHAGYASHREE MANOHAR	P	P	A	P	P	P	P	P	A	P	P	P	P	P	P	P
45	PATIL TEJASWINI PRAKASH	P	P	P	P	P	P	P	P	A	P	P	A	P	P	P	P
46	PATIL AKSHAY PANDURANG	P	P	P	A	P	P	P	P	P	P	P	P	A	P	P	P
47	DEVKULE SHITAL VIJAY	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	A
48	PATIL SARSVATI MANOHAR	P	P	P	P	P	P	A	P	A	P	P	P	A	P	P	P
49	PATIL POONAM DILIP	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P
50	MANE RAM DADASO	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P
51	ZAMBRE VARSHARANI NANASO	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	A
52	SURYAWANSHI ANIKET SURESH	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P
53	PAWAR RUTUJA SARJERAO	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P
54	JAMDADE VARSHARANI SANJAY	A	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P
55	JAMDADE PRANALI MADHUKAR	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P
56	PAWAR ANJALI BALASO	P	P	P	P	A	P	P	P	P	P	P	P	P	A	P	P
57	PAWAR PRANALI BHAGWAN	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P
58	PAWAR SONALI ADHIK	A	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P
59	KILLEDAR PRITAM BIPINCHANDRA	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P
60	THORVAT PRAJAKTA SADASHIV	P	P	P	P	P	P	P	P	P	P	P	P	P	A	P	P
61	PATIL MOHINI ADHIK	P	P	P	P	A	P	P	P	P	P	P	P	P	P	A	P
62	PATIL SHRADDHA DILIP	P	P	P	A	P	P	P	P	P	P	P	A	P	P	P	P
63	SALUNKHE ABHISHEK ADHIKRAO	A	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P
64	SHINDE SNEHA SUDHIR	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P
65	JAMDADE PRIYANKA MANIKRAO	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P

Dr. B. B. B. B.
MBAD

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67	PATIL MAYURI BHUPAL	P	P	P	P	A	P	P	P	A	P	P	P	P	P	P
68	CHAVAN SARITA RAGHUNATH	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P
69	MANDALE KIRAN VILAS	P	P	P	P	A	P	P	P	P	P	P	P	P	P	A
70	SHINDE ARTI SUBHASH	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P
71	SAKHARE PRIYANKA MAHADEV	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P
72	SHINDE SONALI MOHAN	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P
73	SURYAWANSHI AISHWARYA PANDURANG	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P
74	TAPASE NAYANA SUNIL	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P
75	SUTAR PRASHANT RAJENDRA	P	P	P	A	P	P	P	P	P	A	P	P	P	P	P
76	KUNURE PRIYANKA PANDIT	P	P	P	P	P	A	P	P	P	P	P	P	P	P	A
77	GHOLAP HARDIK BALKRUSHNA	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P
78	JADHAV VISHAL BAPUSAHEB	P	P	P	A	P	P	P	P	P	A	P	P	P	P	P
79	WADKAR SWAROOPA APPASO	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P


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Shri Swami Vivekanand Shikshan Sanstha Kolhapur

Padmabhushan Dr. Vasanttraodada Patil Mahavidyalaya, Tasgaon

Tal-Tasgaon, Dist-Sangli-416312 (Maharashtra)

(Affiliated to Shivaji University, Kolhapur)


Department of Mathematics

Academic year 2016-2017

Notice

All the students are hear by informed that the examination of A
CERTIFICATE COURSE IN OPTIMIZATION PROBLEMS certificate course will be held
on following time table wise.

