Vivekanand College, Kolhapur. (Autonomous)
Department of Physics
Internal Examination Notice
2019-20

Date:11 September 2019

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 four 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 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

For B.Sc. III : 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 2019-20.
SEM I, SEM III and SEM V
Time Table

Sr. No.	Class	Paper	Date	Time
1.	B.Sc. I	Paper I	23/09/2019	11:00 am to 12:00 pm
2.	B.Sc. II	Paper III	23/09/2019	11:00 am to 12:00 pm
3.	B.Sc. II (Astrophysics)	Paper I	25/09/2019	11:00 am to 12:00 pm
4.	B.Sc. III	Paper V (section I)	26/09/2019	11:00 am to 12:00 pm
		Paper V (section II)		01:00 am to 2:00 pm
		Paper VI (section I)	27/09/2019	11:00 am to 12:00 pm
		Paper VI (section II)		01:00 am to 2:00 pm

VIVEKANAND COLLEGE ESTD JUNE 1964 KOLHAPUR - 416003

HOD
Head of the
Department of Physics
Vivekanand College, Kolhapur.

Vivekanand College, Kolhapur (Autonomous)
B.Sc. (Part-I) Semester- I Internal Examination 2019
Subject : Physics
Title: Mechanics
Paper No. : I

Day & Date : - Tuesday, 24th Sep 2019
Time : 10:30 am to 11:30 am **Total Marks : 25**

Q.1 Select correct alternative. (5)

1. The term (τ/θ) is called as ----------
   a) twist per unit torque b) couple per unit twist
   c) force per unit twist d) force per unit torque
2. Young's modulus is ---------
   a) ratio of stress to the strain
   b) ratio of strain to the stress
   c) force per unit cross sectional area
   d) force per unit volume
3. The quantity Yak^2 is called ----------
   a) Geometrical M.I. b) flexural rigidity
   c) bending moment d) inertia
4. If the total troque acting on a system of a particles is zero, then ------- of the particle or system is conserved
   a) linear momentum b) angular momentum
   c) kinetic energy d) energy
5. The rate of change of angular momentum is ------
   a) linear acceleration b) angular acceleration
   c) force d) torque

Q.2) Attempt any one (10)

A. State and explain work energy theorem. Also prove the law of conservation of energy for a system of particle.

B. Determine the elastic constants Y, η and k.

Q.3) Attempt any two (10)

A. State and prove the law of conservation of angular momentum for a particle.

B. State and prove the law of conservation of linear momentum for system of particles.

C. Derive an expression for the depression of the centrally loaded beam supported at both the ends

D. Prove $C = \frac{\eta \pi r^4}{2l}$

VIVEKANAND COLLEGE KOLHAPUR (Autonomous) ESTD JUNE 1964

Shri Swami Vivekanand Shikshan Sanstha's

Vivekanand College, Kolhapur

(Autonomous)

Department of Physics

Internal exam

B.Sc.I Sem I

Date:- 23/09/2019

Attendance Sheet

Roll No.	Name Of The Student	Signature
7001	Chauhan Aditi Brijesh	
7002	Bankar Ashwini Rajaram	
7003	Barwade Sammed Mahavir	
7004	Bhatmare Shivani Sanjay	
7005	Chaugale Rutika Tanaji	
7006	Desai Fiza Sikander	
7007	Desai Nilesh Dattatray	
7008	Desai Pranav Sanjay	
7009	Desai Pratiksha Jitendra	
7010	Deshmukh Swapnil Vitthal	
7011	Dhare Prajakta Ravindra	
7012	Ghorpade Prasad Shahaji	
7013	Gurav Santosh Ananda	
7014	Jadhav Aakanksha Chandrakant	
7015	Jadhav Shraddha Dinkar	
7016	Jagadale Amey Bhagawan	
7017	Jawale Shivam Nilkanth	
7018	Kabir Siddhi Suresh	
7019	Kamble Abhishek Pandurang	
7020	Kamble Ashlesha Ramesh	
7021	Kamble Ashwini Mohan	
7022	Kamble Sanket Shrimant	
7023	Kamble Swapnil Babasaheb	
7024	Kamble Vedant Chandrakant	
7025	Kandalkar Prafull Rajendra	
7026	Kane Shweta Bhausaheb	
7027	Khamkar Akash Baburao	
7028	Khekare Kallesh Chandrakant	
7029	Khtangle Nishikant Nivruti	
7030	Killedar Yogiraj Rajendra	
7031	Kolekar Pranali Ravikant	
7032	Koli Lalita Ramdas	

