

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

Date:30/09/2018

All students of class B.Sc. I, B.Sc. II and B.Sc. III are hereby noticed that the first 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 I, SEM III and SEM V

Time Table

Sr. No.	Class	Paper	Date	Time
1.	B.Sc. I	Paper I	11/10/2018	11:00 am to 12:00 pm
2.	B.Sc. II	Paper III	11/10/2018	11:00 am to 12:00 pm
3.	B.Sc. II (Astrophysics)	Paper I	12/10/2018	11:00 am to 12:00 pm
4.	B.Sc. III	Paper V (section I)	15/10/2018	11:00 am to 12:00 pm
		Paper V (section II)		01:00 am to 2:00 pm
		Paper VI (section I)	16/10/2018	11:00 am to 12:00 pm
		Paper VI (section II)		01:00 am to 2:00 pm




HOD
Head of the
Department of Physics
Vivekanand College, Kolhapur

Shri Swami Vivekanand Shikshan Sanstha's
Vivekanand College, Kolhapur (Autonomous)

Internal Examination 2018-19

**General Physics, Sound and Acoustics and Electronics and Semiconductor
Devices**

Time: 30 Minutes

Marks: 20

Q. 1. Long Answer Questions (Any one)

(20)

- 1) What is gyrostatic pendulum? Obtain an expression for its period.
- 2) Explain construction and working of cathode ray tube.

Q. 1. Long Answer Questions (Any one)

(20)

- 1) Write a note on riding on bicycle.
- 2) Write a note on a rifling of Barrel of Gun.
- 3) Write a note on Lissjous figure with examples.



Shri Swami Vivekanand Shikshan Sanstha's

Vivekanand College, Kolhapur

(Autonomous)


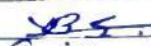
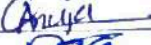








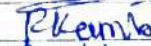
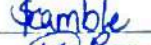

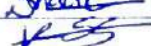
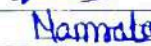


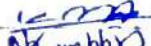


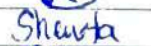



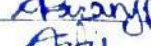





Department of Physics

Internal exam

B.Sc.II Sem III

Date:- 11/10/2018

Attendance Sheet

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



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



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



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



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

Internal Examiner.....

(Dr M.M. Karanjkar)



VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)

SUPPLIMENT

Signature
of
Supervisor

Subject : Sound and Acoustics.

Test / Tutorial No. : Internal Exam

Div. :

Suppliment No. :

Roll No. : 8008

$\frac{17}{20}$

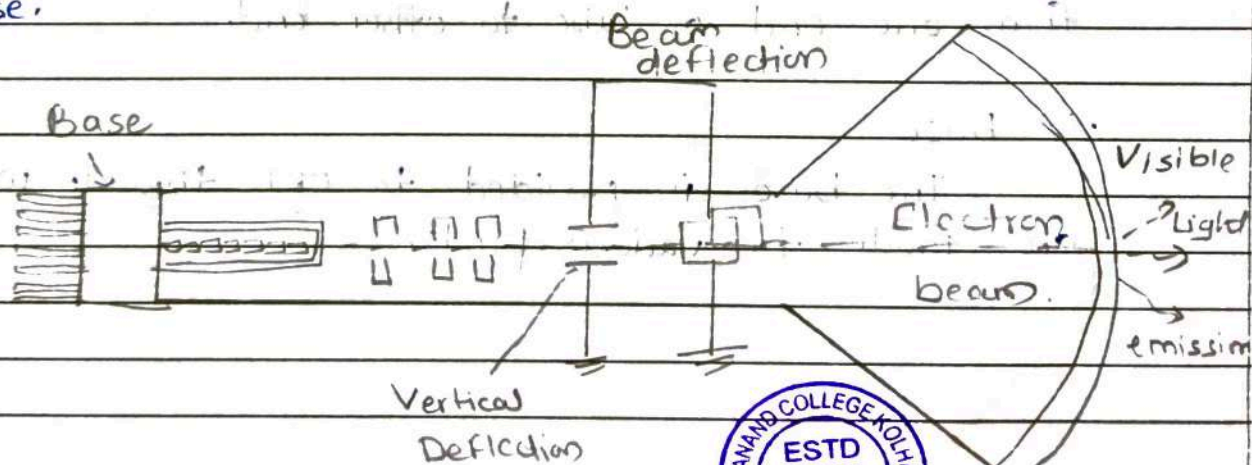
Class : B.Sc-II, Sem-III (18-19)

Q.1) Cathode Ray Oscilloscope.

