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- Shikshanmaharshi Dr. Bapuji Salunkhe

Shri Swami Vivekanand Shikshan Sanstha's

Vivekanand College, Kolhapur

(Autonomous)

Department of Physics

ICT based CIE

on

M.Sc. I: Internal Examination of Mathematical methods of Physics

Conducted by

Mr. A. V. Shinde

on

Date: 26/03/2021, Time: 11.00 am to 11.25 am

(2020 – 21)

Mathematical Methods in Physics

Vivekanand College, Kolhapur (Autonomous)

Department of Physics

M. Sc. I (Internal examination)

Paper code – CP-1100A

Name of the course - Mathematical methods of Physics

Date – 26-03-2021

Time – 11.00 am to 11.25 am

Instructions:

- 1) All questions are compulsory.
- 2) Each question carry one mark.
- 3) Total mark = 20

* Indicates required question

1. Name of Student *

2. Email Address *

3. PRN Number *

4. Roll No *

5. Untitled Question

1. Two of the eigen values of a 3×3 matrix, whose determinant equals 4 are -1 and 2, the third eigen value of the matrix is equal to

- a) -2 | b) -1 c) 1 d) 2

Mark only one oval.

- a)
 b)
 c)
 d)
 Other: _____

6.

2. The eigen values of matrix A are 1,-2, 3. The eigen values of $3I-2A+A^2$ are

- a) 2,11,6 b) 3,11,18 c) 2,3,6 |d) 6,3,11

Mark only one oval.

- a)
 b)
 c)
 d)
 Other: _____

7.

3. An eigen value of scalar matrix A is $\lambda = 0$. Then...

- a) $|A| \neq 0$ b) A is symmetric c) A is singular d) A is an odd order matrix

Mark only one oval.

a)

b)

c)

d)

Other: _____

8.

4. $(AB)^{-1}$ is equal to

- a) $A^{-1}B^{-1}$ b) $B^{-1}A^{-1}$ c) $(A')^{-1}B^{-1}$ d) $A^{-1}(B')^{-1}$

Mark only one oval.

a)

b)

c)

d)

Other: _____

9.

5. The characteristics of an orthogonal matrix is

- a) $A^{-1} A = I$ b) $A A^{-1} = I$ c) $A' A^{-1} = I$ d) $A A' = I$

Mark only one oval.

a)

b)

c)

d)

Other: _____

10.

6. If A is a skew symmetric matrix of odd order, then determinant of A is.....

- a) -1 b) 0 c) 1 d) a real number

Mark only one oval.

a)

b)

c)

d)

Other: _____

11.

7. The characteristics roots of a Hermitian matrix are

a) real b) imaginary c) complex d) zero

Mark only one oval.

a)

b)

c)

d)

Other: _____

12.

8. The characteristics roots of a skew Hermitian matrix are

a) zero or pure imaginary b) real c) complex d) not defined

Mark only one oval.

a)

b)

c)

d)

Other: _____

13.

9. Any square matrix A and its transpose A' haveeigenvalues

- a) different b) real c) same d) imaginary**

Mark only one oval.

a)

b)

c)

d)

Other: _____

14.

10. The sum of eigenvalues of matrix is equal to of matrix.

- a) trace b) real c) determinant d) imaginary**

Mark only one oval.

a)

b)

c)

d)

Other: _____

15.

11. The product of eigenvalues of a matrix A is equal to of A

- a) trace b) real c) determinant d) imaginary

Mark only one oval.

a)

b)

c)

d)

Other: _____

16.

12. Eigen value of matrix $\begin{bmatrix} 1 & i \\ -i & 1 \end{bmatrix}$ are.....

- a) +1 and +1 b) zero and +1 c) zero and +2 d) -1 and +1

Mark only one oval.

a)

b)

c)

d)

Other: _____

17.

13. The eigen values of the matrix $\begin{bmatrix} \cos \theta & -\sin \theta \\ \sin \theta & \cos \theta \end{bmatrix}$ are.....

- a) $e^{\pm i\theta}$ b) $e^{\pm 2i\theta}$ c) $e^{\pm 3i\theta}$ d) $e^{\pm i\theta/2}$

Mark only one oval.

- a)
- b)
- c)
- d)
- Other: _____

18.

