

F1 ANNUAL EXAMINATION 2020

LINDI REGION

PHYSICS MARKING SCHEME

1.

i	ii	iii	iv	v	vi	vii	viii	ix	x
B	B	C	B	B	C	A	B	C	D

2.

i	ii	iii	iv	v
B	D	F	H	I

3.

- Floating
- Force acting and cross-section area
- Friction
- Laboratory
- Fundamental force

4. a) Pressure is the force acting normal per unit area, SI unit of pressure in Newton per Meter square(N/M²) or Pascal.

b) Pebbles have sharp edge which means small area since $\text{Pressure} = \frac{\text{force}}{\text{area}}$, therefore the area is less while Pressure is more. That's it is painful to work barefooted on a road covered with pebbles.

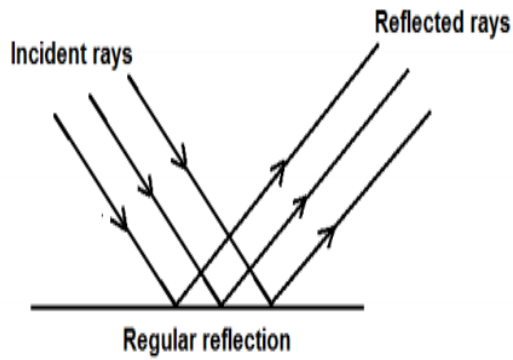
c) Data given

force (F) = 30N, maximum area(A_{max}) = 50m², minimum area(A_{min}) = 20m²

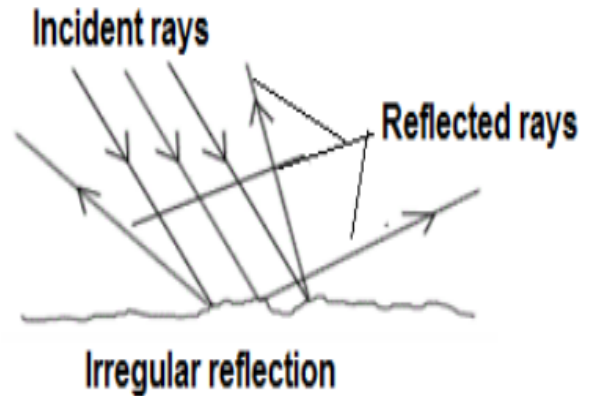
$$\text{i) Maximum pressure} = \frac{\text{force}}{\text{minimum area}(A_{\min})} = \frac{30N}{20m^2} = \underline{\underline{1.5N/m^2}}$$

$$\text{ii) Minimum pressure} = \frac{\text{force}}{\text{maximum area}(A_{\max})} = \frac{30N}{50m^2} = \underline{\underline{0.6 N/m^2}}$$

5. a) i/ Regular reflection



ii/ Irregular reflection



b) i/ $i^0 = \frac{(180-80)}{2} = \frac{100}{2} = 50^0$

ii/ $r^0 = \frac{(180-80)}{2} = \frac{100}{2} = 50^0$ or $r^0 = 90 - 40 = 50^0$

c) i/ $\frac{360}{90} - 1 = 4 - 1 = 3$ images

ii/ $\frac{360}{60} - 1 = 6 - 1 = 5$ images

6. a) Physics is the study of matter in relation to energy,

- i. Enable us to answer several questions /solve problems
- ii. Enable us to design and manufacture items like generator, transformer motors etc
- iii. Help us to acquire different professional like doctor, engineering, architecture, etc
- iv. Help us to help others example the use of machine and giving first aid to victims
- v. Enable us to enjoy since we study practically

b) i/in medical field -

x-ray, ultrasound machine and microscope made due to knowledge of physics

ii/at home

door handles, steam iron ,electrical cooker, car jack, pulley they use knowledge of physics

iii/at school

Instruments and apparatus used in laboratory created by knowledge of physics

Iv/ in transportation and communication

Devices like computer, newspapers, car, aero plane, ship, telephone, discovered and works under the principles of physics

v/in entertainments

physics helps people to enjoy example photography, exercise machine,etc

vi/ in industry

Machinery and tools are made and operates by using knowledge, principle and skills of physics

vii/help us to construct source of energy like batteries, bulbs, uses knowledge of physics

c) there is no distance moved.

Since work done(W.D)= Force (F) X distance (d), now because distance is zero therefore , work done is equally to zero.

7. a) Force is the pull or push experienced by an object, SI unit of force is Newton (N).

b) .i/ electromagnetic force

ii/ gravitational force

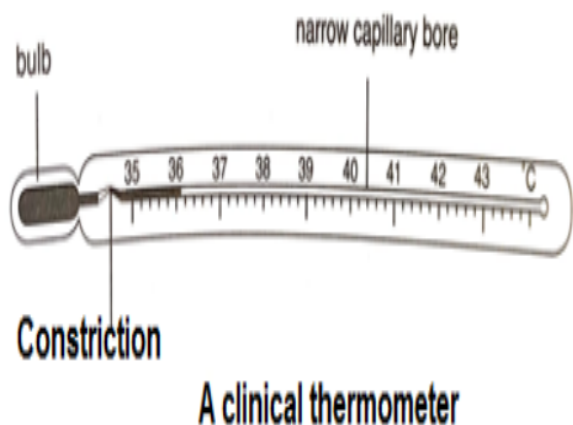
Iii/strong nuclear force

iv/ weak nuclear force

c) Laboratory is the special room where scientific experiments are done /conducted or is the working room for scientists

d) i/ **thermometer**

ii/ beaker



8.a) energy is the ability to do work.

- i. Nuclear energy
- ii. Light energy
- iii. Chemical energy
- iv. Heat energy
- v. Sound energy
- vi. Mechanical energy
- vii. Solar energy

b) i/ Potential energy is the energy possessed by the body due to its position while kinetic energy is the energy due to the motion of the body

By the formula potential energy = mass $\times$ gravity $\times$ height while kinetic energy = (mass $\times$ velocity square)/2

ii/ data given

Mass (m)=5kg, velocity (v)=4m/s, kinetic energy=?

Kinetic energy (**K.E**)= $MV^2/2$ (5 X 4 X 4)/2 = **40J**.

9.a) i/ the floatation law states that;

“a floating body displaces its own weight of fluid, in which it floats”

ii/ **Archimedes principle states that;**

“when the body is totally or partially immersed in fluid it experiences an up thrust equal to the displaced fluid”

b) i/ data given

Weight in air(R)=5N apparent weight (A)=3N up thrust (U)=?

Up thrust = (R-A) 5N-3N = **2N**

Relative density (R.D) =(R/U) 5/2 = 2.5

C) Relative density of ship is less than relative density of water. At the same time relative density of coin is greater than relative density of water,

Also the submerged area of ship is large and wide enough compared to that of coin, that's why ship floats on water while coin sinks in water

10. a/

- i. steam iron
- ii. ballpoint pen
- iii. batteries
- iv. door handles
- v. car seat belt
- vi. walking
- vii. cell phones
- viii. headphone/earphones
- ix. Spinning
- x. Washing machine
- xi. Camera lens
- xii. Alarm clock
- xiii. Doppler radar

b)

- i. Size and shape of image and objects are the same
- ii. Distance from image to mirror and distance from object to mirror are the same
- iii. Angle of incident is equal to angle of reflection
- iv. Image is virtual/not real
- v. Image is upright
- vi. Image is inverted

c)

- i. Solid - example iron, wood, timber, bone
- ii. Liquid - example water, oil,
- iii. Gas- example oxygen gas, helium gas etc.