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7033	Koli Nandini Siddharthshankar	
7034	Koshti Shweta Jitendra	
7035	Kumathekar Kedar Sanjay	
7036	Lohar Siddhesh Ravindra	
7037	Magdum Samruddhi Gunda	
7038	Mane Supriya Narayan	
7039	Mathew Jisna Anoop	
7040	More Akshada Vijay	
7041	More Madhumati Tanaji	
7042	More Pranav Ashok	
7043	Mudrale Shweta Rahul	
7044	Mugdar Akanksha Nilesh	
7045	Mukkanawar Siddharth Sadanand	
7046	Naik Atharv Ajit	
7047	Nirmale Sakshi Sunil	
7048	Pareek Sangeeta Ramawatar	
7049	Parit Sumit Dipak	
7050	Patil Aditya Tatyaso	
7051	Patil Ashwini Ashok	
7052	Patil Omkar Prakash	
7053	Patil Prajakta Pandurang	
7054	Patil Rajnandini Pratap	
7055	Patil Rasika Shahaji	
7056	Patil Rutuja Anant	
7057	Patil Samruddhi Arun	
7058	Patil Shriya Suresh	
7059	Powar Mrunali Ramchandra	
7060	Rajput Ajay Ravasaheb	
7061	Ramchandani Khushi Deepak	
7062	Randive Rutuja Arvind	
7063	Rukadikar Sudhanshu Dilip	
7064	Sarnaik Yoesh Shivaji	
7065	Sayyed Tabassum Aijaz	
7066	Shidvankar Siraj Yasin	
7067	Shinde Sejal Sudhir	
7068	Shirke Pranali Pradeep	
7069	Solase Sakshi Subhash	
7070	Sutar Pravin Rajendra	
7071	Terdale Pranjali Anandkumar	
7072	Thanekar Vaibhav Mahendra	
7073	Tonpe Sejal Vijay	
7074	Ubare Sakshi Sanjay	
7075	Vadicharla Sandhya Krushnamurti	
7076	Veer Vikram Sarjerao	
7077	Vetale Rohit Bapu	
7078	Wadar Pramod Deepak	
7079	Warake Sakshi Sanjay	

7080	Ambekar Sakshi Mohan	
7081	Bagadi Shivani Prashant	
7082	Bam Shruti Harish	
7083	Belvalkar Surabhi Mahesh	
7084	Chougule Sanket Ranvidra	
7085	Chougule Suyash Praveen	
7086	Davang Omkar Tanaji	
7087	Desai Kayym Dadaso	
7088	Devadkar Bhaveshwar Shamrao	
7089	Dhamanekar Deepa Anil	
7090	Dhokare Sushant Digambar	
7091	Doke Vaibhav Eknath	
7092	Fadtare Sourabh Pratap	
7093	Firinge Rupesh Maruti	
7094	Gandure Manoj Dhanaji	
7095	Ganeshacharya Digvijay Yashawant	
7096	Gopane Siddhanath Chandrakant	
7097	Gove Vaishnavi Shashikant	
7098	Gudami Shrinivas Mallappa	
7099	Gundakalli Sakshi Sachin	
7100	Injar Pavan Satappa	
7101	Jadhav Ankita Sanjay	
7102	Jadhav Nikhil Jotiram	
7103	Jamadar Saad Akhtarhusen	
7104	Kadam Sandesh Santosh	
7105	Kadvekar Vaibhav Maruti	
7106	Kamble Subodh Prashant	
7107	Kenjalekar Akash Shamrao	
7108	Khanaj Ketan Dattatray	
7109	Khandekar Tejas Milind	
7110	Kokate Prasad Shivaji	
7111	Kumbhar Souarbh Ravindra	
7112	Lad Abhijeet Keraba	
7113	Lambe Pratiksha Ranjeet	
7114	Magdum Rutuja Vitthal	
7115	Mali Prajwal Ashok	
7116	Mali Prajyot Sanjay	
7117	Maniyar Ahamadraza Goushmoddin	
7118	Mengane Prathamesh Prakash	
7119	Mude Gargi Anil	
7120	Mujawar Saniya Niyaj	
7121	Mullani Junaid Shahabuddin	
7122	Naik Mitali Vijay	
7123	Nashte Riteshkumar Rameshwar	
7124	Nerlekar Sourabh Krishnat	
7125	Pankar Digvijay Satappa	
7126	Patane Satyajeet Sudhakar	

