"Dissemination of Education for Knowledge, Science and Culture"

- Shikshanmaharshi Dr. Bapuji Salunkhe

Shri Swami Vivekanand Shikshan Sanstha's

Vivekanand College, Kolhapur

(Autonomous)

Department of Physics

ICT based CIE

on

B.Sc. III: Internal Examination of Mathematical and Statistical Physics

Conducted by

Dr. M. M. Karanjkar

on

Day: Thursday, Date: 01/10/2020

(2020 – 21)

Mathematical and Statistical Physics

Vivekanand College, Kolhapur(Autonomous)
Shivaji University, Kolhapur
Final Year Backlog Online Examination-2020
B.Sc.III(Sem V)
Physics paper- IX
Mathematical and Statistical Physics
Day: Thursday
Date: 1/10/2020
Marks: 50
Attempt any 25
Instructions :1) Attempt any 25
2) Each question carries 2 marks

* Indicates required question

1. Email *

2. Name of the Student *

3. PRN *

4. email address *

5. Roll No. *

6. 1 Three coordinates of spherical polar coordinate system are …..

Mark only one oval.

- a)x,y,z
- b) r, θ, φ
- c) r, θ, z
- d) r, φ,z

7. 2 Three coordinates of Cylindrical polar coordinate system are …..

Mark only one oval.

- a)x,y,z
- b) r, θ, φ
- c) r, θ, z
- d) r, φ,z

8. 3 In orthogonal curvilinear coordinate system, the coordinate surfaces are in general …..

Mark only one oval.

- a)Plane
- b) curved
- c) spherical
- d) linear

9. 4 In orthogonal curvilinear coordinate system, the coefficients h1, h2, h3 are called …..

Mark only one oval.

- a)Scale coordinates
- b) scale coefficients
- c) scale factors
- d) all of the above

10. 5.In spherical polar coordinate system, h3= ……

Mark only one oval.

- a)r
- b) sin θ
- c) rsin θ
- d) cos θ

11. 6.The highest of the orders of the differential coefficients occurring in a differential equation is called ……of the differential equation.

Mark only one oval.

- a)Degree
- b) order
- c) linearity
- c) power

12. 7.The ….. of a differential equation is highest power of highest order differential coefficient occurring in it.

Mark only one oval.

- a)Degree
- b) order
- c) linearity
- d) all of the above

13. 8. In a ……. Differential equation the dependent variable and all its derivatives occur in the first power.

Mark only one oval.

- a)Homogeneous
- b) in homogeneous
- c) linear
- d) nonlinear

14. 9. What is the volume of cell in phase space?

Mark only one oval.

- a)h
- b)h2
- c) h3
- d)1/h

15. 10. Many different ……may correspond to the same microstate

Mark only one oval.

- a)Microstates
- b) macrostates
- c) phase points
- d)phase densities

16. 11. For the distribution of most probable……

Mark only one oval.

- a)W=0
- b) lnW=0
- c) $^{\delta}$lnW=0
- d) $^{\delta}$=0

17. 1222. Thermodynamics can not be applied to ……. Ensemble

Mark only one oval.

- a)Microcanonical
- b)canonical
- c) grand canonical
- d)minicanonocal

18. 1323. The collection of large number of essentially independent systems having the same temperature T, volume V and the same number of identical particles N is called the ……ensemble.

Mark only one oval.

- a)Microcanonical
- b)canonical
- c) grand canonical
- d)hetrocanonical

19. 1425. If W is the probability of state of the system, then which of the following is the statistical definition of entropy?

Mark only one oval.

- a)S= kW
- b)S= WlnK
- c) S= klnW
- d) S= W

20. 1526. Maxwell –Boltzmann distribution law gives the most probable distribution of ……

Mark only one oval.

- a)A number of molecules among given number of energy values
- b)Number of energy values which can be assigned to a molecule
- c)Number of molecules associated with a given value of energy
- d)maximum molecules associated with a given value of energy

21. 16A perfectly black body is …… concept

Mark only one oval.

- a)An ideal
- b)a practical
- c)an achievable
- d)an imaginary

22. 1733. The energy density of diffused radiation coming from all possible directions is given by

Mark only one oval.

- a)4Pi K/c
- b)2Pi K/c
- c) 3Pi K/c
- d) Pi K/c

23. 18.34. The radiation pressure due to diffused radiation =….. X the energy density of radiation.

Mark only one oval.

- a)2
- b)3
- c)½
- d) 1/3

24. 1936. Bose-Eienstein statistics is applicable to the ……

Mark only one oval.

- a)Identical indistinguishable particles of zero or integral spins
- b) Identical indistinguishable particles of any spins
- c)Identical distinguishable particles of zero or integral spins
- d)Identical distinguishable particles of any spins

25. 2037. Which of the following particles are Boson?

Mark only one oval.

