HOME PACKAGE

FOR ORDINARY LEVEL PHYSICS

FORM FOUR

KUPATA MAJIBU TUCHEKI **WHATSAPP 0624 254 757**

PROBLEM - 01

a) Describe how unfaithfully drivers use physics to steal fuel from car fuel tank

b) In waves energy propagation a certain wave detector detects only plane waves. If the sender produces circular waves, then describe the modification that you will employ to make the detector to detect your signal

PROBLEM - 02

a) You are an interviewee in the battery manufacturing company and you were taken to the laboratory having all items you need and asked to prepare a dry cell. Describe how are going to do

b) What are main purpose of connecting a diode and transistor on various electronic devices?

PROBLEM - 03

Explain why in rainy season, the sound of whistle of a rain is heard more than in summer

PROBLEM - 04

a) Briefly give reasons for the following

i) A musician must re-tune a stringed instrument if its temperature changes

ii) Power of an electric motor can be enhanced by increasing the current flowing through it

b) Briefly explain four characteristics of a highly sensitive moving coil galvanometer

PROBLEM - 05

X-ray are just like fetuses to be delivered, x-ray tube is just like a woman and her amniotic sac and cathode is just like a men and its rays is just like sperms. With the aid of a diagram, describe the statement

PROBLEM - 06

a) i) Outline three defining characteristics of planet

ii) Explain three importance of astronomy to man kind

b) Briefly explain four (4) measures that can be taken to control global warming

PROBLEM - 07

a) X-rays are said to have harmful effect to human beings when used for long time. Explain the effects that x-rays causes to human being

b) i) Describe how x-rays are produced in x-ray tube

ii) Explain four uses of x-rays in daily life

PROBLEM - 08

a) Why is high voltage and high current used in transmission of power over long distance?

b) What are the necessary condition for production of an induced e.m.f

PROBLEM - 09

Explain two effects of volcano and two effects of earthquake on the lands

PROBLEM - 10

As water waves pass by a duck floating on a lake, the duck bobs up and down but remains in essentially one place. Explain why a duck is ot carried along by the wave motion

PROBLEM - 11

Explain how AC generator can be converted to a DC generator?

PROBLEM - 12

Explain how microwaves are used to cook food

PROBLEM - 13

Explain the significance of using laminated soft irons in transformer cores

PROBLEM - 14

Describe with the aid of a well labelled diagram how x-rays are produced in x-ray tube. And explain why it is evacuated?

PROBLEM - 15

a) Differentiate audibility range from ultrasonic

b) Explain in terms of sound waves, why a piano can be distinguished from violin even when they are playing notes of the same pitch

PROBLEM - 16

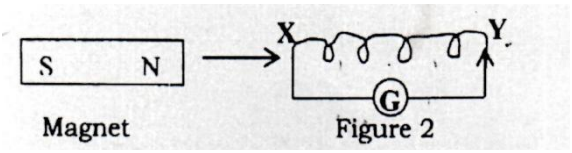


Figure 2

Figure 2 shows a coil connected to zero centred galvanometer G

a) State and explain the deflection of the galvanometer pointer when the magnet is

i)Held stationary at one end of the coil

ii) Moved towards the coil

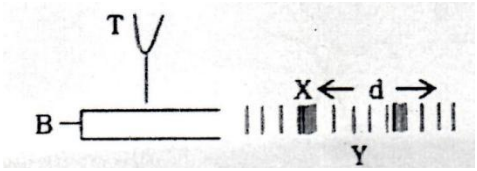
iii)Moved away from the coil

b) i) What pole is produced at X as the magnet enters the coil?

ii) Name and state the law which guides you to answer part (a) above

PROBLEM - 17

Figure 3 shows air molecules in front of a hollow, wooden box B, set vibrating by tuning fork T of frequency156Hz



a) State the advantages of mounting the tuning fork on the box which is open at one end

b) what are the sections X and Y are called? How does the spacing of the air molecules at X and Y differ?