Day	Date	Time
Monday	01/03/2017	11:00 to 1:00


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DEPARTMENT OF MATHEMATICS
PADMABHUSHAN DR VASANTRAODADA PATIL MAHAVIDYALAYA
TASGAON

CERTIFICATE COURSE

IN

“CERTIFICATE COURSE IN OPTIMIZATION PROBLEMS”


Date:

Total marks: 50

Time: 11:00am to 01:00pm

Q. select correct alternative from the following.

1. Maximization assignment problem is transformed into a minimization problem by
 - A. Adding each entry in a column from the maximization value in that column
 - B. Subtracting each entry in a column from the maximum value in that column
 - C. Subtracting each entry in the table from the maximum value in that table
 - D. Any one of the above
2. is the father of game theory.
 - A. George B Dantzig
 - B. H. M. Wagner
 - C. J Von Neumann
 - D. Jagjit Singh
3. Game Theory is type of
 - A. Decision theory
 - B. Assignment problem
 - C. Transportation problem
 - D. Travelling Sales-man problem
4. If the number of players is n then the game is called
 - a. 2-person game
 - b. n -person game
 - c. zero sum game


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d. rectangular game

5. Poker game is example of

- a. zero sum game
- b. Non zero sum game
- c. rectangular game
- d. Pure Strategy

6. Which statement is not true regarding zero sum game?

- a. Sum of all payoffs is zero
- b. Sum of all payoffs is non-zero
- c. loss of one is gain of other
- d. gain of one is loss of other

7. Maximin value is denoted by

- a. \bar{v}
- b. \underline{v}
- c. v
- d. 0

8. Minimax value is denoted by


- a. \bar{v}
- b. \underline{v}
- c. v
- d. 0

9. i) every fair game is strictly determinable

ii) Every strictly determinable game is fair game

Which of the following statement is true?

- A. (i) true


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- B. (ii) true
- C. both true
- D. both false

10. What happens when minimax and maximin values of the game are same?

- a. no solution exist
- b. Solution is mixed
- c. Saddle point exists
- d. no saddle point exists

11. A mixed strategy game can be solved by

- a. Algebraic method
- b. Arithmetic method
- c. Graphical method
- d. all of the above

12. The size of the payoff matrix of game can be reduced by using the principle of

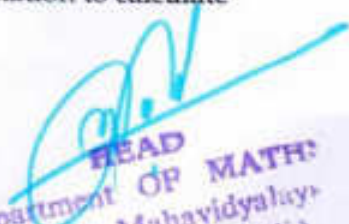
- a. reduction
- b. game transpose
- c. dominance
- d. rotation

13. A game is fair if

- a. both upper and lower values of game are same and zero
- b. upper value is more than lower value of the game.
- c. upper and lower value of game is not equal.
- d. upper and lower value of the game is equal.

14. When no saddle point is found in a payoff matrix of a game, the value of the game is then found by.....

- a. knowing joint probabilities of each row and column combination to calculate expected payoff for that combination and adding all such values.
- b. reducing size of the game to apply algebraic method.


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- c. both a and b
- d. none

15. When can one say that strategy a is dominated by strategy b?

- a. $a_i \leq b_i \forall i$
- b. $a_i \geq b_i \forall i$
- c. $a_i \neq b_i \forall i$
- d. $a_i \leq b_i$

16. Find the value of the game $\begin{vmatrix} -5 & 2 \\ -7 & -4 \end{vmatrix}$

- a. 2
- b. -5
- c. -7
- d. -4

17. Which statement is true about game? $\begin{vmatrix} 1 & 1 \\ 4 & -3 \end{vmatrix}$

- a. game is fair
- b. value of the game is 4
- c. upper value of the game is equal to lower value of the game.
- d. saddle point at (1,1)


18. maximin value of the following game minimax value of the game.

$$\begin{vmatrix} 1 & 3 & 6 \\ 2 & 1 & 3 \\ 6 & 2 & 1 \end{vmatrix}$$

- a. \geq
- b. \leq
- c. $=$
- d. $<$

19. Fundamental theorem of game theory is also called

- a. minimax theorem


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- b. Dominance principle
- c. graphical method
- d. arithmetic theorem

20. Player A's pay off matrix is $\begin{vmatrix} 2 & 5 \\ 7 & 3 \end{vmatrix}$ which of the following is not oddment?

- a. 5
- b. 4
- c. 3
- d. 1

21. Two players A and B toss coins. If the coin match player A wins unit of value. If not matches then B wins one unit of value. What are the optimum strategies for the players?