- a)Electrons
- b) protons
- c)gas molecules
- d)photons

26. 2140. Rayleigh –Jean's formula agrees well with the experimental results at …… wavelengths.

Mark only one oval.

- a)All
- b)longer
- c)shorter
- d)difference between longer and shorter

27. 2242. Fermi and Dirac modifies Bose-Eienstein statistics on the basis of ……

Mark only one oval.

- a)Equipartition energy
- b)Pauli exclusion principle
- c) quantum theory
- d) both Equipartition energy and Pauli exclusion principle

28. 2343. According to the Pauli exclusion principle it is impossible for two electrons to exist in the same……..

Mark only one oval.

- a)Atom
- b)electronic orbit
- c)quantum state
- d)atom and electronic orbit

29. 2444. Fermi-Dirac statistics is applicable to the …..

Mark only one oval.

- a)Electrons
- b)atoms
- c)molecules
- c)photons

30. 2545. The particles obeying Fermi-Dirac statistics are called….

Mark only one oval.

- a)Fermi particles
- b)Dirac Particles
- c)Fermi-Dirac particles
- d)Bose Particles

31. 2646. Fermi-Dirac distribution law is widely applied in the

Mark only one oval.

- a)Band Theory of solids
- b)free electron theory of metals
- c)Debye theory of specific heat
- d)electronics

32. 2741. Wein’s law agrees well with the experimental results at …. Frequencies

Mark only one oval.

- a)All
- b)small
- c)large
- d)difference between smaller and larger

33. 28 Stirlings formula is given as

Mark only one oval.

- a)nlon-n
- b)nlogn+n
- c)nlog.
- d)2nlog

34. 29.Fermions have spin value

Mark only one oval.

- a)zero
- b)1/2
- c)1
- d)2

35. 30. In Cartesian coordinate system h1=h2=h3=……..

Mark only one oval.

- a)0
- b) 1
- c) r
- d)3

Mathematical and Statistical Physics

9 responses

Publish analytics

Name of the Student

9 responses

xyz

PATIL TEJASWINI KRISHNA

Sourabh Vijay Ghatage

Dinde Akash Sadashiv

Sujit Dinkar Katale

Sourabh kiran joshi

Sourabh Mahadev Kadam

Abhijeet Bajirao Chougule

Katroot Harshad Sitaram

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9 responses

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9 responses

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9 responses

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1 Three coordinates of spherical polar coordinate system are …..

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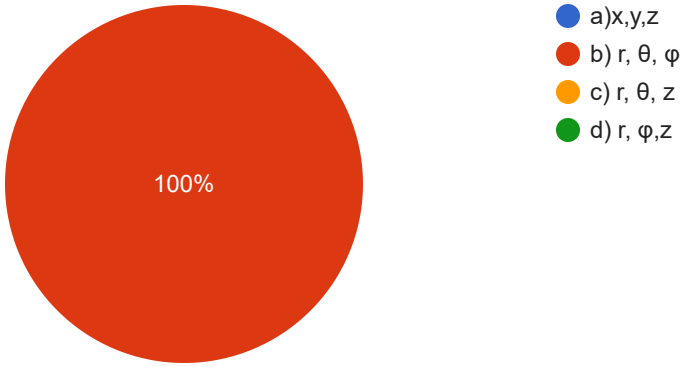

2 Three coordinates of Cylindrical polar coordinate system are …..

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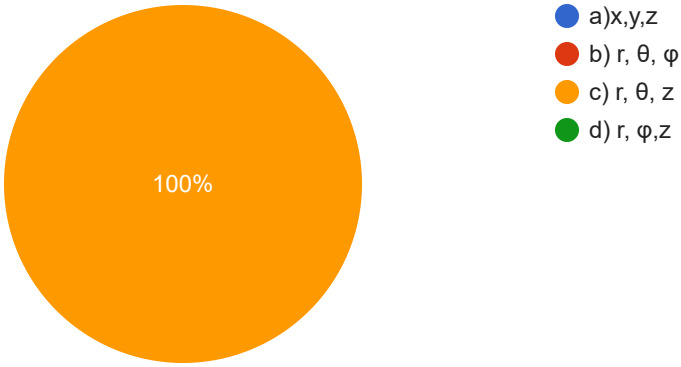

3 In orthogonal curvilinear coordinate system, the coordinate surfaces are in general …..

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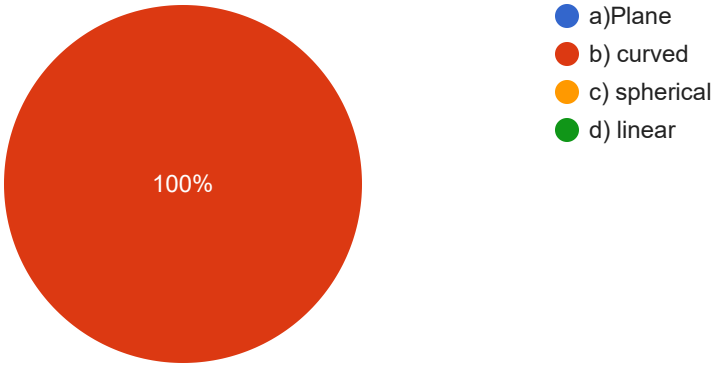