A device which allows, the amplitude of such signals, to be displayed primarily as a function of time, is called Cathode ray-oscilloscope. The cathode ray tube is ~~at~~ heart of CRO.

The main part of CRT are,

- (i) Electron Gun
- (ii) Deflection System
- (iii) Fluorescent Screen
- (iv) Glass tube
- (v) Base.



i) Electron Gun-

Electron gun section of cathode ray tube provides sharply focused electron beam directed towards the fluorescent coated screen.

ii) This section starts from thermally heated cathode emitting the electrons.

iii) The light emitted usually of the green colour.

iv) Deflection system-

When the electron beam is accelerated it passes through deflection system.

v) Fluorescent Screen-

The light produced by screen does not disappear immediately when bombardment by electrons increases.

vi) Glass tube -

All the components of CRT are enclosed in evacuated glass tube called envelop.

This allows the emitted electrons to move about freely from one end of tube to other end.

vii) Base-

The base is provided to CRT through which connections are made to various parts.



Q. 2)

- 2) Bicycle is an example of statistical instability. It acquires stability when it is in motion. Here the principle of gyroscopic motion works. When the plane of rotating wheels of a bicycle leans to the vertical the gravitational torque exerts. Due to this the axis of rotation of each wheel acting as a gyrostatis properly deflected, hence the plane of rotation of the wheel changes. This gravitational torque provides necessary precessional torque which counterbalance the gravitational torque and plane of rotation of each wheel is again made vertical. Thus, when a person rides a bicycle, without holding its handle, he has simply to tilt to one side in order to turn to that side. By doing this he produces a couple about the wheel horizontal direction of motion of the front wheel of his bicycle. The front wheel acts as a rotating gyrostatis. This couple then turns the axle of the wheel about the vertical and hence its plane of rotation into the described direction.
- 3) When a bullet is fired from a gun or rifle to hit a particular target, it should travel in a straight line upto the target without being affected due to gravitational effect or any other disturbances.



॥ ज्ञान, विज्ञान आणि सुसंस्कार यांसाठी शिक्षण प्रसार ॥

- शिक्षणमहर्षी डॉ. बापूजी साबुळे

34010

Shri Swami Vivekanand Shikshan Sanstha Kolhapur's

VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)

SUPPLIMENT

Signature
of
Supervisor

Suppliment No. :

Roll No. : 8021

Class : B.Sc-II, Sem-III

Subject : General physics Sound
and Acoustic

Test / Tutorial No. : Internal Exam

Div. : 2018-19

Q2.

1. What is gynamstatic Pendulum? obtain an expression for its period

2. Explain Construction and Working of Cathode Ray tube

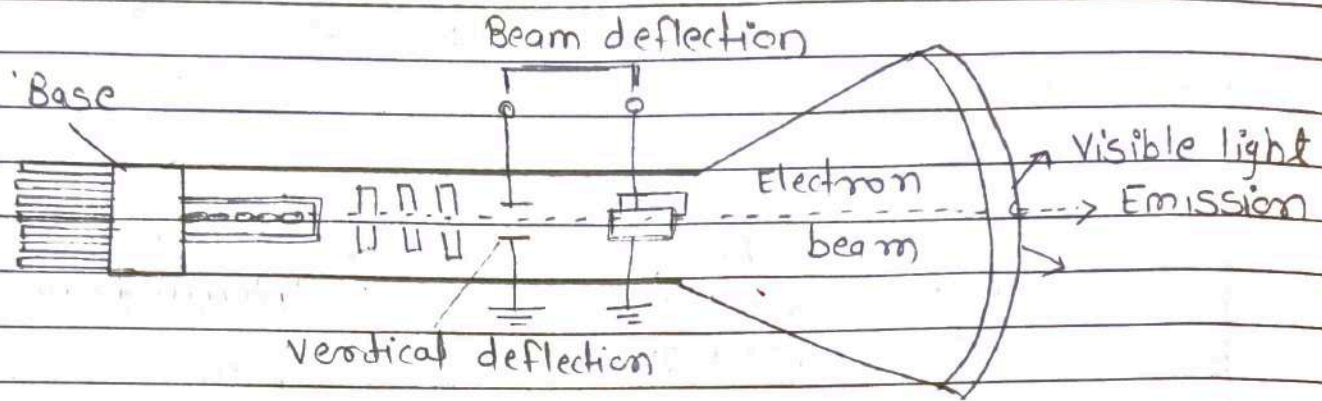
⇒ A device which allows, the amplitude of such signals, to be displayed primarily as a function of time, is called cathode ray oscilloscope. The cathode ray tube is heart of C.R.O.