14. If $A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 0 & 0 & 8 \end{bmatrix}$, then sum of eigen values are

- a) 14 b) 15 c) 6 d) 5

Mark only one oval.

- a)
- b)
- c)
- d)
- Other: _____

19.

15. If $AB = BA$ where A & B are matrixes, then.....

a) A & B have same order

b) A & B have different order

c) A & B have same rank

d) A & B have different rank

Mark only one oval.

a)

b)

c)

d)

Other: _____

20.

16. The determinant of a 3 x 3 real symmetric matrix is 36. If two of its eigen values are 2 & 3, then the third eigen value is

a) 4

b) 6

c) 8

| d) 9

Mark only one oval.

a)

b)

c)

d)

Other: _____

21.

17. The value of integral $\oint \frac{dz}{z+2}$ where $|z| = 1$ is

- a) 0 b) πi c) $-\pi i$ d) $-2\pi i$

Mark only one oval.

- a)
- b)
- c)
- d)
- Other: _____

22.

18. The value of integral $\oint \frac{3z^2 + 7z + 1}{z+1}$ where $|z| = \frac{1}{2}$ is

- a) 0 b) πi c) $-\pi i$ d) $-2\pi i$

Mark only one oval.

- a)
- b)
- c)
- d)
- Other: _____

23.

19 The necessary condition for function $f(z)$ to be analytic at all points in the region are

a) $\frac{\partial u}{\partial x} = \frac{\partial v}{\partial y}$, $\frac{\partial u}{\partial y} = -\frac{\partial v}{\partial x}$

b) $\frac{\partial u}{\partial x} = \frac{\partial v}{\partial y}$, $\frac{\partial u}{\partial y} = \frac{\partial v}{\partial x}$

c) $\frac{\partial u}{\partial x} = -\frac{\partial v}{\partial y}$, $\frac{\partial u}{\partial y} = \frac{\partial v}{\partial x}$

d) $\frac{\partial u}{\partial x} = -\frac{\partial v}{\partial y}$, $\frac{\partial u}{\partial y} = -\frac{\partial v}{\partial x}$

Mark only one oval.

a)

b)

c)

d)

Other: _____

24.

20. The value of integral $\oint \frac{3z+4}{z(2z+1)} dz$ where $|z| = \frac{1}{2}$ is

a) $3\pi i$ b) πi c) $-\pi i$ d) $-2\pi i$

Mark only one oval.

a)

b)

c)

d)

Other: _____

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Mathematical Methods in Physics

22 responses

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Pranav shankar ghosalkar

Rutuja Subhash Shetti

Pratiksha Pandit Chougale

Priyanka Sanjay Patil

Yogita zirange

Sadiya shaikh

Manasi Khanderao Jagadale

Priyarani Ravindra Burud

Komal Jotiram Bhosale

Gouri govind jadhav

Snehal Mane

Sawant Manisha Shivram

Sunil Ratnakar chougale

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22 responses

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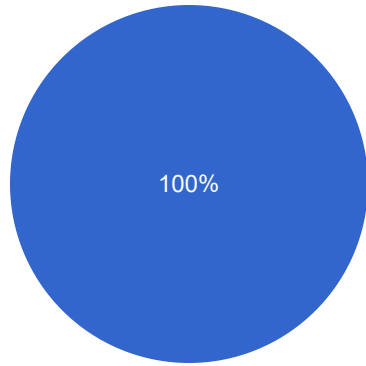
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Untitled Question

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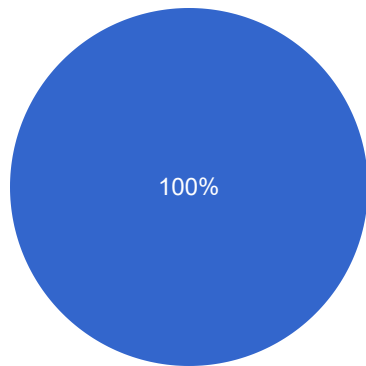
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22 responses