PROBLEM - 18

a) Describe the way you can protect electrical d.c load (appliance) against power supply polarity reversal

b) By the aid of diagram why the two TANESCO electricity transmission wires do not attract one another provided both wires carry current?

PROBLEM - 19

Explain why the conductivity of a metallic conductor decreases with increase in temperature while that of semi-conductor increase with increase in temperature

PROBLEM - 20

a) State what is meant by junction voltage (potential barrier0 and how it is formed in a p-n junction

b) In an x-ray tube, it is observed that the intensity of x-ray increase when the heating voltage at the filament is increased. Briefly explain this observation.

PROBLEM - 26

By using a well labelled diagram explain how would you expect the appearance of the resulting pattern to change if, when using the narrow gape, the wavelength of the incident plane wave becomes shorter?

PROBLEM - 27

Have you ever heard someone say that one of the advantages of the short and stocky is that you are less likely to get knocked over? Explain your answer.

PROBLEM - 28

If you see an object that is not moving can you conclude that there are no forces on it? Explain your answer

PROBLEM - 29

a) Explain why the small ozone layer on the top of the stratosphere is crucial for human survival.

b) State any four (4) indications that may predict the occurrence of an earthquakes.

PROBLEM - 30

a) i) Explain why cathode ray tube (CRT) are evacuate

ii) What happens to the CRT when a gas is maintained?

b) With the aid of the diagram briefly explain the production of X-rays

PROBLEM - 31

a) i) Why is the base of the transistor made thin and lightly doped?

ii) Why is the collector of the transistor made wider than emitter and base?

b) Give two reasons why most of the electrons from emitter continues their journey through the base collector to form collector current.

PROBLEM - 32

a) Why do snails die when enough salt gets on them?

b) Mention four (4) applications of diffusion in real life

PROBLEM - 33

a) i) Why the inner core of the earth is solid although it has a high temperature?

ii) Give the summary of the origin and composition of the ionosphere. What is the net electric charge in the ionosphere?

b) i) Give out clear five (5) advantages of the elementary astronomy in our daily life

ii) With five (50 differences differentiate between star and planet

PROBLEM - 34

a) i) Why the induced EMF is called the back EMF?

ii) Why do birds fly off a high-tension wire when the current is switched on?

b) Self-induction is called inertial of electricity. Why?

PROBLEM - 35

a) i) How does the arrangement of the energy level in semi-conductor differs from that of an insulator

ii) Give two physical properties of semiconductor which distinguish them from other type of electrical material

b) i) With the aid of well labelled diagram brief explain why the forward biasing of the *PN* junction allow an electric current flow possible.

ii) Briefly explain with two (2) strong reasons to why *NPN* transistor is most preferred rather than *PNP* transistor

PROBLEM - 36

a) i) State the laws of radioactive decay

ii) Describe, giving a labeled diagram, the essential construction feature of the spark counter and outline how it function.

b) i) Why it is necessary to specify the half-life of a radioactive substance rather than the full time?

ii) Why is radioactive decay described as a random process?

PROBLEM - 37

a) i) State the laws of electromagnetic induction

ii) Distinguish between self-induction and mutual induction

b) i) Briefly explain the term Eddy current and how to minimize it.

PROBLEM - 38

a) i) Explain what is meant by the wavelength, the frequency and the speed of a sinusoidal travelling wave and drive the

relationship between them

PROBLEM - 39

a) i) Briefly explain why efficiency of transformer can never be 100%

ii) Differentiate between a motor and generator with four (4) differences

b) Briefly explain the mode of action of the induction coil. Support your explanation by the use of a well labeled sketch of the induction coil

PROBLEM - 40

a) i) Why is a thunder of lightening heard some moment after seeing the flash

ii) Why does an empty vessel produce more sound than the filled one?

b) Why are stationary wave called so?

PROBLEM - 41

a) i) Briefly explain five (5) effect of global warning in our environment

ii) