Vivekanand College, Kolhapur. (Autonomous)
Department of Physics
Internal Examination Notice
2018-19

Date: 21/01/2019

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 one from given two questions) for 10 marks

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

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

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

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

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

Internal Evaluation Examination 2018-19.
SEM II, SEM IV and SEM VI
Time Table

Sr. No.	Class	Paper	Date	Time
1.	B.Sc. I	Paper II	28/01/2019	11:00 am to 12:00 pm
2.	B.Sc. II	Paper IV	28/01/2019	11:00 am to 12:00 pm
3.	B.Sc. II (Astrophysics)	Paper II	29/01/2019	11:00 am to 12:00 pm
4.	B.Sc. III	Paper VII (section I)	30/01/2019	11:00 am to 12:00 pm
		Paper VII (section II)		01:00 am to 02:00 pm
		Paper VIII (section I)	31/01/2019	11:00 am to 12:00 pm
		Paper VIII (section II)		01:00 am to 02:00 pm

HOD

Head of the
Department of Physics
Vivekanand College, Kolhapur

VIVEKANAND COLLEGE ESTD JUNE 1964 KOLHAPUR - 416003

Shri Swami Vivekanand Shikshan Sanstha's

Vivekanand College, Kolhapur (Autonomous)

Internal Examination 2018-19

Optics and Lasers and Relativity and Modern Physics

Time: 30 Minutes Marks: 20

Q. 1. Long Answer Questions (Any one) **(20)**

1) Discuss the conditions to obtain interference due to reflection of light from thin, parallel film.

2) How Newtons rings are formed? Obtain an expression for the radius of n th dark ring.

Q. 2. Short Answer Questions (Any one) **(20)**

1) Discuss the effect of length contraction.

2) Explanation of phenomenon of time dilation.

3) Derive relation for relativistic addition of velocity.

Shri Swami Vivekanand Shikshan Sanstha's

Vivekanand College, Kolhapur

(Autonomous)

Department of Physics

Internal exam

B.Sc.II Sem IV

Date:- 28/01/2019

Attendance Sheet

Roll No.	Name Of The Student	Signature
8001	Baundane Sanjay Baraku	
8002	Bodekar Vinod Sakharam	
8003	Chougule Anuja Sunil	
8004	Dafade Jitendra Gangaram	
8005	Dalavi Shubham Suresh	Shubham
8006	Gawandi Misba Riyaj	
8007	Ghorapade Gurudas Sadashiv	
8008	Howale Akashay Dayanand	
8009	Indulkar Digvijaya Babaso	Indulkar
8010	Jadhav Priyesh Santosh	Jadhav.
8011	Joshi Sourabh Kiran	
8012	Kadam Sourabh Mahadev	
8013	Kamble Prasad Vilas	
8014	Kamble Priyanka Chiman	Kamble
8015	Kamble Sanket Jagannath	Kamble
8016	Kanade Akanksha Ravindra	Kanade.
8017	Khade Shubham Chandrakant	
8018	Khatib Sitara Sadiksaheb	
8019	Khot Namrata Ajit	Namrata
8020	Khot Shubham Anil	Khot.
8021	Kulkarni Manasi Vinayak	
8022	Kumbhar Jaywant Rajaram	
8023	Kumbhar Neha Deelip	Kumbhar
8024	Kumbhar Trupti Ramanath	Kumbhar.
8025	Kumbhar Vishal Anil	
8026	Mahajan Shweta Sadashiv	
8027	Mali Shubham Shivanand	
8028	Momin Misba Iliyas	
8029	More Aishawarya Akaram	Amore.
8030	Paranjape Anish Shriram	Paranjape.
8031	Parit Amruta Ashok	