The main part of CRT are,

- i. Electron gun
- ii. Deflection system
- iii. fluorescent Screen
- iv. Glass tube
- v. Base.



Cathode Ray tube



1. ~~Electron gun~~ -

Electron gun Section of Cathode ray tube provides sharply focused electron beam directed towards the fluorescent-coated screen.

2. This section starts from thermally heated cathode emitting the electrons.

3. The light emitted usually of the green color.

* Deflection system -

When the electron beam is accelerated it passes through deflection system.

* Fluorescent screen -

The light produced by screen does not disappear immediately when bombardment by electrons ceases.

* Glass Tube -

All the components of CRT are enclosed in an evacuated glass tube called envelope.



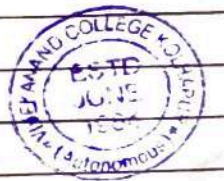
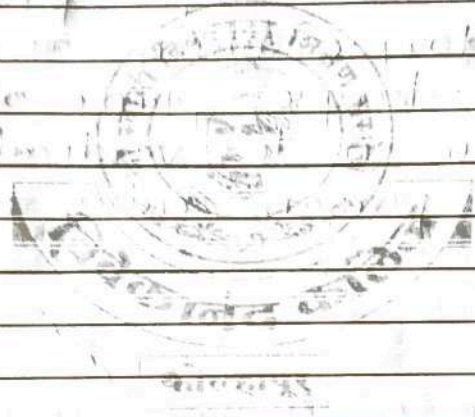
Q.2.

2. Glass-tube.

This allows the emitted electrons to move about freely from one end of tube to other end.

3. Base -

The base is provided to CRT through which connections are made to various parts.



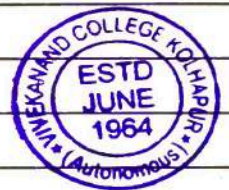
Q2.

1. Note on riding on bicycle

⇒ Bicycle is an example of statistical instability. It acquires stability when it is in motion. Here is the principle of gyroscopic motion, when the plane of rotating wheels of a bicycle leans to the vertical, gravitational torque exerts.

Due to this axis of rotation of each wheel acting as a gyrostad is properly deflected, hence the plane of rotation of the wheel changes. This gravitational torque provides necessary precessional torque which counterbalances the gravitational torque. The plane of rotation of each wheel is again made vertical.

Thus a person rides a bicycle without holding its handle.



VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)

SUPPLIMENT

Signature
of
Supervisor

Subject : Sound and Acoustics

Test / Tutorial No. : Internal Exam

Div. :

Suppliment No. :

Roll No. : 8031

Class : B.Sc-II, Sem-III (18-19)