4 In orthogonal curvilinear coordinate system, the coefficients h1, h2, h3 are called …..

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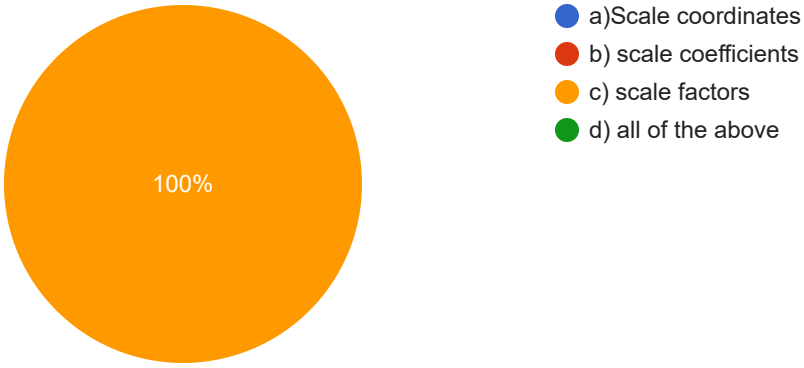

5.In spherical polar coordinate system, h3= ……

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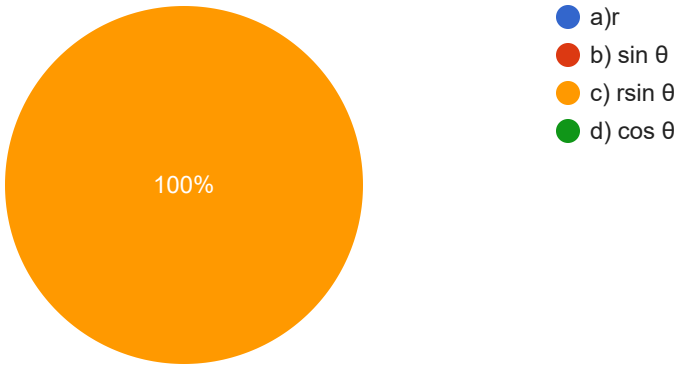

6.The highest of the orders of the differential coefficients occurring in a differential equation is called ……of the differential equation.

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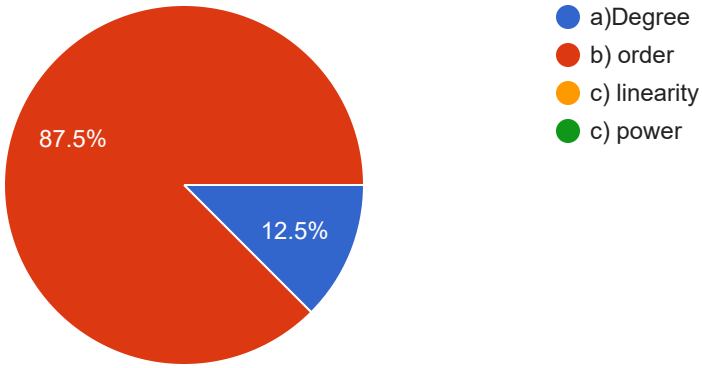

7.The ….. of a differential equation is highest power of highest order differential coefficient occurring in it.

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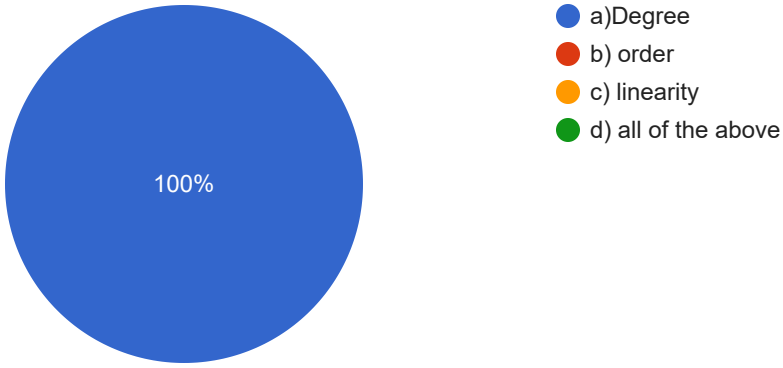