VIVEKANAND COLLEGE KOLHAPUR (AUTONOMOUS) ESTD JUNE 1964

8032	Patil Abhijeet Rajaram	
8033	Patil Nilam Vijay	
8034	Patil Pranav Baburao	
8035	Patil Rajvardhan Shivaji	
8036	Patil Shubham Yuvraj	
8037	Patil Sujata Ananda	
8038	Patil Trupti Sanjay	
8039	Potdar Aishwarya Sharadh	
8040	Powar Amol Appaso	
8041	Rananane Rushikesh Anil	
8042	Sadalge Pratiksha Sadanand	
8043	Shinde Swaranjali Sanjay	
8044	Shinde Vijay Dilip	
8045	Sutar Shivani Anil	
8046	Sutar Vinayak Ananda	
8047	Wagavekar Vivek Vishnu	
8048	Yetale Rushikesh Bhauso	
8049	Zirange Yogita Vishnu	
8050	Chandane Sakshi Nishikant	
8051	Chile Kalpak Anil	
8052	Chougule Abhijeet Bajirao	
8053	Chougule Nita Malappa	
8054	Dalvi Tejas Chetan	
8055	Deuskar Yogiraj Ramesh	
8056	Dharmadhikari Adhiraj Anil	
8057	Dhavale Swarupa Baburao	
8058	Dinde Rahul Ananda	
8059	Durugale Samidha Surendra	
8060	Gaikwad Suraj Dhananjay	
8061	Gaurav Vaishnavi Mahadev	
8062	Gavade Aarati Sanjay	
8063	Godase Rajkumar Kisan	
8064	Gurav Dhananjay Krushnat	
8065	Ingale Aakanksha Ajit	
8066	Jadhav Asmita Appaso	
8067	Jangam Vivek Prakash	
8068	Kadam Vrushabh Shamrao	
8069	Kamble Raju Vinod	
8070	Kamble Sanmargi Ananda	
8071	Kamble Shubham Suresh	
8072	Kamte Prajyot Kakasaheb	
8073	Khatkar Digvijay Ashok	
8074	Khochage Shruti Sunil	
8075	Khodbale Amruta Tatyaso	
8076	Kumbhar Gauri Ekanath	
8077	Kumbhar Prathamesh Mallikarjun	
8078	Lambe Bhalchandra Krishnat	

8079	Manwadkar Priti Vishwanath	
8080	Mule Swati Ramireddy	
8081	Nalawade Nyan Dattatray	
8082	Nerlekar Aishwarya Bhujgond	
8083	Patil Arati Ajit	
8084	Patil Arpana Mahaveer	
8085	Patil Dipali Vishnu	
8086	Patil Nisha Ravindra	
8087	Patil Pooja Nagonda	
8088	Patil Prajkta Bhujgonda	
8089	Patil Pratiksha Ashok	
8090	Patil Pravin Bajirao	
8091	Patil Sampada Namdev	
8092	Patil Shreyash Anna	
8093	Patil Shubhangi Bhagwan	
8094	Patil Sneha Ambaji	
8095	Patil Suraj Shahaji	
8096	Patil Tejswini Krishna	
8097	Patil Vedanti Vasant	
8098	Patil Vijay Dattatray	
8099	Pawar Shubhangi Balu	
8100	Rane Prachi Sunil	
8101	Sankapal Supriya Shrikant	
8102	Sawant Rohit Ramchandra	
8103	Shindale Swagat Maruti	
8104	Shinde Nishigandha Ramnath	
8105	Shinde Prajakta Pandurang	
8106	Shinde Rohit Shashikant	
8107	Shingare Amol Krushnat	
8108	Singh Sonam Yogendra	
8109	Sutar Poonam Prakash	
8110	Sutar Shubham Prakash	
8111	Swami Hiremath Somesh Shubhas	
8112	Tayshete Shubham Sundar	
8113	Umaranikar Suman Appasaheb	
8114	Umaranikar Supriya Appasaheb	
8115	Zure Makarand Mahesh	
8116	Apraj Sohan Dadaso	
8117	Bankar Priyanka Chandrakant	
8118	Bhosale Sakshi Vijay	
8119	Chougule Tanuja Ashok	
8120	Desai Asif Firoz	
8121	Dhutre Prajakta Digambar	
8122	Dingane Sandhya Sudhakar	
8123	Gadgil Rohini Sanjay	
8124	Ghosalkar Pranav Shankar	
8125	Ghosalkar Pranoti Suresh	

