Name :- Mohd. Nauman Khan

Class: BTech Mech. 2nd Sem.

Roll No.:- 11-MES-41

CIVIL ENGINEERING LAB

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1.	To determine Izod & Charpy Impact values of mild steel & cast iron	20/01/2012		(5)
2.	To determine modulus of elasticity (E) of material of given beam using deflection method.	3/02/2012		
3.	To verify the theoretical bending moment of AI beam apparatus at the section of hinge using various load combination	17/02/2012		
4.	To determine Rockwell & Brinell hardness of mild steel cast iron & brass specimen.	13/4/2012		

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Experiment No. 1

Object: To determine Izod & charpy Impact value of mild steel and cast iron specimen.

Apparatus Used:- Charpy pendulum testing machine, specimen of cast iron and mild steel, Vernier calliper, Izod testing machine.

Theory, Obs. Table.

Result:-

Izod impact test value for mild steel = ~~101.17~~ 109.92 Kgm
Izod impact test value for cast iron = ~~109.92~~ 104.47 Kgm

Charpy impact test value for mild steel = 100.03 Kgm
Charpy impact test value for cast iron = 91.27 Kgm

Discussion on Result:-

Izod Test

We have calculated the experimental impact value of mild steel and cast iron. The Izod impact value of mild steel comes out to be greater than that of cast iron. This shows that the strength of mild steel bar. The errors may be there due to negligence in measurements and taking dimension which

MOHD. NAUMAN KHAN
BTECH(MECH.) II SEM.

Object:- To determine Izod and charpy impact values of mild steel and cast iron speciment.

Apparatus Used:- Impact testing machine.

Observations:-

Izod Impact Test

Parameters	Mild Steel	Cast Iron
Length (cm)	75.43	75.14
Width (cm)	10.08	10.12
Depth (cm)	10.12	10.08
Depth of Notch (cm)	1.24	1.36
Depth of specimens at the Notch (cm)		
Depth - Depth of Notch (cm)		
Distance of Notch from end (cm)	43.93	44.00
Initial reading on impact M/C	~~109.92~~ 0.0	~~104.47~~ 0.0
Final reading on impact M/C	104.47	109.92
Impact value = (Final - Initial) ($K_g m$)	104.47	109.92

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CHARPY IMPACT TEST

Parameters	Mild Steel	Cast Iron
Length (cm)	54.32	54.24
Width (cm)	10.1	10.08
Breadth (cm)	10.08	10.12
Depth of Notch (cm)		
Depth of specimen at the notch (cm)	1.72	1.6
Distance of Notch from end (cm)	27.15	27.10
Initial Reading on Impact. M/C	0	0
Final Reading on Impact. M/C	100.03 J	91.27 J
Impact Value = Final - Initial	100.03 J	91.27 J

within permissible limits.

Charpy Test :-

On comparing the two values for cast iron & mild steel, we find that the strength of mild steel to resist against impact load is much higher. If the material breaks on a flat plane, the fracture was brittle & if it breaks with jagged edges, the fracture was ductile.

