Vivekanand College, Kolhapur. (Autonomous)
Department of Physics
Internal Examination Notice
2021-22

Date: 10 May 2022

~~2022~~

All students of class B.Sc. I, B.Sc. II and B.Sc. III are hereby noticed that the second term internal evaluation examination is scheduled as per following time table.

Nature of question paper:

For B.Sc. I : Long answer question (Any two from given four questions) for 20 marks

Short answer question (Any four from given six questions) for 20 marks

For B.Sc. II : Long answer question (Any one from given two questions) for 10 marks

Short answer question (Any two from given four questions) for 10 marks

For B.Sc. II (Astro) : Long answer question (Any one from given two questions) for 10 marks

Short answer question (Any two from given four questions) for 10 marks

Internal Evaluation Examination 2021-22.
SEM II, SEM IV and SEM VI
Time Table

Sr. No.	Class	Paper	Date	Time
1.	B.Sc. I	Paper II	22/05/2022	11:00 am to 12:30 pm
2.	B.Sc. II	Paper IV	22/05/2022	11:00 am to 12:00 pm
3.	B.Sc. II (Astrophysics)	Paper II	25/05/2022	04:00 pm to 05:00 pm

HOD

VIVEKANAND COLLEGE ESTD JUNE 1964 KOLHAPUR - 416003

Shri Swami Vivekanand Shikshan Sanstha's

Vivekanand College, Kolhapur (Autonomous)

Internal Examination 2021-22

PHYSICS-DSC -1001D

B.Sc. – II, Sem – IV (Thermal and statistical physics II and Optics)

Time: 30 Minutes | Marks: 30

Q. 1. Select Correct Alternatives **(5)**

1) Thermal radiations can travel through ----------

a) Only solid medium
b) Only liquid medium
c) Only gaseous medium
d) Any medium

2)According to Prevost's theory of heat exchange ------

a)Every body emit heat radiations continuously to the surrounding only

b) Every body absorb heat radiations continuously from the surrounding only

c) Every body emit heat radiations continuously to the surrounding and at the same time it receives radiations from surrounding

d) Every body do not exchange heat to the surrounding

3) Perfect black body is --------

a) perfect emitter

b) perfect absorber

c) both 'a' and 'b'

d) good conductor

TO4) According to Kirchoff's law emissive power of perfect black body is equal to -----

a) ratio of emissive power to absorptive power of a given body

b) ratio of absorptive power to emissive power of a given body

c) ratio of emissive power to adsorptive power of a given body

d) ratio of adsorptive power to absorptive power of a given body

5) According to Wein's distribution law ;if λm be the wavelength for maximum energy for Absolute temperature T then

a) $\lambda m \cdot T$ = constant

b) $\frac{\lambda m}{T}$ = constant

c) $\lambda m \ \alpha \ T$

d) $\lambda m \ . T = 0$

1) Two sources are said to be coherent if they have .....
   a) same wavelength
   b) constant path difference
   c) constant phase difference
   d) **all the above**

2) To obtain two coherent sources .....
   a) they must have same wavelength
   b) they must have same path difference
   c) they must have same phase difference
   d) **they must be derived from the same original source**

3) In Lloyd's single mirror experiment, the central fringe is observed to be .....
   a) bright b) **dark** c) faint d) diffuse

4) In a wave getting reflected from a denser medium, the additional phase difference introduced is .....
   a) 0 b) $\pi/2$ c) π d) 2π

5) The fringes obtained in wedge shaped thin film are of .....
   a) increasing thickness b) decreasing thickness c) varying thickness d) **equal thickness**

Q.2 Attempt any ONE **(10)**

1. How Newtons rings are formed? Obtain an expression for the radius of n^{th} dark ring.
2. Derive an expression for plank's law.

Q.3 Attempt any TWO **(10)**

1. Discuss the conditions to obtain interference due to reflection of light from thin, parallel film.
2. Deduce of Wien's distribution law
3. Write a note on Blackbody radiation and its importance.