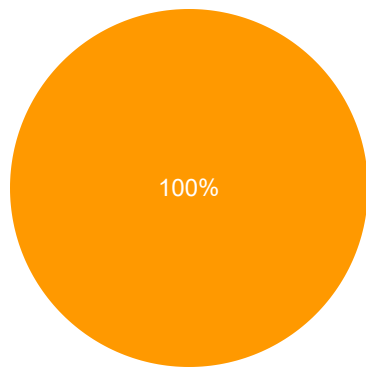
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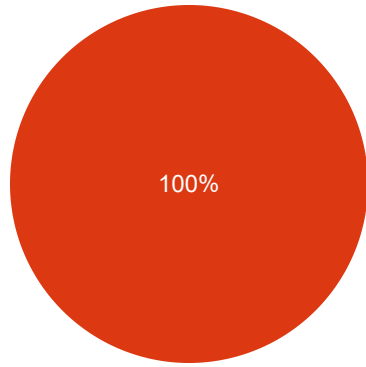


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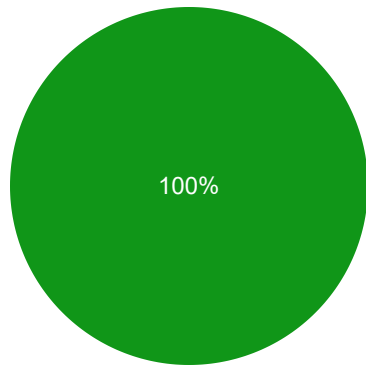
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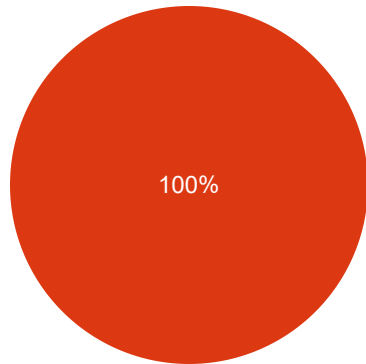
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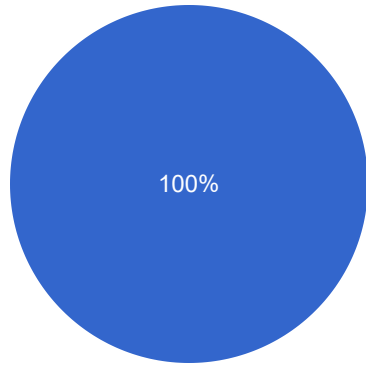


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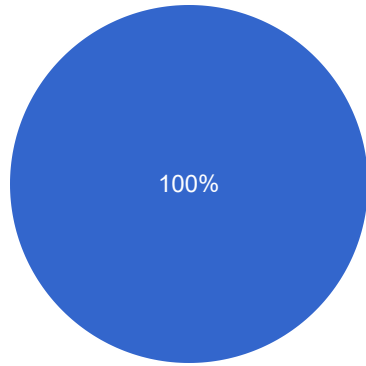
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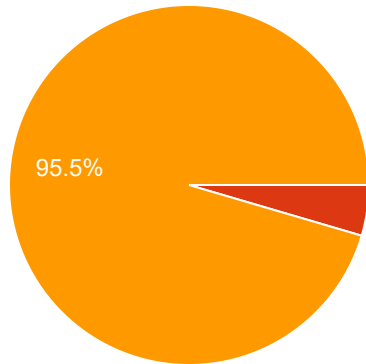
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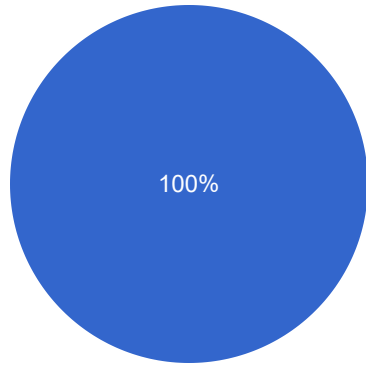