8. In a ……. Differential equation the dependent variable and all its derivatives occur in the first power.

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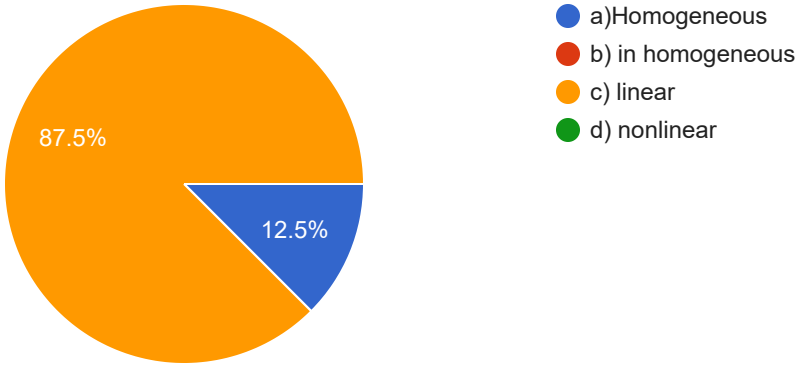

9. What is the volume of cell in phase space?

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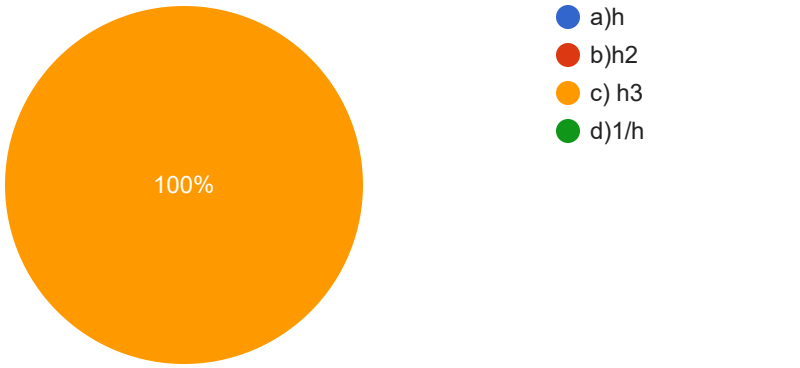

10. Many different ……may correspond to the same microstate

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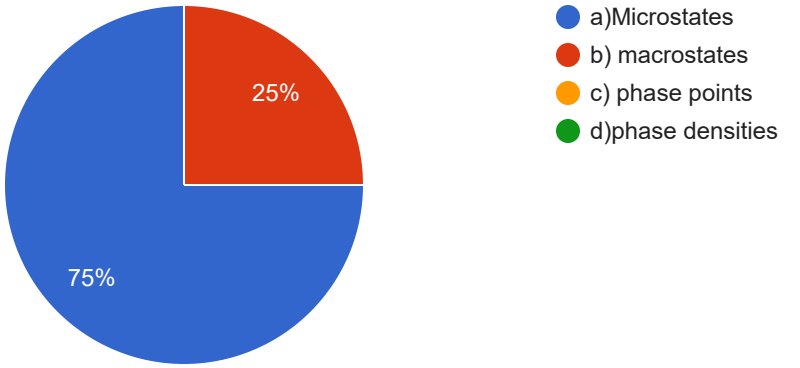

11. For the distribution of most probable……

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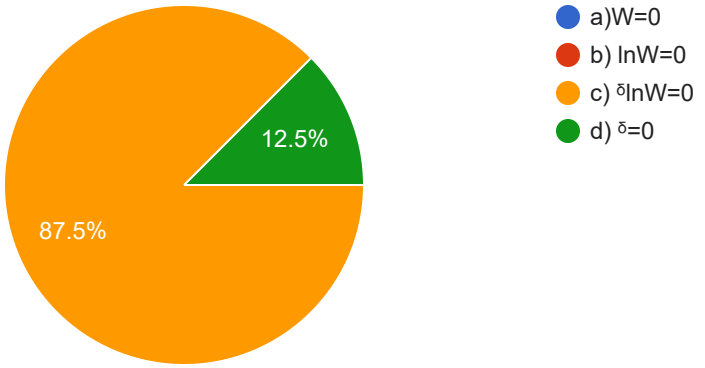

1222. Thermodynamics can not be applied to ……. Ensemble

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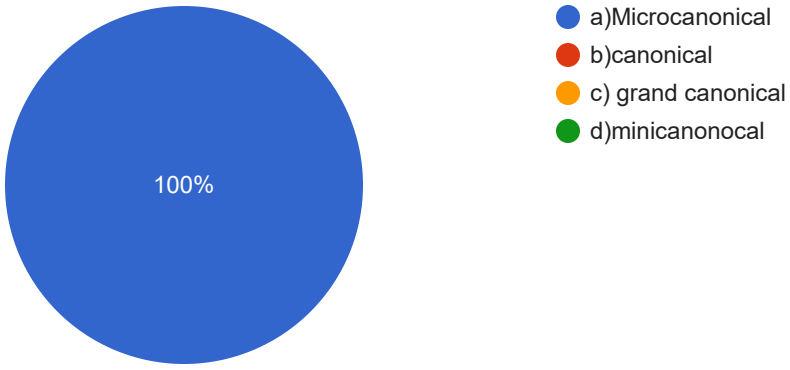

1323. The collection of large number of essentially independent systems having the same temperature T, volume V and the same number of identical particles N is called the ……..ensemble.