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7127	Pathan Faijan Nazim	
7128	Pathan Mohammed Abrar Mansoor	
7129	Patil Abhijit Hindurao	
7130	Patil Abhishek Nivas	
7131	Patil Aniket Ananda	
7132	Patil Anirudha Dilip	
7133	Patil Asitkumar Uttam	
7134	Patil Asmita Ramesh	
7135	Patil Avdhoot Laxman	
7136	Patil Harshvardhan Ashok	
7137	Patil Kalyani Pandurang	
7138	Patil Milind Mahadev	
7139	Patil Niranjan Annasaheb	
7140	Patil Pranita Rajendra	
7141	Patil Prathamesh Rajesh	
7142	Patil Rajvardhan Ashok	
7143	Patil Rohini Vilas	
7144	Patil Rushikesh Ramrao	
7145	Patil Sakshi Babgonda	
7146	Patil Sarika Sahadev	
7147	Patil Shreya Shahaji	
7148	Patil Snehal Suresh	
7149	Patil Suhas Vikram	
7150	Patil Sumit Sambhaji	
7151	Patil Tushar Nayaku	
7152	Patil Vaishnavi Yuvaraj	
7153	Patil Viraj Dhanaji	
7154	Pawar Akshad Mahesh	
7155	Potdar Abhishek Sharad	
7156	Powar Atul Dhondiram	
7157	Powar Samarth Murlidhar	
7158	Raval Dhanashri Ananda	
7159	Sawant Manish Kishor	
7160	Shetke Viraj Uday	
7161	Shevale Sushmita Ananda	
7162	Shinde Aniket Vasant	
7163	Shinde Karankumar Ashok	
7164	Shirkande Sahil Bhauso	
7165	Sutar Swagat Dadaso	
7166	Sutar Yogita Vasant	
7167	Tahasildar Raj Ramesh	
7168	Yogi Sanjay Badrinath	
7169	Avadhut Pradnya Sunil	
7170	Awale Dayasagar Rajendra	
7171	Bagade Aditya Kumar	
7172	Bagade Apoorva Kumar	
7173	Bagwan Umrajiya Shakil	

7174	Bedekar Shreyasi Sharad	
7175	Bhusnar Shanirai Dattatray	
7176	Bodake Tejaswini Shahaji	
7177	Chaluche Pratap Arjun	
7178	Chaluche Swapnil Arjun	
7179	Chougale Shivani Vilas	
7180	Chougale Suvarna Shivaji	
7181	Chougule Sapana Anil	
7182	Darvan Kunal Kumar	
7183	Desai Shrawani Sudhakar	
7184	Deshmukh Harshwardhan Diliprao	
7185	Doke Siddheshwar Shivaji	
7186	Dsouza Priya Motes	
7187	Fakir Juveriya Dastgir	
7188	Falle Nilam Ramchandra	
7189	Gharage Ashutosh Kiran	
7190	Ghodke Ganesh Nandakishor	
7191	Ghule Poonam Manik	
7192	Godhade Gajanan Jayvant	
7193	Gurav Amruta Krishnat	
7194	Heble Sanika Prashant	
7195	Jadhav Aarati Sunil	
7196	Jadhav Ankita Raghunath	
7197	Jadhav Monali Santosh	
7198	Jadhav Pranoti Prakash	
7199	Jadhav Shila Thavaru	
7200	Jagtap Shital Bharat	
7201	Kadam Shrutkirti Rangrao	
7202	Kalantre Neha Namdev	
7203	Kalkutaki Vishal Babasaheb	
7204	Kamble Amruta Suresh	
7205	Kamble Anjali Sanjay	
7206	Kamble Harsha Babaso	
7207	Kamble Manoj Sanjay	
7208	Kamble Shirish Sanjay	
7209	Kamble Shridhar Balu	
7210	Kamble Swapnagandha Dilip	
7211	Kamble Vishal Natha	
7212	Karale Priyanka Bharat	
7213	Kawthekar Safia Mohammad Rafiq	
7214	Khandekar Rutuja Narayan	
7215	Kharase Rushikesh Dayanand	
7216	Kharat Akanksha Rajendra	
7217	Khot Swapnil Sanjay	
7218	Kokate Pratik Pralhad	
7219	Koli Rugveda Vijay	
7220	Kumar Praveen Ranaram	