10
20

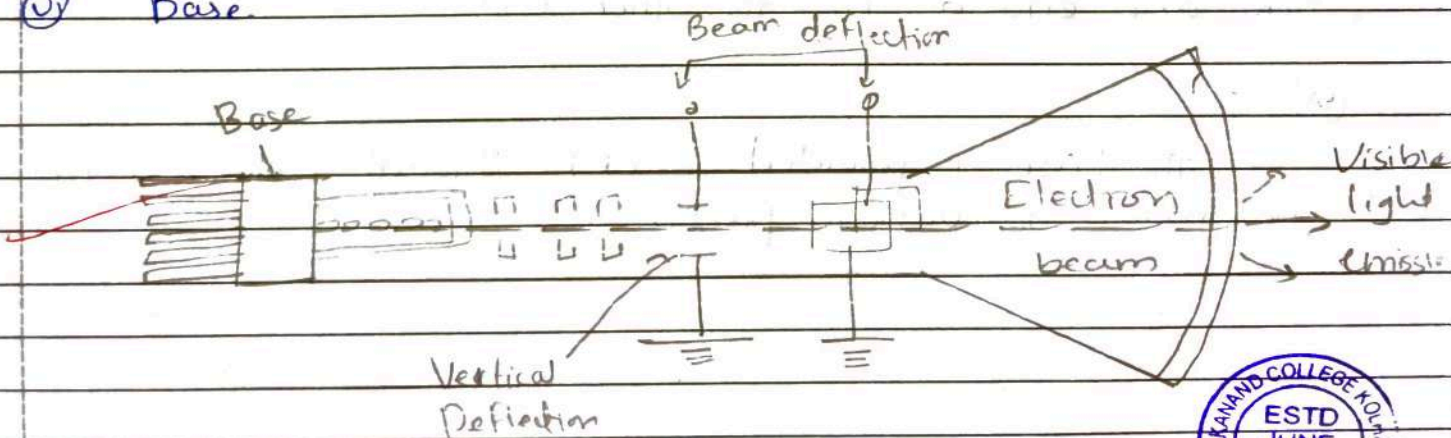
Q. 15

2) Cathode Ray Oscilloscope

A device which allows the amplitude of such signals, to be displayed primarily as a function of time, is called Cathode Ray Oscilloscope. The cathode ray tube is heart of CRO.

The main part of CRT are,

- (i) Electron gun
- (ii) Deflection System
- (iii) Fluorescent Screen
- (iv) Glass tube
- (v) Base



(i) Electron Gun -

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When the electron beam is accelerated it passes through deflection system.

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(vi) Glass tube -

All the components of CRT are enclosed in evacuated glass tube called envelop.

This allows the emitted electrons to move about freely from one end of tube to other end.

(vii) Base -

The Base is provided to CRT through which connections are made to various parts.



Shri Swami Vivekanand Shikshan Sanstha's
Vivekanand College, Kolhapur (Autonomous)

Internal Examination 2018-19

B.Sc. II, Sem III

Astrophysics

(Fundamentals of Astronomy and astrophysics)

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 an 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 III

Date:- 12/10/2018

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	
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	
8210	Mohite Ashish Nivas	
8211	Mohite Tanvi Vikas	
8212	Morbale Manish Dhanaji	



8213	Padaval Tejashwini Vitthal	Padaval
8214	Patil Amar Shivaji	Patil
8215	Patil Shridhar Vilas	Patil
8216	Patil Tushar Aravind	Patil
8217	Paul Jonathan Sanjay	Paul
8218	Randive Pranjjvali Shahaji	P. S. R.
8219	Shingare Amruta Anil	Shingare
8364	Thorat Radhika Vijaysinh	R.

Internal Examiner.....

July



॥ ज्ञान, विज्ञान आणि सुसंस्कार यांसाठी शिक्षण प्रसार ॥

- शिक्षणमहर्षी डॉ. बापूजी साखुंबे

34014

Shri Swami Vivekanand Shikshan Sanstha Kolhapur's

VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)

SUPPLIMENT

Signature
of
Supervisor

Suppliment No. :

Roll No. : 8201

Class : B.Sc - II, Sem III (18-19)