Shri Swami Vivekanand Shikshan Sanstha's

Vivekanand College, Kolhapur

(Autonomous)

Department of Physics

Internal exam(2021-22)

B.Sc.II Sem IV

Date:- 22/05/2022

Attendance Sheet

Roll No.	Name Of Student	Signature
7364	Ambi Pranav Anil	Ambi
7365	Avdankar Pratiksha Ranjeet	Pratiksha
7366	Bargir Yusuf Rahim	YB
7367	Chavan Shruti Raj	Shruti
7368	Chougale Tejas Tukaram	Tejas
7369	Dhisale Vinayak Damodar	VD
7370	Dhotre Shreyash Rajendra	Dhotre
7372	Gajare Namrata Ratan	N.R. Gajare
7373	Garad Dnyaneshwar Sunil	Garad
7374	Ghatage Shamal Dattatray	Shamal.
7375	Gosavi Vinayak Nandkumar	Vinayak
7376	Jadhav Ashish Pandurang	Jadhav
7377	Jadhav Prajakta Hambir	Jadhav
7378	Jadhav Shankar Gajanan	Shankar
7379	Jadhave Sourabh Ramesh	SRJ
7380	Jamadar Mahek Shakilahmed	MJamadar
7381	Kadwale Ankit Vinayak	Akadwale
7382	Kamble Aditya Dattatray	Kamble
7383	Kamble Amol Manik	Amol
7384	Kamble Pradnyavant Machhindra	PK
7385	Karale Pratik Sanjay	Karale
7386	Karekar Aryan Chetan	AK
7387	Katkar Dattatray Prakash	Katkar
7388	Khot Rutuja Krushnat	Rutuja
7389	Khtangle Nishikant Nivruti	N. N. Khtangle
7390	Kulkarni Nupur Sujit	NKulkarni
7391	Kumbhar Abhishek Shivaji	AK
7392	Kumbhar Dhanashri Dattatraya	DKumbhar
7393	Mali Abhishek Sanjay	A Mali
7394	Mali Samruddhi Suresh	SM
7395	Mali Tejaswini Sampatrao	TMali
7396	Mane Swarup Prakash	Swarup

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7398	Mulik Suraj Pandit	
7399	Patakure Aditya Shivaji	
7400	Patil Abhishek Uday	
7401	Patil Aditi Mohan	
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7409	Tashildar Shivani Namdev	
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7411	Ubare Sanika Rajaram	
7412	Yadav Vedaja Ajay	
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7414	Chilgonde Aditya Ganpat	
7415	Chougale Pratiksha Rajaram	
7416	Gade Vaibhavi Rajendra	
7417	Gutte Shruti Vinay	
7418	Hiremath Pournima Nagayya	
7419	Jadhav Pankaj Parasharam	
7420	Jadhav Shreya Anil	
7421	Jadhav Vaishnavi Vishwas	
7422	Jadhave Aniket Arun	
7423	Jamdade Manasi Tanaji	
7424	Kagavale Sandhya Dattatray	
7425	Kalkutki Shubham Babasaheb	
7426	Kamble Anjali Bhagwan	
7427	Kanire Darshan Sharad	
7428	Karape Rajkumar Baban	
7429	Kothawale Tejas Vikas	
7430	Kumawat Varsha Rajesh	
7431	Kumbhar Tejaswini Tanaji	
7432	Kurade Saloni Sanjay	
7433	Mane Manoj Jagannath	
7434	Mujawar Ummeaiman Umarfaruk	
7435	Padmakar Alok Narayan	
7436	Panhalkar Asham Imam	
7437	Panhalkar Varsha Yashvant	
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7439	Patil Nikita Ashok	
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7451	Shinde Pranav Tanaji	
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7453	Sokasane Sanika Nandkumar	
7454	Tandale Gouri Sagar	
7455	Teli Vinayak Rajaram	
7456	Thakare Vaishnavee Navnath	
7457	Warke Shriyash Keraba	
7458	Dadarne Gaurav Ajit	
7459	Devekar Vinayak Datttatraya	
7460	Jadhav Saee Sandeep	
7461	Kavane Digvijay Dilip	
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7465	Patil Sakshi Pandurang	
7466	Ropalkar Vrushali Aarti	
7467	Shinde Akanksha Santosh	
7468	Singh Sapana Raviranjan	
7469	Suryavanshi Ajay Mohan	
7470	Todkar Shivani Dipak	
7471	Waydande Arpita Dipak	
7472	Bagwan Shakir Salim	
7473	Bansode Abhishek Balasaheb	
7474	Dongare Prathamesh Abaji	
7475	Gurav Shreya Sardar	
7476	Jadhav Vaishnavi Nanaso	
7477	Kamble Rohit Baban	
7478	Kamble Rutuja Raghunath	
7479	Kapase Hanumant Vishwanath	
7480	Kharase Prathamesh Baburao	
7481	Koli Pratiksha Rajgonda	
7482	Koli Snehal Narsu	
7483	Kopardekar Harshvardhan Pandurang	
7484	Magdum Rasika Deepak	
7485	Momin Mustakim Yasin	
7486	Patil Aaryan Pramod	
7487	Patil Amruta Dattatray	
7488	Patil Satyajeet Sanjay	
7489	Patil Utkarsh Shivaji	
7490	Pirai Snehal Rajaram	