- a. $(1/2, 1/2)$
- b. $(1, 0)$
- c. $(1/2, 1/2)$ for both players
- d. $(1/2, -1/2)$


22. In rectangular game, none of pure strategies of the player A is inferior to any of his other strategies. Then what can be done to reduce game matrix?

- a. finding superior strategies of player A
- b. Subtracting any of strategies from another strategies
- c. Adding two strategies of player A
- d. Taking average of two or more pure strategies and comparing with remaining

strategies.

23. Minimax (maximin) criterion is used to solve rectangular game

- a. with saddle point
- b. without saddle point
- c. with n players
- d. mixed strategies


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24. Consider zero-sum 2- person game $\begin{matrix} & 1 & 2 \\ 0 & 7 & 2 \\ 5 & 1 & 6 \end{matrix}$

Expected gain for player A is

- a. $17/5$
- b. 1
- c. $12/5$
- d. 0

25. In two-person, zero-sum game is called the equilibrium point of the payoff matrix.

- a. upper value of the game
- b. lower value of the game
- c. saddle point
- d. zero

Mixed MCQ

26. The travelling salesman problem is said to be symmetrical if.....

- a. distance between every pair of cities is dependent of direction of journey
- b. time requires is dependent of direction of journey.
- c. cost changes with his choice of route
- d. distance between any pair of cities is independent of direction of journey.

27. For a salesman, if there are n cities then how many possible routes are there?

- a. $n!$
- b. $(n-1)!$
- c. $(n+1)!$
- d. $2n!$

28. Which condition is restricted over the assignment problem for the formulation of travelling - salesman problem?

- a. $x_{ij} = 1 \text{ or } 0$
- b. $\min z = \sum \sum c_{ij} x_{ij}$
- c. $x_{ij} = 0 \forall i = j$
- d. salesman cannot go directly from city i to city i itself.


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29. While testing the optimality of initial BFS, which condition guaranties that initial basic feasible solution, is optimal solution?

- a. $d_{ij} = 0 \forall i, j$
- b. $d_{ij} \geq 0 \forall i, j$
- c. $d_{ij} \leq 0 \forall i, j$
- d. $d_{ij} = 1 \forall i, j$

30. The value of θ is obtained by equating to the minimum of the allocation containing

- a. $0, \theta$
- b. $0, -\theta$
- c. $1, \theta$
- d. $1, -\theta$

31. The solution to problem is based on Reduction theorem.

- a. Linear programming
- b. Travelling Salesman
- c. Assignment
- d. Job sequencing

32. Consider, 1) Make zero assignment


2) Subtract minimum of each row of matrix from all elements of the respective row.

3) Draw minimum number of horizontal and vertical lines to cover all the zeros.

4) Choose minimum element from each column and subtract from the respective column

Which of the following sequence gives correct assignment algorithm?

- a. $1 \rightarrow 3 \rightarrow 4 \rightarrow 2$
- b. $1 \rightarrow 4 \rightarrow 3 \rightarrow 2$
- c. $2 \rightarrow 3 \rightarrow 4 \rightarrow 1$


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d. 2→4→3→1

33. The assignment cost of assigning any one operator to any one machine is given in the following table

Machines	Subordinates			
		I	II	III
U	8	26	17	11
V	13	28	4	26
W	38	19	18	15
X	19	26	24	10

The optimal assignment is :

- (A) U→I, V→III, W→II, X→IV
- (B) U→II, V→IV, W→III, X→I
- (C) U→III, V→IV, W→II, X→I
- (D) U→IV, V→II, W→III, X→I

34. Vogel's Approximation method is also known as

- a. Stepping stone method
- b. Unit cost penalty method
- c. Lowest cost entry method
- d. North-west corner method

35. What is the largest penalty for the transportation table?

Destination→ Origins↓	D1	D2	D3	Supply
O1	13	15	16	17
O2	7	11	2	12
O3	19	20	9	16
Demand	14	8	23	

- a. 12
- b. 8
- c. 10
- d. 7

36. In Stepping stone method, the first allocation is made in the cell occupying of the transportation problem.

- a. left hand corner
- b. right hand corner
- c. north-east corner
- d. north-west corner