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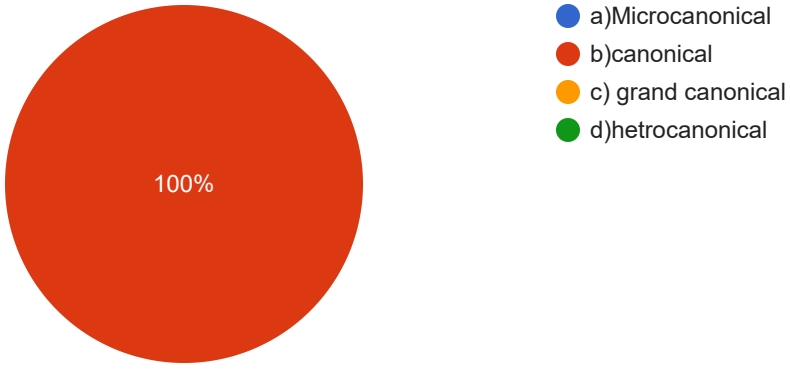

1425. If W is the probability of state of the system, then which of the following is the statistical definition of entropy?

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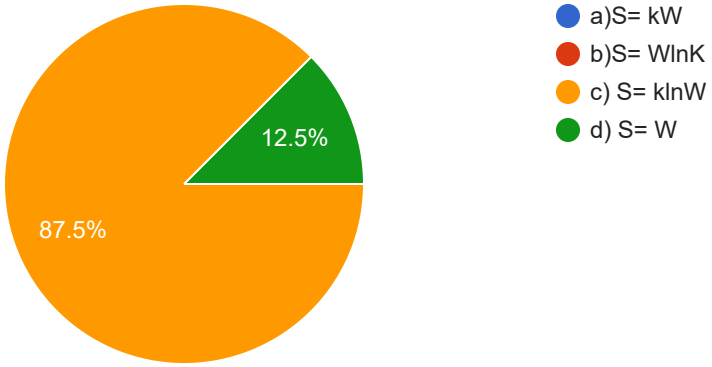

1526. Maxwell –Boltzmann distribution law gives the most probable distribution of ……

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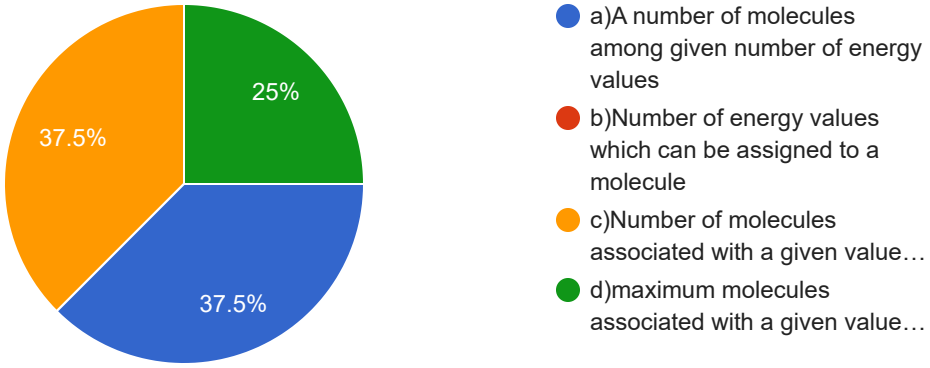

16A perfectly black body is …… concept

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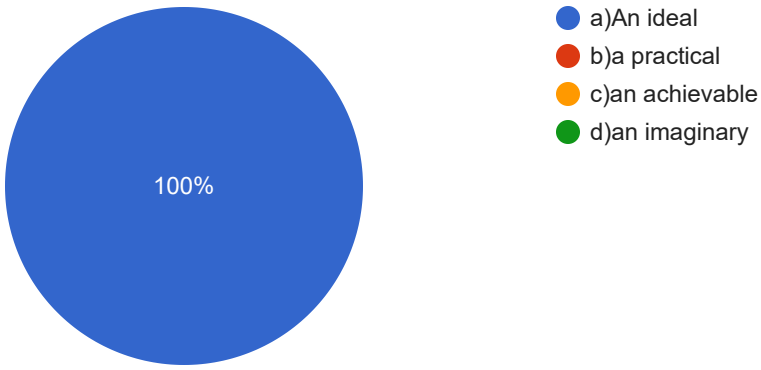