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7492	Priyadarshi Ajinkya Ashok	
7493	Rathod Anushree Suresh	
7494	Sankpal Naganath Uddhav	
7495	Sav Lovely Jitendra	
7496	Shinde Prashant Pandurang	
7497	Sutar Omkar Sanjay	
7498	Yadav Rohini Ravsaheb	
7499	Yadav Shivangi Shivprasad	
7500	Zirange Anuradha Arjun	
7501	Bhingardeve Dhiraj Prakash	
7502	Bhopale Sakshi Tushar	
7503	Bidre Prajakta Sunil	
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7506	Jadhav Pradnya Prashant	
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7509	Maner Aman Imtiyaj	
7510	Maurya Muskan Krupashankar	
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7512	Patil Rutvik Tanaji	
7513	Patil Sandeep Jaysing	
7514	Shingade Aishwarya Deepak	
7515	Shirke Prerana Pradeep	
7516	Yadav Bhgyshri Bharat	

Internal Examinar.....

VIVEKANAND COLLEGE KOLHAPUR (Autonomous) ESTD JUNE 1964

" ज्ञान, विज्ञान आणि सुसंस्कार यांसाठी शिक्षण प्रसार "

-शिक्षणमहर्षी डॉ. बापूजी साळुंखे

Shri Swami Vivekanand Shikshan Sanstha Kolhapur's

VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)

SUPPLIMENT

Signature of Supervisor	

Suppliment No. : 20/25

Roll No. : 7384

Class : BSc-II

Subject : Thermal and statistical physics

Test / Tutorial No. :

Div. :

Q1.

1. d. Any medium

2. C. Every body emit heat radiations continuously to the surrounding and at the same time it receives radiations from surrounding

3. C. both a and b.

4. a. ratio of emissive power to absorptive power of given body

5. a. $\lambda_m T$ = constant

6. d. All of above

7. d. they must be derived from same Original Source

8. b. dark

9. c. π

10. d. equal thickness

Q3.

2. Weins Distribution law

planck's law reduces to weins distribution law for short wavelength plancks law for black body radiation states that,

$$E_\lambda d\lambda = \frac{8\pi hc}{\lambda^5} \cdot \frac{d\lambda}{e^{hc/\lambda KT} - 1}$$

∴ For short wavelength the expression $e^{hc/\lambda KT}$ becomes large as compared to 1 hence for shorter wavelength.

$$\therefore e^{hc/\lambda KT} - 1 \approx e^{hc/\lambda KT}$$

$$\therefore E_\lambda d\lambda = 8\pi hc \cdot \lambda^{-5} e^{-hc/\lambda KT} d\lambda$$

$$\therefore A = 8\pi hc, \quad a = -hc/K$$

∴ where A and a are constant

$$\therefore E_\lambda d\lambda = A\lambda^{-5} e^{-a/\lambda T} d\lambda \quad \text{---} (1)$$

This is known as weins distribution law

3. Black body radiation.

⇒ i. A perfectly black body is one which completely absorbs all the radiation of any wavelength.

ii Since it neither reflects not transmits any radiation, it appears black, whatever may be Colour of incident radiation.

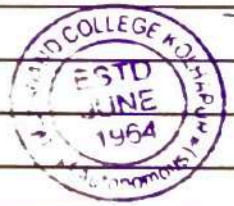
iii for perfectly black body coefficient of absorption is one.

iv. Coefficient of reflection and Coefficient of transmission both are equal to zero.

v. The radiation filled in uniform tempreture enclosure is called full radiation.

vi perfectly black body does not exists nature

(5)



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VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)

SUPPLIMENT

Signature of Supervisor	

Suppliment No. : 15/25

Roll No. : 7375

Class : B.Sc - II

Subject : Thermal and statistical physics

Test / Tutorial No. : Internal exam

Div. :

Q.1

1. d. Any medium
2.
3. c. both a and b
4. a. ratio of emissive power to absorptive power of given body.
5. a. $\lambda_m T$ = const.
6. d. All the above
7. d. They must be derived from same original source
8. b. dark
9. c. π
10. d. equal thickness

Q 3

2. Weins Distribution Law

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$$\therefore A = 8\pi hc \quad , a = -hc/k$$

∴ where A and a are constant

$$\therefore E_\lambda d\lambda = A\lambda^{-5} e^{a/\lambda T} d\lambda \quad \text{— (1)}$$

This is known as weins distribution law

3. Black body radiation

⟹ i) A perfectly black body is one which completely absorbs all the radiation of any wavelength

ii) Since it neither reflects nor transmit any radiation it appears black, whatever may be