37. What value should be allocated in the transportation problem using matrix minima method?

- a. $\min(a_i, b_j)$
- b. $\min(a_1, b_1)$
- c. $\min(a_i, b_1)$
- d. $\min(a_1, b_j)$

38. Condition for the optimality test is that number of allocations of basic feasible solution is in independent position

- a. $m+n$
- b. $m+n-1$
- c. $m*n$
- d. $m+n+1$

39. Calculating cell evaluations (unit cost differences) d_{ij} for each empty cell (i, j) by using the formula $d_{ij} = c_{ij} - (u_i + v_j)$ is one of the steps of which method?

- a. VAM
- b. Lowest cost entry method
- c. MODI method
- d. Hungarian method

40. If the number of allocation in a basic feasible solution are less than $m+n-1$ then it is called

- a. Degenerate BFS

b. Non degenerate BFS

c. BFS

d. FS

41. Constraints in LP problem is

a. Limitations

b. Requirements

c. Balancing limitations and requirements

d All of the above

42. Each constraint in a LPP model is expressed as an

a. inequality with \geq sign

b. inequality with \leq sign

c. inequality with = sign

d. all of the above

43. Which of the following is not exceptional case in graphical method?

a. Problem having unbounded solution.

b. Problem with inconsistent system of constraints

c. Problem with consistent system of equation but no solution

d. Problem has unique solution

44. The boundaries of feasible region are

a. Line

b. Plane

c. line or plane

d. cannot be defined

45. In matrix form of LPP, C denotes

Maximize $z = CX^T$

Subject to $AX = b, b \geq 0, X \geq 0$

A. vector

B. cost vector

C. decision variables

D. matrix

46. Consider LLP in which constraints are equations. Such problem has solution if



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Tal-Tasgaon, Dist-Sangli-416312 (Maharashtra)
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Academic year 2016-2017


Sr. No.	Name of the students	Sign
1	PATIL PALLAVI TANAJI	P.T. Patil
2	MANE NAMRATA SIDDHESHWAR	N.N. Mane
3	MANE TEJSWI BALASO	T.B. Mane
4	PATIL VIDYA PARASHARAM	V.P. Patil
5	CHAVAN DIPALEE MAHADEV	D. Dipalee Chavan
6	LAD SNEHA SUNIL	S. Lad
7	PATIL SHWETA HRISHCHANDRA	S. Patil
8	BAGAL POOJA CHANDRAKANT	P. Bagal
9	PATIL MRUNALI MAHADEO	M. Patil
10	MORE ASHWINI RAGHUNATH	A. More
11	ZAMBRE PRAJAKTA VISHWAS	P. Zambre
12	JAGTAP KIRTI GAJANAN	K. Jagtap
13	BABAR SHITAL TANAJI	S.T. Babar
14	PATIL SAYALI SHANKARRAO	S. Patil
15	THITE PRIYANKA PRABHAKAR	P. Thite
16	PAWAR POONAM ASHOK	P. Pawar
17	SURYAWANSHI PRAJAKTA DINKAR	S.P. Suryawanshi
18	SUTAR ROHIT BHAUSO	R. Sutar
19	TUPE SANJAY SUBHASH	S. Tupe
20	SALUNKHE SHITAL SHIVAJI	S. Salunkhe
21	KORATE PRIYANKA SUNIL	P. Korate
22	JADHAV PRANOTI NIVAS	P. Jadhav