8126	Holkar Pratiksha Somnath	
8127	Jadhav Kajal Sunil	
8128	Jadhav Pratiksha Harish	
8129	Jagadale Manasi Khanderao	
8130	Kadam Amruta Ashok	
8131	Kadam Vedika Sanjay	
8132	Kanjiramparambil Stenju Varghese	
8133	Khilare Vaishnavi Rajendra	
8134	Mali Neha Ramesh	
8135	Mullani Misira Yasin	
8136	Nalavade Ankita Amar	
8137	Nale Shubhangi Sunil	
8138	Nigavekar Akash Prakash	
8139	Patil Amruta Bhujgonda	
8140	Pawar Shreyas Sunil	
8141	Regade Poonam Pundlik	
8142	Shinde Radhika Baburao	
8143	Thorat Manish Amar	
8144	Tibile Rohan Arjun	
8182	Benke Ragini Jayaprakash	
8183	Bhosale Jeevan Dhanaji	
8184	Chougule Rutuja Sunil	
8185	Chougule Shital Satappa	
8186	Chougule Shubham Shivaji	
8187	Dhabhade Rutuja Babaso	
8188	Ghungurkar Pratik Rajaram	
8189	Jadhav Omkar Subhash	
8190	Kadam Pratiksha Sunil	
8191	Katale Sujit Dinkar	
8192	Mane Gaurav Gautam	
8193	Mane Sandesh Ramchandra	
8194	More Mayuresh Laxman	
8195	Patil Jeevan Maruti	
8196	Patil Ketan Bhagavan	
8197	Patil Rajesh Sandeep	
8198	Bale Vishvajeet Sanjay	
8199	Bune Harshavardhan Chandrakant	
8200	Chile Shakti Ravindra	
8201	Dinde Akash Sadashiv	
8202	Ghatage Sourabh Vijay	
8203	Ghumai Pramod Baburao	
8204	Kamble Bhagayshri Machindra	
8205	Kamble Pranav Balasaheb	
8206	Kamble Sangram Dnyandev	
8207	Mantri Tanvi Sachin	
8208	Methe Manish Manoj	
8209	Mithari Vinay Sudhakar	

VIVEKANAND COLLEGE KOLHAPUR (Autonomous) ESTD JUNE 1964

8210	Mohite Ashish Nivas	
8211	Mohite Tanvi Vikas	
8212	Morbale Manish Dhanaji	
8213	Padaval Tejashwini Vitthal	
8214	Patil Amar Shivaji	
8215	Patil Shridhar Vilas	
8216	Patil Tushar Aravind	
8217	Paul Jonathan Sanjay	
8218	Randive Pranjjvali Shahaji	
8219	Shingare Amruta Anil	
8361	Jog Vitthal Vishnu	
8362	Gangadhare Rutika Balasaheb	
8364	Thorat Radhika Vijaysinh	

Internal Examinar.....

(Dr M.M. Karanjkar)

VIVEKANAND COLLEGE KOLHAPUR (Autonomous) ESTD JUNE 1964

।। ज्ञान, विज्ञान आणि सुसंस्कार यांसाठी शिक्षण प्रसार ।।
– शिक्षणमहर्षी डॉ. बापूजी साळुंखे
34060
Shri Swami Vivekanand Shikshan Sanstha Kolhapur's
VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)

SUPPLIMENT

Signature of Supervisor

Suppliment No. : 10/20

Roll No. : 8031

Class : B.Sc. II Sem IV

Subject : Relativity and Modern physics

Test / Tutorial No. : Internal Exam

Div. :

Q2.

1. Consider two frame of reference, S is stationary S' is moving with velocity v along the positive x-dirⁿ.

∴ Let us first suppose that rod lies parallel to Y axis. If Y_1 and Y_2 are the co-ordinates

$$\therefore l_0 = Y_2' - Y_1'$$

∴ Lorentz transformation eqⁿ give $Y_1' = Y_1$ and $Y_2 = Y_2$, ∴ in the frame S,

$$\therefore l = Y_2 - Y_1 = Y_2' - Y_1' = l_0$$

∴ Now Suppose the rod lies parallel to x-axis. If x_2' and x_1' are the co-ordinates of two end Points of rod,

$$l_0 = x_2' - x_1'$$

If its length as measured in S is l

$\therefore \quad l = x_2 - x_1$

$\therefore$ Lorentz transformation equations

$\therefore \quad x_2' = \dfrac{x_2 - vt}{\sqrt{1 - v^2/c^2}}$ and $x_1' = \dfrac{x_1 - vt}{\sqrt{1 - v^2/c^2}}$

$\therefore \quad x_2' - x_1' = \dfrac{x_2 - x_1}{\sqrt{1 - v^2/c^2}}$

$\therefore \quad l_0 = \dfrac{l}{\sqrt{1 - v^2/c^2}}$

$\therefore \quad l = l_0 \sqrt{1 - v^2/c^2}$

This shows that length of rod contracts in the direction of motion.

(5)

2. Time Dilation

Consider two frame of references, S is stationary S' is moving with velocity v along positive x dirⁿ.