1733. The energy density of diffused radiation coming from all possible directions is given by

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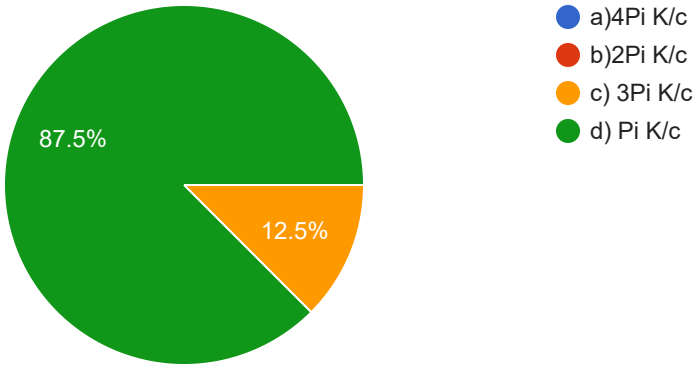

18.34. The radiation pressure due to diffused radiation =….. X the energy density of radiation.

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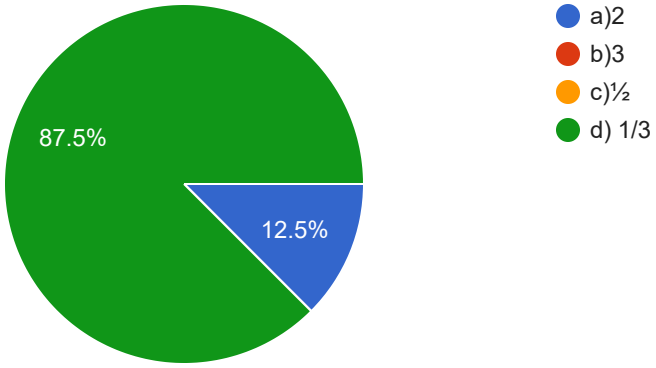

1936. Bose-Eienstein statistics is applicable to the ……

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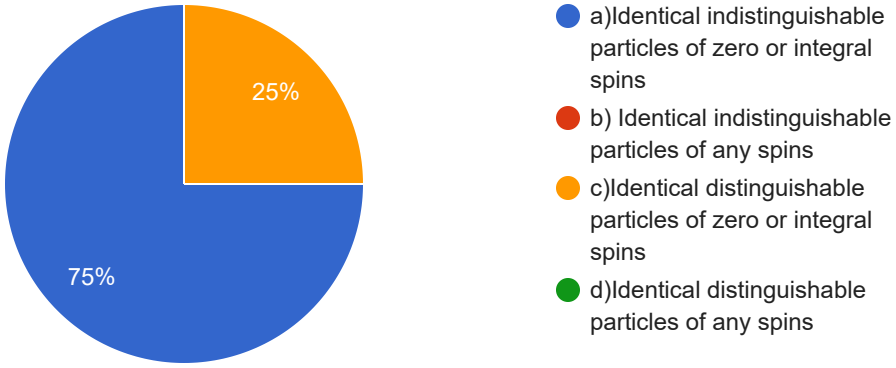

2037. Which of the following particles are Boson?

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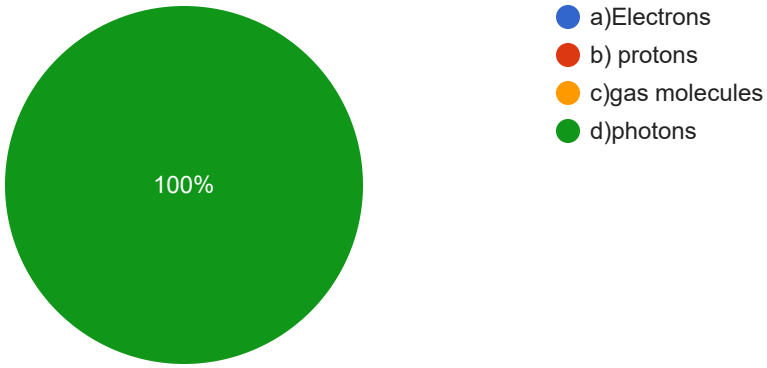

2140. Rayleigh –Jean's formula agrees well with the experimental results at …… wavelengths.

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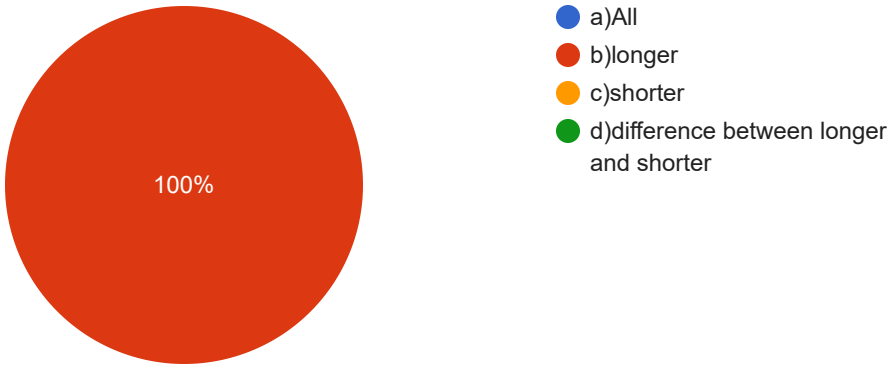