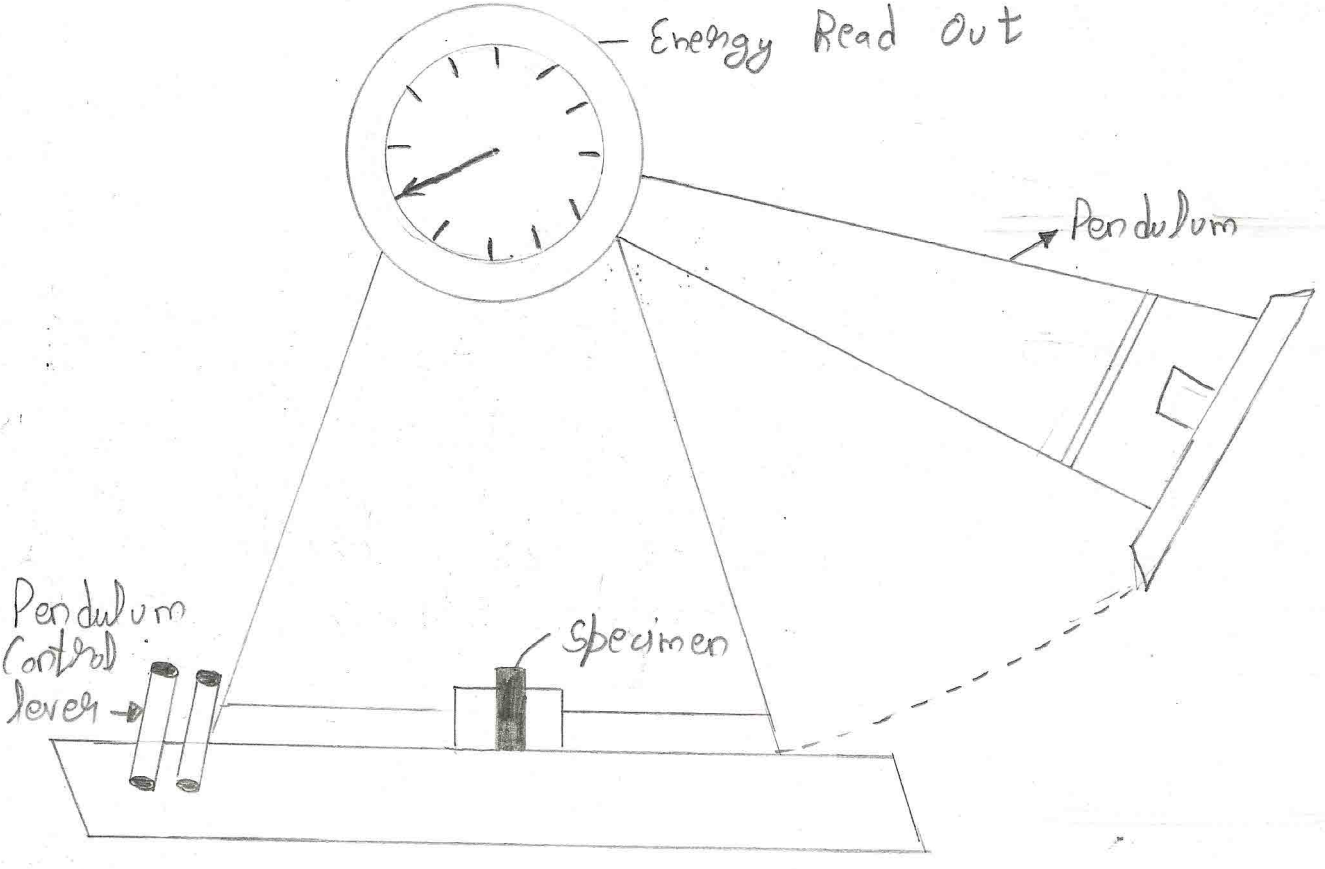
Significance

Izod Test :-

The Izod impact test has great significance in engineering. Its importance are :-

- Qualitative results of impact test can be used to determine the ductility of material.

- If the material breaks on a flat plane, the ~~frac~~ fracture is brittle and if the material breaks with jagged edges on shear tips, the fracture is ductile.



IMPACT TESTING MACHINE LAYOUT

- Quantitative results of impact test the energy needed to fracture of material and can be used to measure the toughness of the material and the yield strength.

CHARPY TEST:-

As this test determines the amount of energy absorbed by a material during fracture. It is widely applied in industry. Since, it is easy to conduct and results can be obtained quickly and cheaply. But a major disadvantage is that all results are only comparative. It is used for testing building and construction materials used in the construction of pressure vessels, bridges and to see how storms will affect material used in building.

PRECAUTIONS:-

1- When pendulum is swinging, a distance should be maintained.
2- Specimen should be placed carefully considering the correct position of the V-Notch.
3- When placing the specimen, take care that the pendulum lever is tightly fixed.

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4- Always mind the gaps during the apparatus is in motion. It can hit and cause harm.

5- Change the test knobs (Plates and particular test carefully).

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