$\therefore \Delta t = t_2 - t_1$

∴ The interval observed by an observer in frame S' will be $\Delta t' = t_2' - t_1'$

put Lorentz transformation equation for t_1' and t_2'

$$\therefore \Delta t' = \frac{t_2 - vx/c^2}{\sqrt{1 - v^2/c^2}} - \frac{t_1 - vx/c^2}{\sqrt{1 - v^2/c^2}} = \frac{t_2 - t_1}{\sqrt{1 - v^2/c^2}}$$

$$\therefore \Delta t' = \frac{\Delta t}{\sqrt{1 - v^2/c^2}} \quad \text{---} \quad (1)$$

∴ eqⁿ (1) shows that $\Delta t' > \Delta t$

Thus for moving observer, time interval appears to be dialated

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– शिक्षणमहर्षी डॉ. बापूजी साळुंखे 34058
Shri Swami Vivekanand Shikshan Sanstha Kolhapur's
VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)

SUPPLIMENT

15/20

Signature of Supervisor

Suppliment No. :

Roll No. : 8021

Class : B Sc II sem IV

Subject : optics & Lasers & Relativity & modern Physics

Test / Tutorial No. : Internal exam

Div. :

Q.1

2) When plano convex lens of large focal length is placed on a plane glass plate, a thin air film is formed between lower surface of lens and plane glass plate. The thickness of air film is very small at the point of contact between lens and glass plate and it increases in outward direction. When monochromatic light is incident normally on the film, then alternate circular dark and bright fringes are seen, called Newton's ring

Let R be the radius of lense and 't' be the thickness of air film at a distance OQ = r_n from the point of contact O as shown in fig. In this case, interference phenomenon occurs due to reflection of light ∴ for dark ring, we write.

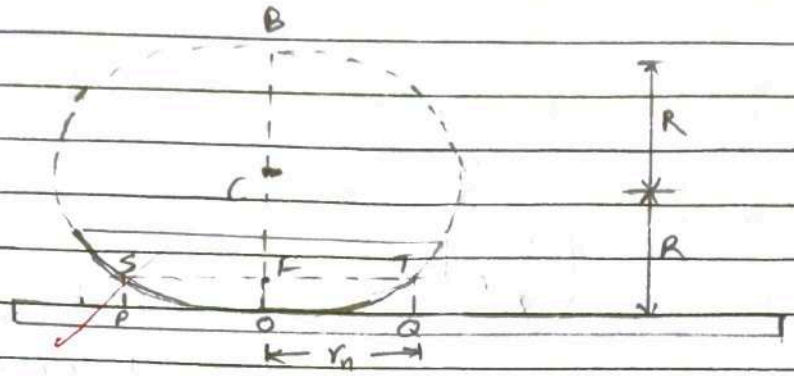
10

$2\mu t \cos r = n\lambda$, where $n = 0, 1, 2, 3, \ldots$ etc.

For air film, $\mu = 1$

since 'r' is very small, $\cos r = 1$

$\therefore 2t = 2\lambda$



From geometry of fig we have

$$ET \times SE = OE \times EB$$
$$ET \times ST = OE \times (OB - OE) \quad \text{---(1)}$$

From Fig, we have

$ET = SE = r_n$; $OE = QT = t$ and $OB = 2R$

Hence eqn (1) becomes

$$r_n \cdot r_n = t \times (2R - t) \quad \text{---(2)}$$

t is very small. Hence we can write.

$$2R - t = 2R$$

Hence eqn 2 becomes

$$r_n^2 = 2Rt$$
$$2t = \frac{r_n^2}{R} \quad \text{---(3)}$$

equating eqn (2) & (3)

$$\frac{r_n^2}{R} = n\lambda$$

$$r_n^2 = nR\lambda$$
$$r_n = \sqrt{nR\lambda}$$

Shri Swami Vivekanand Shikshan Sanstha's

Vivekanand College, Kolhapur (Autonomous)

Internal Examination 2018-19

B.Sc. II, Sem IV

Astrophysics

(Celestial Mechanics and Introductory Quantum Mechanics)

Time: 30 Minutes Marks: 20

Q.1] Long answer question (Attempt any one of the following) **(10)**

1)Derive the expression for Equation of continuity in three dimensions

2) Derive equation of motion of on ideal fluid.