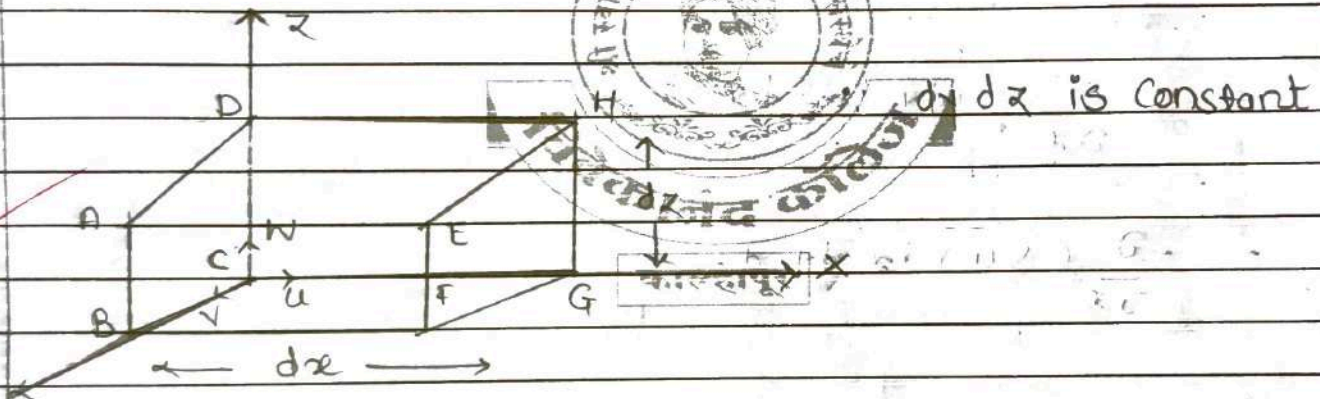
Subject : Astrophysics

Test / Tutorial No. : Internal Exam

Div. :

Q1.

1. Expression for continuity in three dimensions.



Consider fluid element of lengths dx, dy, dz in direction of x, y, z . Let u, v, w are the inlet velocity components in x, y, z dirⁿ resp. Mass of fluid entering the face ABCD per second

$$= \rho \times \text{velocity in } x\text{-dir}^n \times \text{Area of ABCD}$$

$$= \rho \times u \times (dy \times dz)$$



The mass of fluid leaving the face EFGH Per Second
 $= \rho u dy dz + \frac{\partial (\rho u dy dz)}{\partial x} dx$.

\therefore Gain of mass in x -dirⁿ

= Mass through ABCD - Mass through EFGH Per Second

$$= \rho u dy dz - \rho u dy dz - \frac{\partial (\rho u dy dz)}{\partial x} dx$$

$$= -\frac{\partial (\rho u dy dz)}{\partial x} dx$$

$$= -\frac{\partial (\rho u dy dz)}{\partial x} dx$$

$$= -\frac{\partial (\rho u)}{\partial x} dx dy dz$$

Similarly; the net gain of mass in y -dirⁿ

$$= -\frac{\partial (\rho v)}{\partial y} dx dy dz$$

$$= -\frac{\partial (\rho w)}{\partial z} dx dy dz$$



$$\therefore \text{Net gain of masses} = - \left[\frac{\partial (\rho u)}{\partial x} + \frac{\partial (\rho v)}{\partial y} + \frac{\partial (\rho w)}{\partial z} \right] dx dy dz$$

Since mass is neither created nor destroyed in fluid element the net increase of mass per unit time in fluid element must be equal to rate of increase of mass of fluid in the element

$$\therefore - \left[\frac{\partial (\rho u)}{\partial x} + \frac{\partial (\rho v)}{\partial y} + \frac{\partial (\rho w)}{\partial z} \right] dx dy dz = \frac{\partial \rho}{\partial t} dx dy dz$$

$$\therefore \frac{\partial \rho}{\partial t} + \frac{\partial (\rho u)}{\partial x} + \frac{\partial (\rho v)}{\partial y} + \frac{\partial (\rho w)}{\partial z} = 0 \quad \text{[cancelling } dx dy dz \text{ from both side]} \quad \text{--- (1)}$$

\therefore Eqⁿ (1) is continuity eqⁿ in Cartesian co-ordinates in most general form. This applicable to

- 1) Steady and unsteady flow
- 2) Uniform and non-uniform flow
- 3) Compressible and incompressible

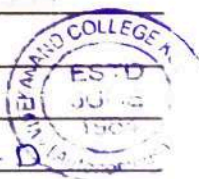
for steady flow $\frac{\partial \rho}{\partial t} = 0$, hence eqⁿ (1) become

$$\therefore \frac{\partial (\rho u)}{\partial x} + \frac{\partial (\rho v)}{\partial y} + \frac{\partial (\rho w)}{\partial z} = 0 \quad \text{--- (2)}$$

If fluid is incompressible then ρ is constant above eqⁿ becomes as

$$\frac{\partial u}{\partial x} + \frac{\partial v}{\partial y} + \frac{\partial w}{\partial z} = 0 \quad \text{--- (3)}$$

Above eqⁿ known as continuity eqⁿ in 3-D



Q 2.