2242. Fermi and Dirac modifies Bose-Eienstein statistics on the basis of ……..

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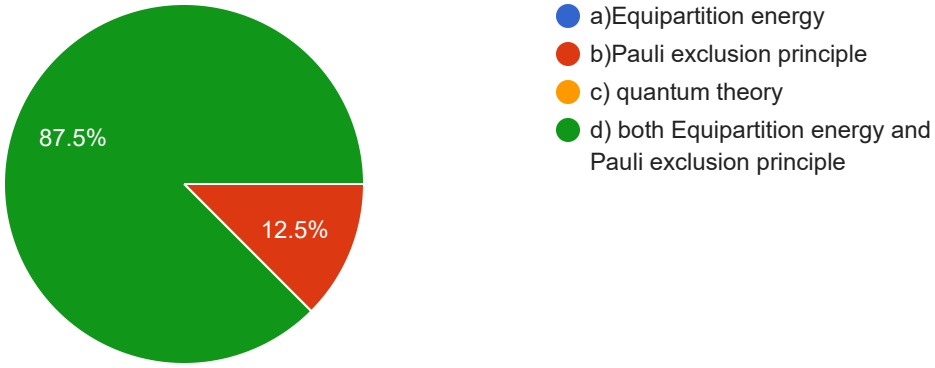

2343. According to the Pauli exclusion principle it is impossible for two electrons to exist in the same……..

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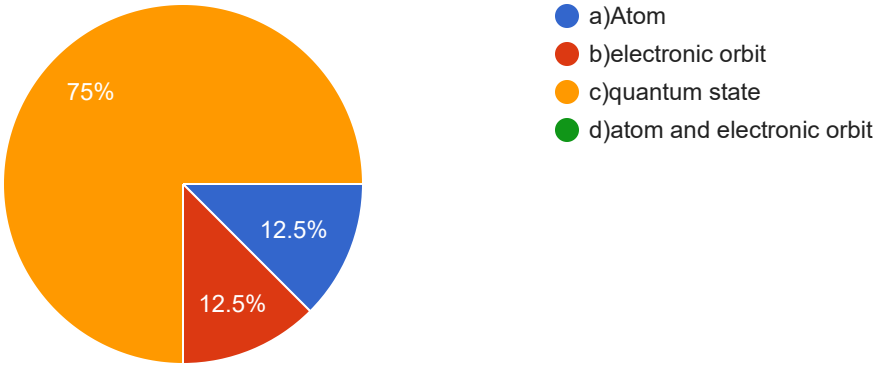
8 responses



2444. Fermi-Dirac statistics is applicable to the …..

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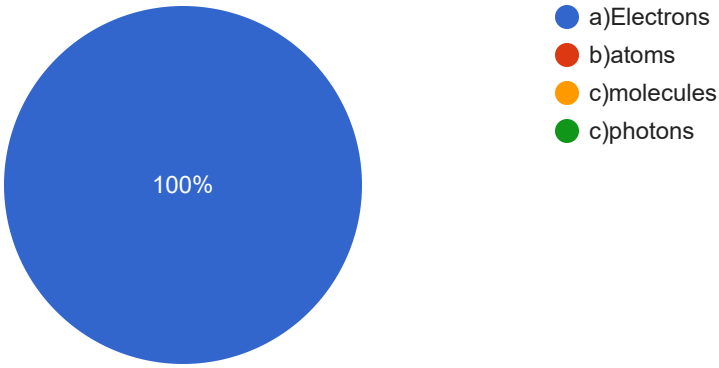

2545. The particles obeying Fermi-Dirac statistics are called….

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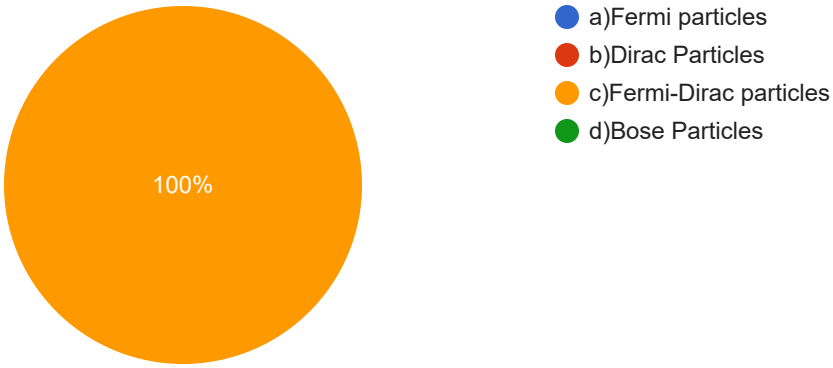