Q.2) short answer question (Attempt any TWO of the following) **(10)**

1) What is Galaxy? What are the types of galaxies

2) Write a note on Seyfert Galaxy.

3)Write a note on Comet.

Shri Swami Vivekanand Shikshan Sanstha's

Vivekanand College, Kolhapur

(Autonomous)

Department of Physics

Internal exam

B.Sc.II (Astrophysics)Sem IV

Date:-29/01/2019

Attendance Sheet

Roll No.	Name Of The Student	Signature
8182	Benke Ragini Jayaprakash	
8183	Bhosale Jeevan Dhanaji	
8184	Chougule Rutuja Sunil	
8185	Chougule Shital Satappa	
8186	Chougule Shubham Shivaji	
8187	Dhabhade Rutuja Babaso	
8188	Ghungurkar Pratik Rajaram	
8189	Jadhav Omkar Subhash	
8190	Kadam Pratiksha Sunil	
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8203	Ghumai Pramod Baburao	
8204	Kamble Bhagayshri Machindra	
8205	Kamble Pranav Balasaheb	
8206	Kamble Sangram Dnyandev	
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8208	Methe Manish Manoj	
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VIVEKANAND COLLEGE KOLHAPUR (AUTONOMOUS) ESTD JUNE 1964

8213	Padaval Tejashwini Vitthal	
8214	Patil Amar Shivaji	
8215	Patil Shridhar Vilas	
8216	Patil Tushar Aravind	
8217	Paul Jonathan Sanjay	
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8364	Thorat Radhika Vijaysinh	

Internal Examinar.....

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. : 24/25

Roll No. : 7567

Class : B.Sc II

Subject : Astrophysics

Test / Tutorial No. : Internal Exam

Div. :

Q.1)

1) a) hγ

2) b) Constant

3) a) Geocentric

4) c) 29.5

5) a) triangular

5

Q.2)

2) Copernican Heliocentric model.

Copernicus a polish astronomer and mathematician proposed his heliocentric model in 1542 AD. This heliocentric (Sun-centered) concept was so radical that copernicus waited until the year of his death to publish his work titled The Revolutions of the Heavenly Spheres.

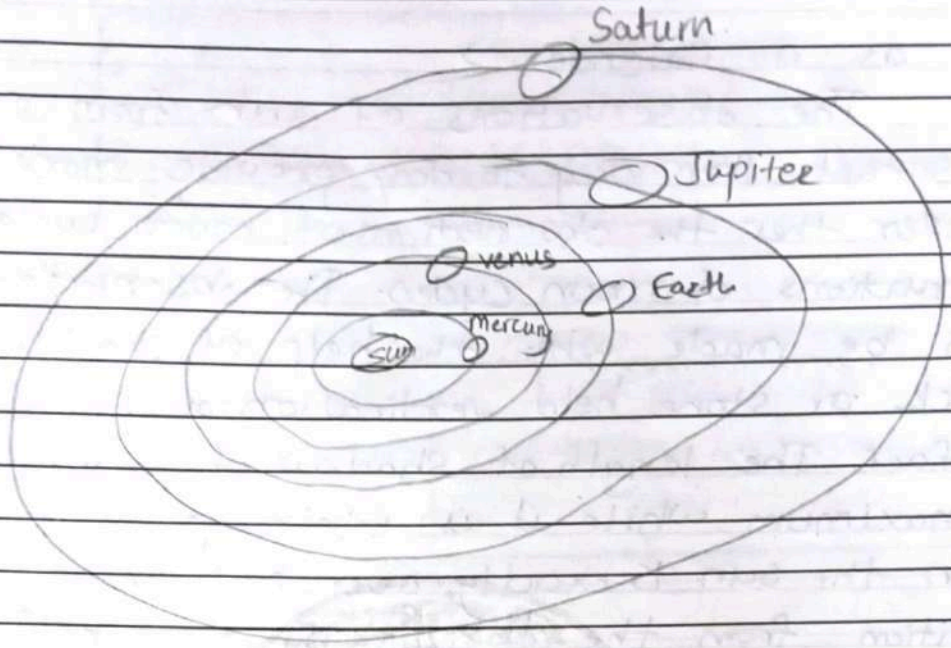
Copernicus had two main reasons for assuming that the sun was the centre,

1. Though the ptolemic model was good at predicting the predictions of the planets, it was not precise. and over the centuries its predictions got worse and worse.