① what is Galaxy

A system of stars, stellar remnants, interstellar gas, dust and dark matter bound together by gravity

①. Elliptical Galaxies -

These type of galaxies are like flattened balls of old stars and contain very little gas. It also includes most massive galaxies containing trillion stars

②. Spiral Galaxies -

Spiral galaxies have flattened shape. They have bulge in center composed of old stars surrounded by disk young stars

③. Irregular Galaxies -

Irregular Galaxies have no particular shape. There are billions of galaxies in universe. The center of galaxy releases huge amount of heat.

3. Note on comet

Comets are large objects made up of dust and ice that orbit the sun. Best known for their long streaming tails.

Comets are mostly found way out in solar system. Some exist in wide disk beyond the orbit of Neptune called Kuiper Belt.



॥ ज्ञान, विज्ञान आणि सुसंस्कार यांसाठी शिक्षण प्रसार ॥

- शिक्षणमहर्षी डॉ. बापूजी साळुंखे

34015

Shri Swami Vivekanand Shikshan Sanstha Kolhapur's

VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)

SUPPLIMENT

Signature
of
Supervisor

Suppliment No. :

Roll No. : 8212

Class : B.Sc II, Sem-III (18-19)

Subject : Astrophysics.

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Q-2)

3. Comet →

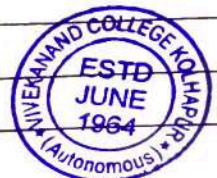
Comets are large objects made of dust and ice that orbit the sun. Best known for their long streaming tails.

Comets come from. Comets are mostly found way out in the solar system. Some exist in wide disk beyond the orbit of Neptune called Kuiper Belt.

5 (i) Meaning of comet is that it is small irregular shaped asteroids that are made up of volatile grains and frozen gases, which orbit around the sun.

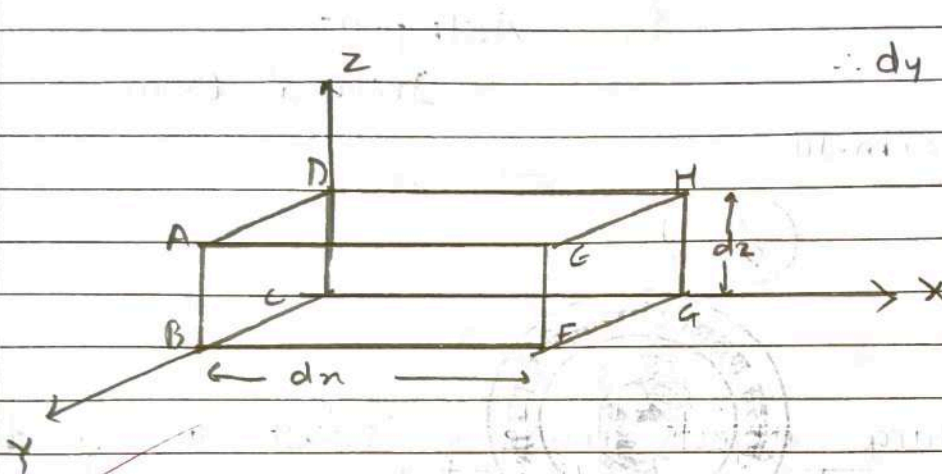
(ii) The ice sublimates when the comet comes close to the sun. i.e. the ice directly converts from solid to gas form. This process of releasing gas by comet is called outgassing.

(iii) The process of outgassing produces visible atmosphere which called coma.



(i) Asteroid - These are small solar system bodies that orbit the sun and asteroid consists of rock, metal and also organic compound. There are millions of asteroid orbiting the sun which are in Asteroid Belt.