7221	Kurkute Parth Lalaji	
7222	Lohar Prajakta Prakash	
7223	Lohar Sushma Madhukar	
7224	Magdum Pranali Manik	
7225	Mahadik Ishwari Sadashiv	
7226	Mohite Prerana Pravin	
7227	Mujawar Aaliya Altaf	
7228	Mujawar Asifa Ramjan	
7229	Mujawar Fahim Sajid	
7230	Mulani Arbaz Yunus	
7231	Nalawade Poonam Prakash	
7232	Navale Sumit Rajendra	
7233	Nimbalkar Samiksha Ramchandra	
7234	Oswal Chaitali Pravin	
7235	Parit Shivani Tanaji	
7236	Patil Aditi Atul	
7237	Patil Dhairyashil Sagar	
7238	Patil Harshada Hambirrao	
7239	Patil Kirti Vijay	
7240	Patil Manasvi Sardar	
7241	Patil Radhika Nivas	
7242	Patil Rajvardhini Jaysing	
7243	Patil Samrudhi Rajendra	
7244	Patil Shivani Keraba	
7245	Patil Shreyas Eknath	
7246	Patil Snehal Maruti	
7247	Patil Swaraj Shivaji	
7248	Pattankude Chaitali Shital	
7249	Phonde Pandurang Baburao	
7250	Pingale Vaishnavi Satish	
7251	Pol Mrunal Rakesh	
7252	Ranage Snehal Kundan	
7253	Sakhare Aaishwarya Rajendra	
7254	Salavi Akanksha Rajaram	
7255	Salavi Sonali Mahadev	
7256	Salvi Pratiksha Prakash	
7257	Sarvagode Priti Vikas	
7258	Savtekar Priyanka Shekhar	
7259	Sawant Shreya Gopal	
7260	Sayyad Aarzoo Salim	
7261	Sayyad Zeenat Salim	
7262	Shelar Samiksha Umesh	
7263	Shevale Yogiraj Shivaji	
7264	Shinde Abhishek Sunil	
7265	Shinde Nayan Harishchandra	
7266	Shinde Tejasvinee Sunil	
7267	Shivatankar Shubham Anant	

7268	Suryawanshi Pratiksha Suryakant	
7269	Talkar Akanksha Vijay	
7270	Talkar Pratiksha Vijay	
7271	Tirale Samiksha Dattatray	
7272	Vanjari Koustubh Appasaheb	
7273	Waghmare Pratik Pandit	
7274	Wakrushe Divya Vitthal	
7275	Yadav Aditi Sudhir	
7276	Yevaluje Swapnali Madhukar	
7277	Zende Manaswini Milind	
7278	Bhopale Animesh Sunil	
7279	Chavan Aishwarya Sunil	
7280	Chougale Ketan Krishnat	
7281	Dabade Shweta Shivaji	
7282	Desai Akanksha Anil	
7283	Dinde Rutuja Amar	
7284	Ekal Sanket Sarjerao	
7285	Garadi Saniya Harun	
7286	Jadhav Vaishnavi Ravaso	
7287	Jamadar Tasmiya Kasim	
7288	Kharat Komal Laxman	
7289	Korde Shreya Rahul	
7290	Kugaji Bhargavi Ramling	
7291	Magdum Rajvardhan Satappa	
7292	Nikalje Aarti Fulchand	
7294	Patil Sakshi Pramod	
7295	Patil Sujit Sunil	
7296	Patil Sunil Suresh	
7297	Powar Saraswati Ajit	
7298	Sagaonkar Tejashree Ssarang	
7299	Shintre Pranjal Prakash	
7300	Shivane Ashutosh Dhanaji	
7301	Arade Samadhan Anil	
7302	Chavan Pratik Pradip	
7303	Dabade Amruta Shahaji	
7304	Giri Poonam Sanjay	
7305	Inamdar Ruturaj Sharad	
7306	Jadhav Sayali Vijay	
7307	Kadwale Ananya Balwant	
7308	Katiyar Kajal Lakhmichand	
7309	Katyar Preeti Manohar	
7310	Khandare Pankaj Vishnu	
7311	Khurandle Vaishnavi Rajendra	
7312	Mahadik Akshata Suhas	
7313	Mali Karishma Ratanlalji	
7314	Mulla Ashrafalli Akhtarhusen	
7315	Patil Aadesh Satish	