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23	SHINDE MAYURI MANOJ	<u>MS</u>
24	SHINDE PRAGATI BHAIRU	<u>PShinde</u>
25	PATIL KIRAN RAMESH	<u>KRPatil</u>
26	SHINDE POONAM JAGANNATH	<u>PShinde</u>
27	KATE SHILESH SAHADEV	<u>SKate</u>
28	PATIL VAIBHAV BALASAHEB	<u>VPatil</u>
29	THORAT CHHAYA BALASO	<u>CThorat</u>
30	GAVALI SHITAL RAMCHANDRA	<u>RGavali</u>
31	TIKOLE ASHWINI SANJAY	<u>ATikole</u>
32	CHOUGULE ANKITA ASHOK	<u>ACH</u>
33	MALI SHARDA JAGANNATH	<u>Jmali</u>
34	PATIL SHWETA BALASAHEB	<u>SPatil</u>
35	PATIL SNEHA BALASAHEB	<u>SPatil</u>
36	SURYAWANSHI SWATI MAHADEV	<u>MS</u>
37	VIBHUTE VRUSHALI RAMESH	<u>VRVibute</u>
38	PATIL SANDEEP SUKHADEV	<u>SPatil</u>
39	NAGARE SHUBHANGI POPAT	<u>SNagare</u>
40	KADAM SWATI MAHADEV	<u>SKadam</u>
41	SURYAWANSHI PRAJAKTA DATTATRAY	<u>PSurawanshi</u>
42	SAWANT RUTUJA RAJENDRA	<u>RSawant</u>
43	GAIKWAD SONAM SHRIKANT	<u>SS.G</u>
44	PATOLE BHAGYASHREE MANOHAR	<u>BMPatole</u>
45	PATIL TEJASWINI PRAKASH	<u>TPatil</u>
46	PATIL AKSHAY PANDURANG	<u>APatil</u>
47	DEVKULE SHITAL VIJAY	<u>SDevkule</u>
48	PATIL SARSVATI MANOHAR	<u>SPatil</u>
49	PATIL POONAM DILIP	<u>PPatil</u>
50	MANE RAM DADASO	<u>RDmane</u>
51	ZAMBRE VARSHARANI NANASO	<u>VZambre</u>
52	SURYAWANSHI ANIKET SURESH	<u>ASurawanshi</u>
53	PAWAR RUTUJA SARJERAO	<u>RPawar</u>


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54	JAMDADE VARSHARANI SANJAY	<u>VJamdade</u>
55	JAMDADE PRANALI MADHUKAR	<u>PJamdade</u>
56	PAWAR ANJALI BALASO	<u>APawar</u>
57	PAWAR PRANALI BHAGWAN	<u>BPawar</u>
58	PAWAR SONALI ADHIK	<u>APawar</u>
59	KILLEDAR PRITAM BIPINCHANDRA	<u>PBKilledar</u>
60	THORVAT PRAJAKTA SADASHIV	<u>BThorvat</u>
61	PATIL MOHINI ADHIK	<u>MAPatil</u>
62	PATIL SHRADDHA DILIP	<u>SPatil</u>
63	SALUNKHE ABHISHEK ADHIKRAO	<u>ASalunkhe</u>
64	SHINDE SNEHA SUDHIR	<u>Sshinde</u>
65	JAMDADE PRIYANKA MANIKRAO	<u>PJamdade</u>
67	PATIL MAYURI BHUPAL	<u>MPatil</u>
68	CHAVAN SARITA RAGHUNATH	<u>RChavan</u>
69	MANDALE KIRAN VILAS	<u>KMandale</u>
70	SHINDE ARTI SUBHASH	<u>AShinde</u>
71	SAKHARE PRIYANKA MAHADEV	<u>PSakhare</u>
72	SHINDE SONALI MOHAN	<u>AShinde</u>
73	SURYAWANSHI AISHWARYA PANDURANG	<u>ASuryawanshi</u>
74	TAPASE NAYANA SUNIL	<u>NTapase</u>
75	SUTAR PRASHANT RAJENDRA	<u>RSutar</u>
76	KUNURE PRIYANKA PANDIT	<u>RKunure</u>
77	GHOLAP HARDIK BALKRUSHNA	<u>HGholap</u>
78	JADHAV VISHAL BAPUSAHEB	<u>VBJadhav</u>
79	WADKAR SWAROOPA APPASO	<u>SWadkar</u>