2646. Fermi-Dirac distribution law is widely applied in the

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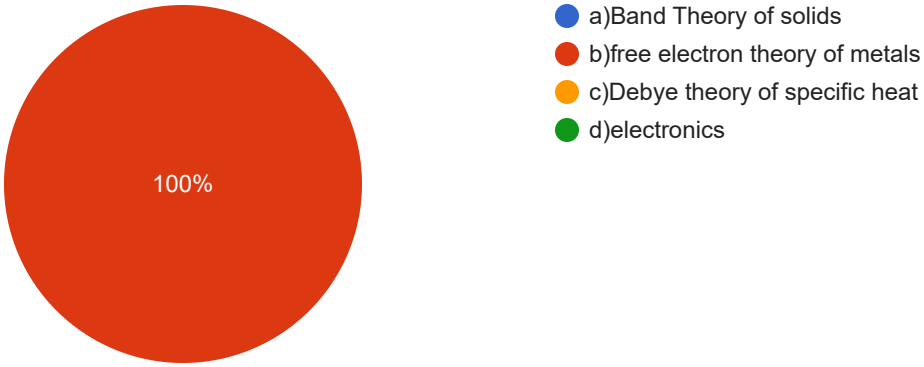

2741. Wein's law agrees well with the experimental results at .... Frequencies

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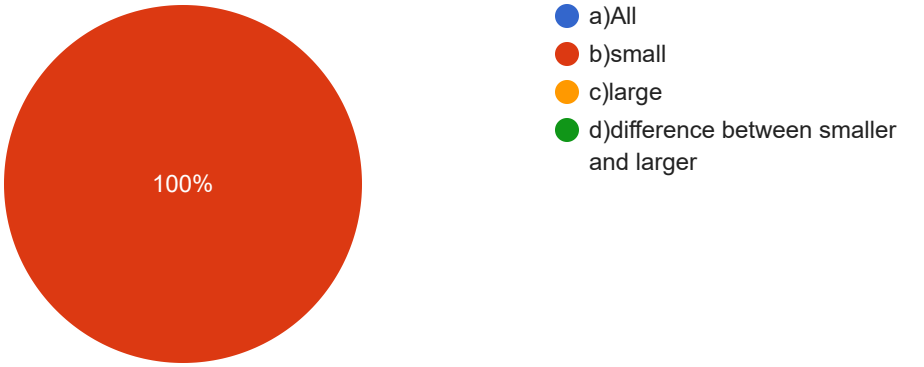

28 Stirlings formula is given as

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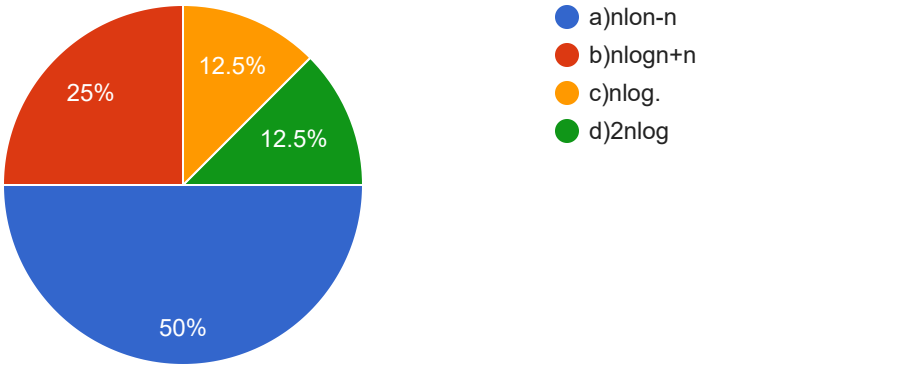

29.Fermions have spin value

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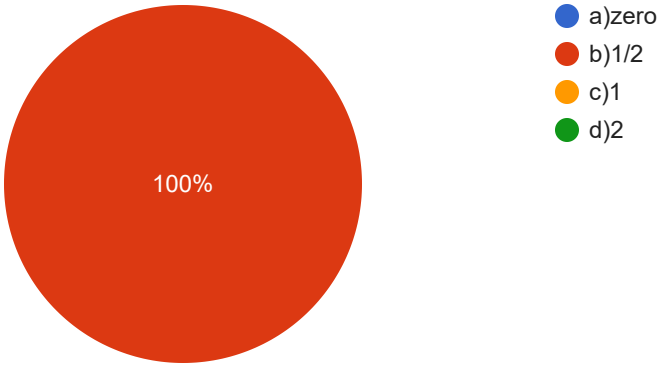

30. In Cartesian coordinate system h1=h2=h3=……..

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8 responses