F1 ANNUAL EXAMINATION 2021

LINDI REGION

PHYSICS MARKING SCHEME

1.

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

2.

i	ii	iii	iv	v
B	D	F	H	I

3.

i. Floating
ii. Force acting and cross-section area
iii. Friction
iv. Laboratory
v. Fundamental force

4. a)Pressure is the force acting normal per unit area, SI unit of pressure in Newton per Meter square(N/M^2) or Pascal.

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

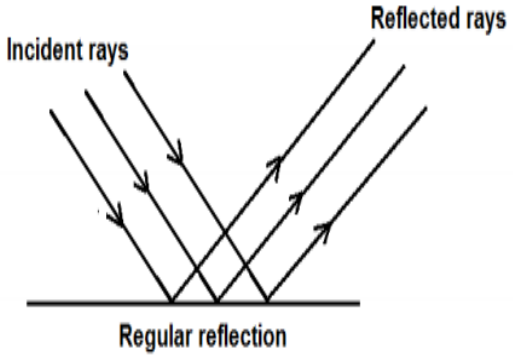
c)Data given

force (F) =30N, maximum area(A_{max}) =50m^2, minimum area(A_{min}) =20m^2

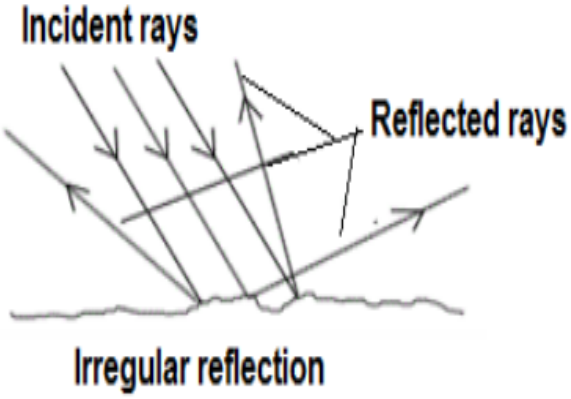
i) Maximum pressure =$\frac{force}{minimum\ area(Amin)}$ $\frac{30N}{20m2}$ **1.5N/m^2**

ii) Minimum pressure = $\frac{force}{maximum\ area(Amax)}$ $\frac{30N}{50m2}$ **0.6 N/m^2**

5. a) i/ Regular reflection



ii/ Irregular reflection



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

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

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

ii/ $\frac{360}{\ominus}$ -1 $\quad \frac{360}{60} - 1 \quad 6 - 1 = 5$ **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

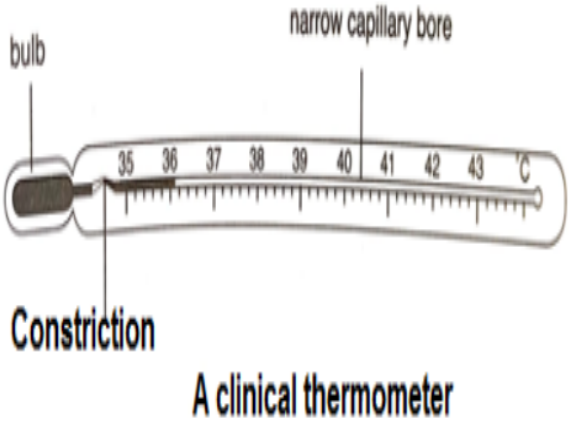
Iii/strong nuclear force

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**



A clinical thermometer

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 processed 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 x gravity x height while kinetic energy = (mass x 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 displace its own weight of fluid, in which it float"

ii/ **Archimedes principle states that**;

"when the body is totally or partially immersed in fluid it experience an up thrust equals 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 float on water while coin sink 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.