7316	Patil Abhishek Ajit	
7317	Patil Nikita Subhash	
7318	Patil Santosh Subhash	
7319	Patil Siddharth Subhash	
7320	Patil Snehal Sanjay	
7321	Prabhavale Uditanshu Sarang	
7322	Pusalkar Tanay Dhaval	
7323	Sankpal Prajakta Pandurang	
7324	Shinde Kriti Pravin	
7325	Sutar Harshada Sanjay	
7326	Sutar Vaishnavi Suresh	
7327	Tashildar Prathamesh Sunil	
7293	Nirmale Snehal Sudhakar	

Internal Examinar.....
(Dr. M. M. Karanjkar)

VIVEKANAND COLLEGE KOLHAPUR
ESTD JUNE 1964
(Autonomous)

।। ज्ञान, विज्ञान आणि सुसंस्कार यांसाठी शिक्षण प्रसार ।।
– शिक्षणमहर्षी डॉ. बापूजी साळुंखे
34064
Shri Swami Vivekanand Shikshan Sanstha Kolhapur's
VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)

SUPPLIMENT

Signature of Supervisor	

Suppliment No. : 15/25

Roll No. : 7007

Class : B.Sc I

Subject : Mechanics

Test / Tutorial No. : Intesnal Exam

Div. :

Q.1)

1. d) force per unit twist
2. a) Ratio of Stress to the Strain
3. c) bending moment.
4. b) angular momentum
5. b) angular acceleration

5

Q.2)

a) According to work energy theorem, the network done on a body is equal to the change in kinetic energy of the body. This is known as work-energy theorem. It can be represented as,

$$K_f - K_i = W$$

where, K_f = final kinetic energy

K_i = Initial kinetic energy

W = Work done

So the above equation follows the law of conservation of energy according to which we can only transfer energy from to another. Also, here the work done is the work done by all forces acting on the body like gravity, friction, external force etc.

According to work energy theorem,
Work done by all the forces = change in kinetic energy.

$$W_g + W_N + W_F = K_f - K_i$$

Work done by a constant force
Now the eqⁿ of motion

$$v^2 = u^2 + 2as$$
$$2as = v^2 - u^2$$

Multiplying both sides with mass m,

$$(mas) = \frac{(mv^2 - mu^2)}{2}$$

$$F.S = \frac{mv^2 - mu^2}{2}$$

Comparing the above equation we get.

Work done by force (F) = F.S.

Where, S is the displacement of the body.

" 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. : 12/29

Roll No. : 7018

Class : B.Sc I

Subject : Mechanics

Test / Tutorial No. : Internal Exam.

Div. :

Q 2)

A) According to work energy theorem. the net work done on a body is equal to the change in kinetic energy of the body. This is known as work-energy theorem. It can be presented as.

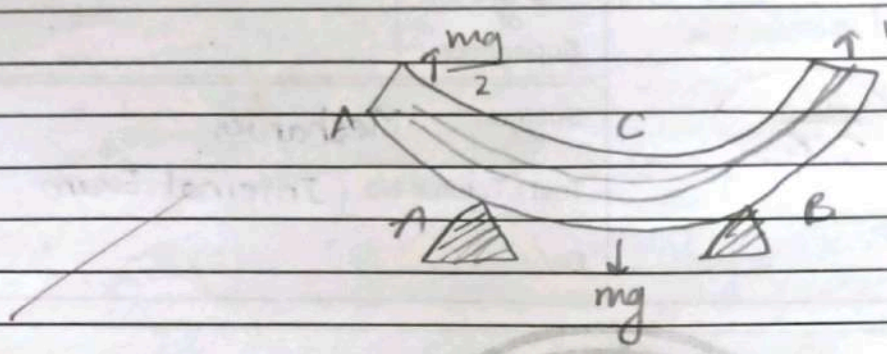
$$K_f - K_i = W$$

where, K_f = final kinetic energy
K_i = Initial kinetic energy.
W = Work done

2

Q. 3)

c) Let a beam be supported horizontally on two knife edges at A and B. Let it be loaded in the middle at C with a weight mg.



The middle part of the beam is horizontal hence the beam be considered as equivalent to two inverted cantilivers which are fixed at C.