2. The retrograde motions of the planets could be explained by assuming that the Earth also moves around the Sun.

Thus the sun retrograde loops of the planets as seen from the Earth occur naturally as a found result of the Earth's motion combined with the motions of the planets. Accordingly, the Sun is at the centre and all planets and distant objects stars revolve in circular orbit as shown. In fig. below.

The invention of the telescope by Galileo in 1609 and observations on orbiting moons as planet Jupiter as well as observed phases of planet just like the Earth's moon supported the heliocentric system.



(Q.3)

1) Moon as a Calender →

The moon revolve around the earth. from the earth, moon phases are observed. These moon phases were used as a calender. Phases from full moon to no moon and again to full moon is called as lunar cycle or lunar month. The One lunar month consist of 29.5 solar days. when 12 lunar months are completed from the start of spring is called the lunar year. The lunar year consist of $12 \times 29.5 = 354$ days But the Solar year consist of 365.25 days & hence the spring of next year will start after 11.25 days. This error may create a Serious problem for farmers on the earth. Hence a correction should be applied for this error. The civilizations introduced an extra month after 3 years in order to match lunar calender & cycle of seasons.

2) Sun as a Calender →

The observations of sun from sunrise to noon to sunset from day to day provide more reliable calender then the observations of moon cycles. The observations of moon cycles. The observations of sun can be made with the help of shadow of a long stick or stone held vertical on a plane earth surface. The length of shadow of sunrise & sunset is maximum while it is minimum at the noon, when the sun is exactly over head or at its highest position from the horizon The time betn two succesive noons is called as a solar day one solar day consists of 24 hours

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-शिक्षणमहर्षी डॉ. बापूजी साळुंखे

Shri Swami Vivekanand Shikshan Sanstha Kolhapur's

VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)

SUPPLIMENT

Signature of Supervisor	

Suppliment No. :

Roll No. : 7554

Class : B-Sc II

Subject : Astrophysics

Test / Tutorial No. : Internal exam

Div. :

Q.1

1) a) hν

2) b) constant

3) b) heliocentric

4) c) 29-5

5) a) triangular

6)

Q.2

2) Copernicus Heliocentric model

Copernicus a polish astronomer and mathematician proposed his heliocentric model in 1542 AD. This heliocentric (sun-centered) cocept was so radical that copernicus waited until the year of his death to publish his work titled. The Revolutions of the Heavenly spheres.

Copernicus had two main reasons for assuming that the sun was the centre.

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2. The retrograde motions of the planets could be explained by assuming that the Earth also moves around the sun.

Thus the sun retrograde loops of the planets as seen from the earth occur naturally as a found result of the Earth's motion combined with the motions of the planets Accordingly, the sun is at the centre and all planets and distant objects stars revolve in circular orbits as shown. in fig. below.

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Shri Swami Vivekanand Shikshan Sanstha Kolhapur's

VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)

SUPPLIMENT

Signature of Supervisor	

Suppliment No. :

Roll No. : 7870

Class : B.Sc II

15/25

Subject : Astrophysics

Test / Tutorial No. : Internal Exam

Div. :

Q.1)

1) a) hγ

2) b) Constant

3) a) Geocentric

4) c) 29.5

5) a) Triangular

6)

VIVEKANAND COLLEGE KOLHAPUR ESTD JUNE 1964 (Autonomous)

Q3)

2) Sun as a Calender →

The observations of Sun from sunrise to noon to sunset from day to day provide more reliable calender then the observations of moon cycles. The observations of sun can be made with the help of shadow of a long stick or stone held vertical on a plane earth surface. The length of shadow at sunrise and sunset is maximum while it is minimum at the noon, when the sun is exactly over head or at its highest position from the horizon. The time between two successive noons is called as Solar day. One solar day consist of 24 hours. The minimum length of shadow at noon depends upon the particular region on the earth and season of the year. For eg. the shadow length at noon is longest at the begining of winter.

1) Moon as a Calender →

The moon revolves around the earth from the earth, moon phases are observed. These moon phases were used as a calender called as lunar calender. Phases from full moon to no moon and again to full moon is called as lunar cycle or lunar month. One lunar month consist of 29.5 days. When 12 lunar months are completed from the start of spring it is called the lunar year. The lunar year consist of $12 \times 29.5 = 354$ days. But, the solar year consist of 365.25 solar days. and hence the spring of next year will start after 11.25 days. This error may create a serious problem for farmers on the earth. Hence a correction should be applied for this error.