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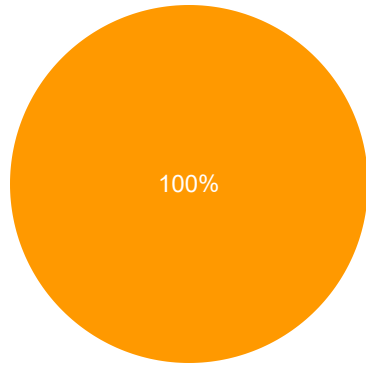
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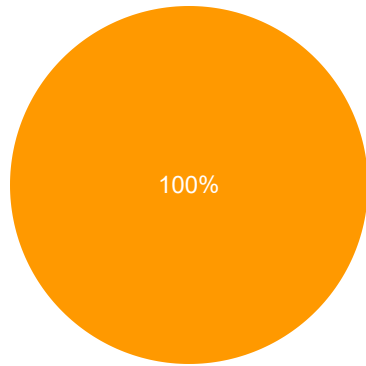
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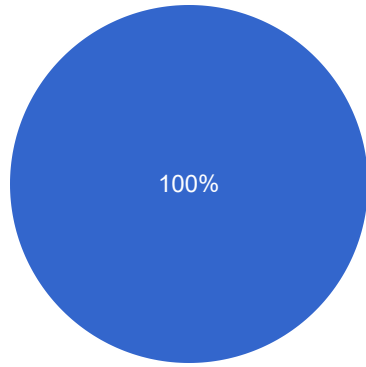


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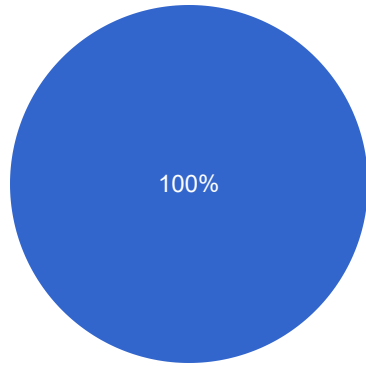
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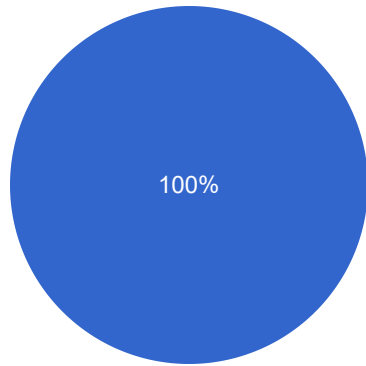
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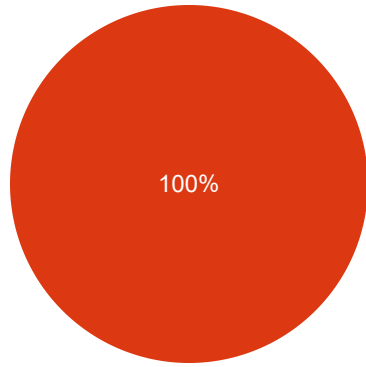


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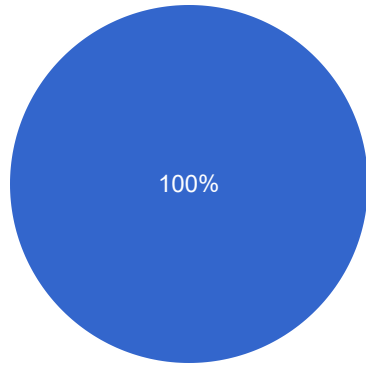
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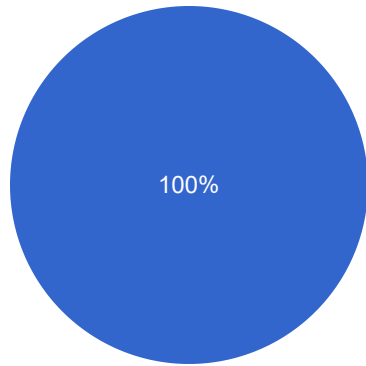
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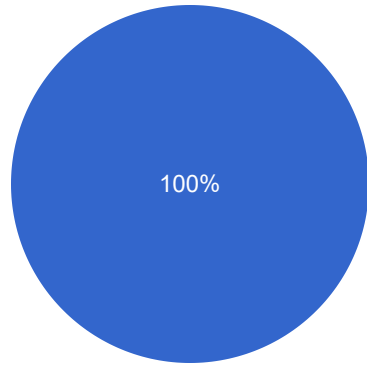


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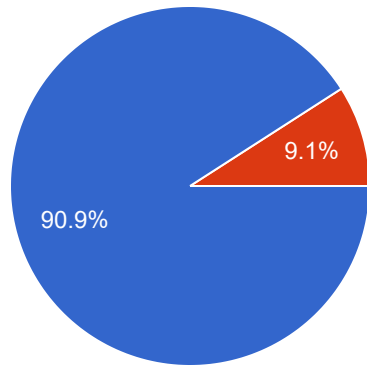
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