



GOVERNMENT DEGREE COLLEGE – YELLANDU
BHADRADRI KOTHAGUDEM DISTRICT, TELANGANA



DEPARTMENT OF PHYSICS

Academic Year 2020-2021

Add on Course in Physics

Basics of Virtual Labs in Physics

Objective:

- Experiments or laboratory work are vital for learners. They are useful in understanding the theories and concepts of science or other subjects that cannot be studied alone only by textbooks. Though, there is no substitute to direct hands-on experience of a physical laboratory, virtual laboratory has the great potential to enhance actual laboratory experiences. These Virtual Lab and related resources can help students in visualising the concepts in a better manner.
- To practise the Lab resources to learn and basic concepts of through experiments in simulated environment

Course Content:

This is a Four Week Course and the layout is as follows :

Week 1: Introduction to Concept Of Virtual Labs – Different on-line Platforms – Usage of Simulation.

Experiment 1 : Moment of Inertia of Fly Wheel -Virtual lab Plat form.

Week 2: **Experiment 2 :** Torsional Pendulum

Experiment 3 : Compound Pendulum

Week 3: **Experiment 4 :** Young's Modulus-Uniform Bending

Experiment 5 : Young's Modulus-Non Uniform Bending

Week 4 : **Experiment 6 :** Carey- Foster Bridge

Eligibility :

This Course is Intended students who are pursuing B.Sc Physical Sciences.

CRITERIA TO GET A CERTIFICATE:

- Average assignment score = 25% of average 4 assignments given in the course.
- Exam score = 75% of the final certification exam score
- Final score = Average assignment score + Final Exam score.

STUDENT WILL BE ELIGIBLE FOR A CERTIFICATE ONLY IF

FINAL SCORE \geq 40%

Books and references :

Virtual Labs project is an initiative of Ministry of Human Resource Development (MHRD), Government of India under the aegis of National Mission on Education through Information and Communication Technology (NMEICT).

Online Resources :

- 1) <https://www.vlab.co.in/>
- 2) <https://vlab.amrita.edu/>
- 3) <https://bop-iitk.vlabs.ac.in/basics-of-physics/>

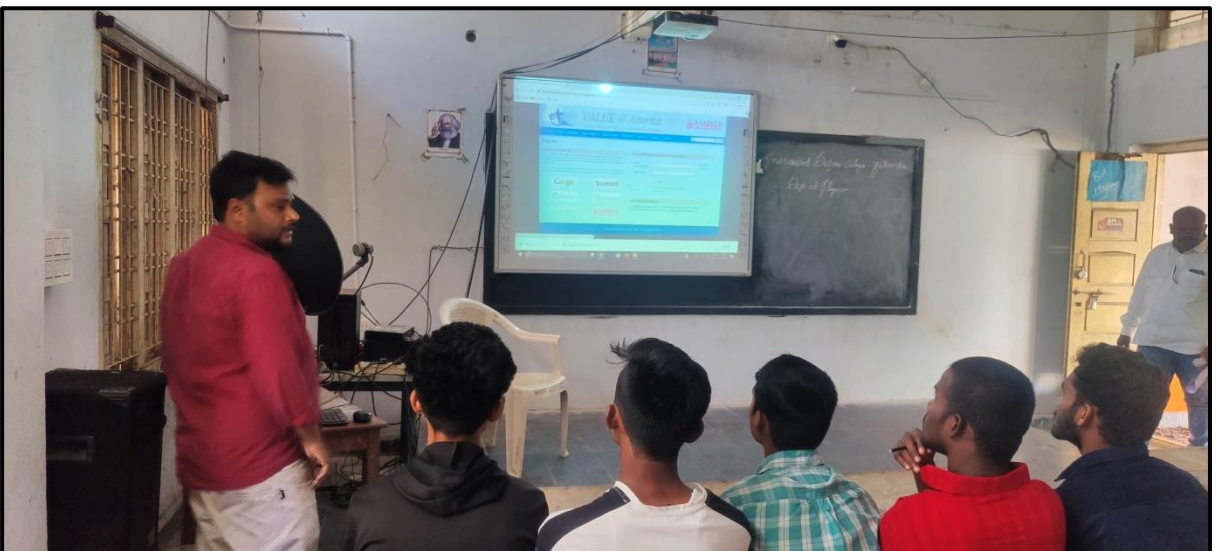
Students Enrolled:

S No	Name of the Student	Hall Ticket No.	Course/Year
1	G Anjali		
2	V Niharika		
3	K Sadhana		
4	G Sukanya		
5	D Sravani		
6	Y Srujana		
7	D Sidhartha		
8	M Saketh		
9	V Sandeep		
10	S Kartheek		
11	M Lakshmi Prasahnth		
12	P Srinivas		

Photos During Inaugural Session



Photos During Classes







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Sub : Basics of Virtual Labs in Physics

Duration : 30 Min

Max Marks: 30

Final Exam

I Choose the correct option for MCQ

15x2=30

1) If the mass distribution of a given body shifts towards the axis of rotation, its moment of inertia

- a) Increase
- b) Become double
- c) Decrease
- d) Remain unaffected

2) Young's modulus is

- a) volume strain / volume stress
- b) longitudinal stress/longitudinal strain
- c) shear stress/ shear strain
- d) shear strain/ shear stress

3) What is the rotational analogy corresponds to mass in linear motion?

- a) Inertial mass
- b) Moment of inertia
- c) Radius of gyration
- d) Torque

4) Within the limit of elasticity, strain produced is directly proportional to stress applied, by

- a) Pascal's law
- b) Hook's law
- c) Planck's law
- d) Newton's law

5) In simple harmonic motion, the maximum displacement of a body from its mean position is called...

- a) Time period
- b) Amplitude
- c) Frequency
- d) Velocity

6) Nearest approach to a perfectly plastic material

- a) putty
- b) Quartz
- c) PVC
- d) Polystyrene

7) The total number of complete oscillations per unit time in SHM is called...

- a) Time period
- b) Amplitude
- c) Frequency
- d) Velocity

8) The moment of inertia of a disc of mass M and radius R , about an axis passing through its center and perpendicular to the plane of the disc is...

- a) MR^2
- b) $(1/2)MR^2$
- c) $(1/4)MR^2$
- d) $(3/4)MR^2$

9) Which among the following is an application of torsional oscillation?

- a) Pendulum clock
- b) Digital clock
- c) Stop watch
- d) All the above

10) In a circuit, the current is directly proportional to _____.

- a) Voltage
- b) Resistance
- c) Temperature
- d) Resistivity

11) Moment of inertia of a rectangular strip of length 'l' and breadth 'b' is given by

- a) $(M/12)(l^2+b^2)^2$
- b) $(M/2)(l^2+b^2)^2$
- c) $(M/2)(l^2+b^2)$
- d) $(M/12)(l^2+b^2)$

12) What is the unit of Young's modulus?

- a) N/m^2
- b) N/m^3
- c) Nm
- d) Nm^2

13) Which among of the following is more elastic?

- a) copper
- b) wood
- c) steel
- d) rubber

14) Units of Resistance are

- a) Ohm
- b) Ohm/meter
- c) Mho
- d) Mho/meter

15) Which of the following offers Virtual labs under Ministry of Education Under the National Mission on Education through ICT

- a) IIT Bombay
- b) IIT Kanpur
- c) Amritha Vidhya Peetam
- d) All the above.

*******ALL THE BEST*******