Shri Swami Vivekanand Shikshan Sanstha's

Vivekanand College, Kolhapur (Autonomous)

Internal Examination 2021-22

ASTROPHYSICS-DSC -1001D

B.Sc. – II, Sem – III

(Galaxies, Cosmology, solar system & cosmic electrodynamics)

Time: 30 Minutes Marks: 30

Q. 1. Select Correct Alternatives **(5)**

1) The red shift of Quasars measures ---------

a)the shape

b) the age of formation

c)their intensity

d) their distance from earth

2) Galaxies that are extremely bright are called ----------

a) active galactic nuclei

b) supercluster

c) radio galaxies

d) spiral galaxies

3) The period of Halley's comet for earth is ----

a) 76 years

b) 72 years

c) 70 years

d) 74 years

4) Galaxy is -------

a) group of planets

b) group of stars

c)group of satellites

d) group of asteroids

5) our milky way galaxy is ------

a)spiral galaxy

b) elliptical galaxy

c)barred spiral galaxy

d) irregular galaxy

1) A stellar spectra is an ..... spectra which shows dark lines in the spectra.

a) **absorption** b) emission c) transmission d) atomic

2) The group of stars with ionised helium lines in the spectra are known as ..... stars.

a) **O** b) F c) K d) M

3) The coolest group of stars among all stars with surface temperature lower than 3500 K are ..... stars.

a) O b) F c) K d) **M**

4) Nuclei having a constant binding energy per nucleon are relatively ..... nuclei.

a) unstable b) **stable** c) low atomic number
d) high atomic number

6) The milky way galaxy contains large central bulge made up mostly of -----

a) young stars

b) red old stars

c) dust and gas

d)supernova

Long Answer Questions (Attempt any TWO) **(20)**

1) What are the different methods to measure apparent luminosity of stars?

2) Derive an equation for Navier-Stokes equation for viscous fluid.

3) Write a note on apparent luminosity of stars and magnitude scale.

Shri Swami Vivekanand Shikshan Sanstha's

Vivekanand College, Kolhapur

(Autonomous)

Department of Physics

Internal exam (2021-22)

B.Sc.II Sem IV (Astrophysics)

Date:- 25/05/2022

Attendance Sheet

Roll No.	Name Of Student	Signature
7472	Bagwan Shakir Salim	Bagwan
7473	Bansode Abhishek Balasaheb	Bongare
7474	Dongare Prathamesh Abaji	Dongare
7475	Gurav Shreya Sardar	Shreya.
7476	Jadhav Vaishnavi Nanaso	Vaishnavi
7477	Kamble Rohit Baban	Kamble
7478	Kamble Rutuja Raghunath	Rutuja.
7479	Kapase Hanumant Vishwanath	Kapse
7480	Kharase Prathamesh Baburao	Pk
7481	Koli Pratiksha Rajgonda	Koli
7482	Koli Snehal Narsu	Koli
7483	Kopardekar Harshvardhan Pandurang	Kopardekar
7484	Magdum Rasika Deepak	Rasika
7485	Momin Mustakim Yasin	Momin
7486	Patil Aaryan Pramod	Patil
7487	Patil Amruta Dattatray	Amruta
7488	Patil Satyajeet Sanjay	Sap
7489	Patil Utkarsh Shivaji	Patil
7490	Pirai Snehal Rajaram	Pirai
7491	Powar Pruthviraj Pandurang	Powar
7492	Priyadarshi Ajinkya Ashok	Priyadarshi
7493	Rathod Anushree Suresh	Rathode
7494	Sankpal Naganath Uddhav	Naganath
7495	Sav Lovely Jitendra	Lovely
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7506	Jadhav Pradnya Prashant	Jadhav.
7507	Jadhav Siddhesh Vishnu	Sjadh
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7509	Maner Aman Imtiyaj	Aman.
7510	Maurya Muskan Krupashankar	Maurya.
7511	Patil Anirudha Vitthal	APatil
7512	Patil Rutvik Tanaji	RPatil
7513	Patil Sandeep Jaysing	Sandeep.
7514	Shingade Aishwarya Deepak	AShingade
7515	Shirke Prerana Pradeep	PShirke
7516	Yadav Bhgyshri Bharat	Bhagyashree

Internal Examinar.....