If L is length of the beam, the length of each cantiliver is L/2.

The depression of C below A and B is

$$y = \frac{(mg/2)(L/2)^3}{3YIg} = \frac{mgL^3}{48YIg} \quad \text{---(1)}$$

If the beam is circular cross-section then,

$$Ig = \frac{\pi r^4}{4}$$

where, r is radius of its cross-section.

$$Y = \frac{mgL^3}{48y} \times \frac{4}{\pi r^4} = \frac{mgL^3}{12Y\pi r^4} \quad \text{---(2)}$$

If the beam be of rectangular cross Section of breadth b and depth d. we have

$$I_g = bd^3/12$$

for such beam

$$Y = \frac{mgL^3}{48Y} \times \frac{12}{bd^3} = \frac{mgL^3}{4Ybd^3}$$

Young's modulus of the material of the bar is calculated as

$$Y = \frac{mgL^3}{4bd^3y}.$$

Q. 1)

1) d) force per unit twist

2) a) Ratio of stress to the strain.

3) c) bending moment

4) b) angular momentum

5) b) angular acceleration.

।। ज्ञान, विज्ञान आणि सुसंस्कार यांसाठी शिक्षण प्रसार ।।
– शिक्षणमहर्षी डॉ. बापूजी साळुंखे 34057
Shri Swami Vivekanand Shikshan Sanstha Kolhapur's
VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)

SUPPLIMENT

18/35

Signature of Supervisor

Suppliment No. :
Roll No. : 7035
Class : B.Sc I

Subject : Mechanics
Test / Tutorial No. : Internal exam
Div. :

Q.1
1. d) force per unit twist
2. a) ratio of stress to the strain
3. c) bending moment
4. b) angular momentum
5. b) angular acceleration

Q.2
A) According to work energy theorem, the net work done on a body is equal to the change in kinetic energy of the body. This is known as work - Energy Theorem. It can be presented as

$$K_f - K_i = W$$

where K_f = Final kinetic energy
K_i = Initial Kinetic energy
W = work done

So the above equation follows the law of conservation of energy, according to which we can only transfer energy from one form to another. Also, here the work done is the work done by all forces acting on the body like gravity, friction, external force etc.

According to work energy theorem,
work done by all the forces = change in kinetic Energy.

$$W_g + W_N + W_f = K_f - K_i$$

work done by a constant force
From the eqn of motion

$$v^2 = u^2 + 2as$$
$$2as = v^2 - u^2$$

Multiplying both sides with mass 'm'

$$(ma).s = \frac{(mv^2 - mu^2)}{2}$$

$$F.s = \frac{(mv^2 - mu^2)}{2}$$

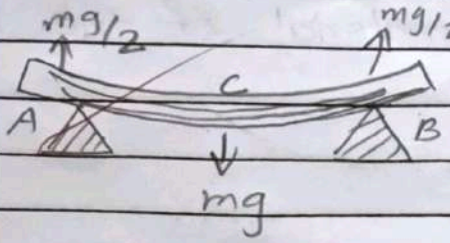
08 Comparing the above equation, we get

Work done by force (F) = F.s

where 's' is the displacement of the body.

Q.3

c. Let a beam be supported horizontally on two knife-edges at A and B. Let it be loaded in the middle at C with a weight mg.



The middle part of the beam is horizontal, hence the beam may be considered as equivalent to two inverted cantilevers which are fixed at C.

If L is length of the beam, then length of each cantilever is $L/2$.

The depression of C below A and B is

$$y = \frac{(mg/2)(L/2)^3}{3YI_g} = \frac{mgL^3}{48YI_g} \quad \text{— (1)}$$

If the beam is circular cross-section, then $I_g = \frac{\pi r^4}{4}$

where, r is radius of its cross-section.

$$y = \frac{mgL^3}{48Y} \times \frac{4}{\pi r^4} = \frac{mgL^3}{12Y\pi r^4} \quad \text{— (2)}$$

If the beam be of rectangular cross-section, of breadth b and depth d, we have

$I_g = bd^3/12$ for such beam

$$y = \frac{mgL^3}{48.Y} \times \frac{12}{bd^3} = \frac{mgL^3}{4Ybd^3}$$

Young's modulus of the material of the bar is calculated as

05

$$Y = \frac{mgL^3}{4bd^3.y}$$