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RESULT ANALYSIS

Sr.No.	Name of the students	Marks out of 50	Result
1	PATIL PALLAVI TANAJI	42	PASS
2	MANE NAMRATA SIDDHESHWAR	34	PASS
3	MANE TEJSWI BALASO	42	PASS
4	PATIL VIDYA PARASHARAM	49	PASS
5	CHAVAN DIPALEE MAHADEV	44	PASS
6	LAD SNEHA SUNIL	40	PASS
7	PATIL SHWETA HRISHCHANDRA	46	PASS
8	BAGAL POOJA CHANDRAKANT	32	PASS
9	PATIL MRUNALI MAHADEO	34	PASS
10	MORE ASHWINI RAGHUNATH	12	PASS
11	ZAMBRE PRAJAKTA VISHWAS	32	PASS
12	JAGTAP KIRTI GAJANAN	38	PASS
13	BABAR SHITAL TANAJI	38	PASS
14	PATIL SAYALI SHANKARRAO	40	PASS
15	THITE PRIYANKA PRABHAKAR	40	PASS
16	PAWAR POONAM ASHOK	40	PASS
17	SURYAWANSHI PRAJAKTA DINKAR	40	PASS
18	SUTAR ROHIT BHAUSO	50	PASS
19	TUPE SANJAY SUBHASH	34	PASS


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20	SALUNKHE SHITAL SHIVAJI	40	PASS
21	KORATE PRIYANKA SUNIL	38	PASS
22	JADHAV PRANOTI NIVAS	40	PASS
23	SHINDE MAYURI MANOJ	40	PASS
24	SHINDE PRAGATI BHAIRU	42	PASS
25	PATIL KIRAN RAMESH	32	PASS
26	SHINDE POONAM JAGANNATH	33	PASS
27	KATE SHILESH SAHADEV	30	PASS
28	PATIL VAIBHAV BALASAHEB	38	PASS
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46	PATIL AKSHAY PANDURANG	49	PASS
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48	PATIL SARSVATI MANOHAR	40	PASS
49	PATIL POONAM DILIP	46	PASS


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50	MANE RAM DADASO	32	PASS
51	ZAMBRE VARSHARANI NANASO	34	PASS
52	SURYAWANSHI ANIKET SURESH	33	PASS
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71	SAKHARE PRIYANKA MAHADEV	40	PASS
72	SHINDE SONALI MOHAN	50	PASS
73	SURYAWANSHI AISHWARYA PANDURANG	34	PASS
74	TAPASE NAYANA SUNIL	40	PASS
75	SUTAR PRASHANT RAJENDRA	38	PASS
76	KUNURE PRIYANKA PANDIT	40	PASS
77	GHOLAP HARDIK BALKRUSHNA	40	PASS
78	JADHAV VISHAL BAPUSAHEB	49	PASS
79	WADKAR SWAROOPA APPASO	48	PASS


HEAD

Department OF MATHS:
P. D. V. P. Mahavidyalaya
TASGAON (Sangli)

Shri Swami Vivekanand Shikshan Sanstha Kolhapur
Padmabhushan Dr. Vasantodada Patil Mahavidyalaya, Tasgaon


Department of Mathematics

Academic year 2016-2017

RESULT ANALYSIS

RANKERS

Sr. No.	Name of the student	Total Marks	Rank
1	SAWANT RUTUJA RAJENDRA	50	I st
2	JADHAV VISHAL BAPUSAHEB	49	II nd
3	WADKAR SWAROOPA APPASO	48	III rd


HEAD
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TASGAON (Sangli)

**PADMABHUSHAN DR. VASANTRAODADA PATIL
MAHAVIDYALAYA, TASGAON**

Tal-Tasgaon, Dist-Sangli-416312 (Maharashtra)

(Affiliated to Shivaji University, Kolhapur)

2016-2017

This is to Certify that Mr. /Miss. _____

*Mother's name _____ has passed the
certificate course in A CERTIFICATE COURSE IN OPTIMIZATION PROBLEMS in _____
_____ Class in the year _____ The examination of which
was held in April _____*

This said certificate has been issued to him/her at Tasgaon (Dist-Sangli)


Co-ordinator
HEAD

Department OF MATHS
P. D. V. P. Mahavidyalaya
TASGAON. (Sangli)

Principal