VIVEKANAND COLLEGE KOLHAPUR
ESTD JUNE 1964
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Shri Swami Vivekanand Shikshan Sanstha Kolhapur's

VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)

SUPPLIMENT

Signature of Supervisor	

Suppliment No. : 25

Roll No. : 7484

Class : B.Sc - II

Subject : Astrophysics

Test / Tutorial No. :

Div. :

Q.1)

1) d) their distance from earth

2) c) radio galaxies

3) a) 76 years

4) b) group of stars

5) a) Spiral galaxy

6) a) absorption

7) a) O

8) d) M

9) b) stable

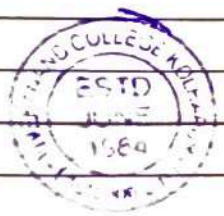
10) b) red old star.

Q 2>

3> Luminosity of Star →

Luminosity is the total amount of electromagnetic theory emitted per unit time by an object. In SI system luminosity is measured in two Joules/second. The luminosity is measured in two forms namely visible light and bolometric luminosity. Generally the term luminosity means bolometric luminosity. The intrinsic brightness of a star is called its absolute luminosity. which depends upon the size and temp of the star. temp of the star is equivalent to that of a black body reporducing the same power. The aperent luminosity is the observed luminosity which depends upon its absolute luminosity & distance from the observer.

The luminosity of a celestial body is indicated in terms of magnitude. The concept of magnitude was first introduced by greet astronomer Hipparchus in 2nd century BC. It was assumed that all stars are moving on the surface of celestial sphere having radius of 20,000 Re. Initially the stars were grouped into 6 distrete categories depending upon their apparent brightness. The first magnitude stars are twice as bright as the next magnitude stars. The second was twice as third and so on. down to the faintest stars. (6th magnitude).



Q.2)

1) Measurement of brightness of a star is relative because one can compare the luminocities of two stars or luminosity of a star with an artificial standard source of light. Apart from visual method, the photographic and photoelectric method are used for luminosity measurement.

* Photographic method →

This method is used after 1840 AD and uses the principle of photography. ie. when a photographic plate is exposed to light and developed the intensity of light is reflected on the photograph. When equal exposure time & identical conditions of photographic plate development is carried then stars of equal luminosities produce an image of equal diameter. The optical image of a star is very small but due to scattering of photons through photographic imulsion produce image of considerable size the size of image proportional to luminosity of a star.

Initially with a single starlight the photographic plates are exposed of different times like 5, 10, 20, 40, 80 seconds. etc. & images are developed. The nature of images are shown.

Now the light from the star whose luminosity is to be measured is focused on the photographic plates for known exposure time & image is developed.

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VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)

SUPPLIMENT

Signature of Supervisor	

Suppliment No. : (19)

Roll No. : 7487

Class : B.Sc II

Subject : Astrophysics

Test / Tutorial No. : Internal exam

Div. :

Q.1

1) d) Their distance from earth

2) c) radio galaxies

3) a) 76 years

4) b) group of stars

5) a) spiral galaxy

6) a) absorption

7) a) O

8) d) F9

9) b) stable

10) b) red old star

VIVEKANAND COLLEGE KOLHAPUR ESTD JUNE 1964 (Autonomous)

Q. 2

12 Measurement of brightness of a star is relative because one can compare the luminocities of two stars or luminosity of a star with an artificial standard source of light. Apart from visual method, the photographic and photoelectric method are used for luminosity measurement.

* Photographic method *

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Shri Swami Vivekanand Shikshan Sanstha Kolhapur's

VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)

SUPPLIMENT

Signature of Supervisor	

Suppliment No. : (17) / 25

Roll No. : 7491

Class : B.Sc- II

Subject : Astrophysics

Test / Tutorial No. :

Div. :

Q1.

1. d) their distance From earth
2. c) radio galaxies
3. a) 76 years
4. b) group of stars
5. a) Spiral galaxy
6. a) absorption
7. a) 0
8. d) H
9. b) stable
10. b) red old star

Q 2.

3. Luminosity of Star -

Luminosity is the total amount of electromagnetic theory emitted per unit time by an object. In SI system luminosity is measured in Joules/second. The luminosity is measured in two forms namely visible light and bolometric luminosity.

Generally the term luminosity means bolometric luminosity. The intrinsic brightness of star is called absolute luminosity. which depends upon the size and temp of the star. temp of star is equivalent to that of black body reproducing the same power. The apparent luminosity is the observed luminosity which depend upon its absolute luminosity and distance from observer.

The luminosity of celestial body is indicated in terms of magnitude. The concept of magnitude was first introduced by greek astronomer Hippachrus in 2nd Century BC. It was assumed that all stars are moving on surface of celestial sphere having radius of 20,000 Re. Initially the stars were grouped into 6 distrete categories depend upon their apparent brightness. The first magnitude stars are twice as bright as the the next magnitude stars.