GATITU SECONDARY SCHOOL, P.O. BOX 327 – 01030, GATUNDU.

FORM 3 PHYSICS MID TERM EXAMINATION. TERM 2 2015.

1.   A bus travelling at 30m/s is brought to rest within a distance of 90m.

a)   Find its acceleration.   (3mks

b)   How long does it take to stop.   (2mks

2.   An arrow shot vertically upwards rises to a maximum height of 1000m. Determine

a)   the initial velocity of the arrow.   (3mks

b)   time of the flight for the arrow.   (2mks

1

3. Given that the refractive index of glass is 1.5, Calculate the angle of incidence for a ray of light travelling from air to glass if the angle of refraction is 10°. (3mks

4(i) Define total internal reflection. (2mks

ii) State conditions necessary for total internal reflection to occur. (2mks

5. Calculate the critical angle of a medium whose refractive index is 2.4 (3mks

6. State Newton's second law of motion. (1mk

2

7.   A trolley whose mass is 200kg travelling at 4.5 m/s is brought to rest in a seconds. Calculate the retardation of the car and the force applied by the brakes.   (4mks

8.   A car of Mass 2000kg is brought to rest from a velocity of 25m/s by a constant of 3000N. Determine the change in momentum produced by the force and the time it takes for the car to come to rest.   (4mks

9.   A bullet of mass 10g is shot into an orange of mass 200g resting on a horizontal surface. At the time of the impact, the bullet is travelling at 20m/s.   Calculate the common velocity just after the impact.   (3mks

10.   Distinguish between elastic and in-elastic collision.   (2mks

3

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3

11.   During in- elastic collision, Kinetic energy changes into other forms of energy. State these forms of energy.   (3mks

12.   Explain why a paratrooper flexes his legs when he lands.   (2mks

13.   State the forces acting on a ball steel ball when falling through oil.   (3mks

14.   Calculate the work done by a stone Mason in lifting a stone of Mass 15kg through a height of 2.0m.   (4mks

4

15. A force of 10N stretches a spring by 5cm. Calculate the work done in stretching a spring by 10cm. (4mks

16. A car travelling at a speed of 20m/s is uniformly slowed down by applying brakes and comes to rest in 8 seconds. If the mass of the Car is 1500kg, Calculate
a) braking force (4mks

b) Work done in bringing the Car to rest. (4mks

17. Define power and state its S.I Units. (2mks

5

18. Calculate the power developed by a girl climbing through a flights to stairs to a height of 15 metres in 30 seconds given that her weights in 500N. (4mks

19. In a machine the load moves through a distance of 2m and the effort moves 8 m. If the effort is 20N and the load is 60N. Calculate the efficiency of the machine. (4mks

20. In a gear system, a wheel 'A' has 10 teeth while wheel 'B' has 20 teeth. If wheel A is driving wheel B, calculate the velocity ratio. (3mks

6

21. The figure below shows hydraulic press system using a lever of negligible mass, on the side of the small piston, pivoted of a points P. a force of 50N is applied of R as shown .
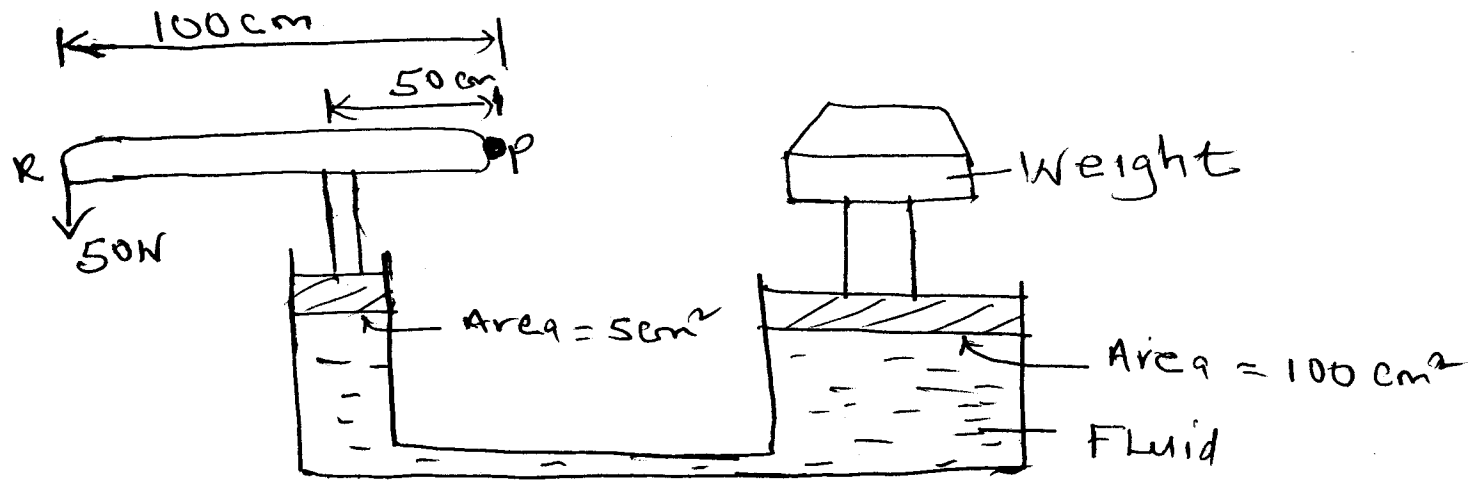
Calculate:-

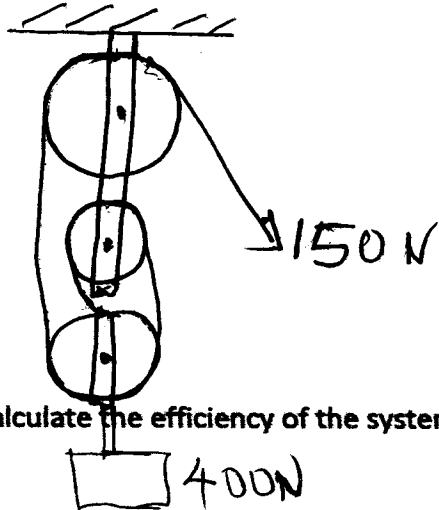a) the force exerted by the small piston on the liquid. (3mks

b) the pressure of the liquid below   the small piston. (4mks

c) the weight balanced by the large piston. (4mks

7

d) Efficiency of the system.   (4mks

22.   The figure below shows a pulley system.

a)   Calculate the efficiency of the system.   (4mks

23.   Define the following terms
i)   Potential difference   (4mks

ii)   Electrii current

iii)   A volt

8

iv)   Amphere

24.   State Ohm's Law   (1mk

25(i)   State two defects of a simple cell.   (2mks

ii)   How can these defects be minimized.   (3mks.

9

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