Q.11
 ↳



$\therefore dy, dz$ is constant

Consider fluid element of length dx, dy, dz in direction of x, y, z . Let u, v, w are the inlet velocity components in x, y, z direction respectively. Mass of fluid entering the face ABCD per second.

$$= \rho \times \text{velocity in } x\text{-direction} \times \text{Area of ABCD}$$

$$= \rho \times u \times (dy \times dz)$$

The mass of fluid leaving the face EFGH per second

$$= \rho u dy dz + \frac{\partial}{\partial x} (\rho u dy dz) dx$$

\therefore Gain of mass in x -direction.

$$= \text{Mass through ABCD} = \text{Mass through EFGH per second}$$

$$= \rho u dy dz = \rho u dy dz + \frac{\partial}{\partial x} (\rho u dy dz) dx$$



$$= -\frac{\partial}{\partial x} (\rho u) dy dz dx$$

$$= -\frac{\partial}{\partial x} (\rho u) dy dz dx$$

$$= -\frac{\partial}{\partial x} (\rho u) dx dy dz$$

Similarly, the net gain of mass in y-direction

$$= -\frac{\partial}{\partial y} (\rho v) dx dy dz$$

$$= -\frac{\partial}{\partial z} (\rho w) dx dy dz$$

$$\therefore \text{New gain of masses} = -\left[\frac{\partial}{\partial x} (\rho u) + \frac{\partial}{\partial y} (\rho v) + \frac{\partial}{\partial z} (\rho w) \right] dx dy dz$$

$$\therefore -\left[\frac{\partial}{\partial x} (\rho u) + \frac{\partial}{\partial y} (\rho v) + \frac{\partial}{\partial z} (\rho w) \right] dx dy dz = \frac{\partial \rho}{\partial t} dx dy dz$$

$$\therefore \frac{\partial \rho}{\partial t} + \frac{\partial}{\partial x} (\rho u) + \frac{\partial}{\partial y} (\rho v) + \frac{\partial}{\partial z} (\rho w) = 0 \quad \text{--- (1)}$$

For steady flow $\frac{\partial \rho}{\partial t} = 0$, hence eqⁿ (1) become

$$\therefore \frac{\partial}{\partial x} (\rho u) + \frac{\partial}{\partial y} (\rho v) + \frac{\partial}{\partial z} (\rho w) = 0 \quad \text{--- (2)}$$

If fluid is incompressible then ρ is constant above eqⁿ becomes as,

$$\frac{\partial u}{\partial x} + \frac{\partial v}{\partial y} + \frac{\partial w}{\partial z} = 0 \quad \text{--- (3)}$$

Above eqⁿ known as continuity eqⁿ in 3-D.



VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)

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Signature
of
Supervisor

Subject : Astrophysics

Test / Tutorial No. : Internal Exam

Div. :

Suppliment No. :

Roll No. : 8219

Class : B.Sc-II, Sem-III

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Q2.

① What is Galaxy
A system of stars, stellar remnants, interstellar gas, dust and dark matter bound together by gravity

② Elliptical Galaxies -
These type of galaxies are like flattened balls of old stars and contain very little gas. It also includes most massive galaxies containing 5 trillion stars.

③ Spiral Galaxies -
Spiral galaxies have flattened shape. They have bulge in center composed of old stars surrounded by disk young stars.

④ Irregular Galaxies -
Irregular Galaxies have no particular shape. There are billions of galaxies in universe. The center of galaxy releases a huge amount of heat.



Q2.

- ① It contains dust particles, huge clouds, gases that lie throughout it and depths of interstellar space.

Q2.

3. Note on Comet.

⇒ Comets are large objects made of dust and ice that orbit the sun. Best known for their long streamer tails.

Comets Come from

Comets are mostly found way out in the solar system. Some exist in wide disk beyond the orbit of Neptune called Kuiper's Belt.

① meaning of comet is that it is small irregular shaped asteroids that are made up of volatile grains and frozen gases, which orbit around the sun.

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(iv). Asteroid - These are small solar system bodies that orbit the sun and asteroid consists of rock, metal and also organic compound. There are millions of asteroid orbiting the sun which are in Asteroid Belt.

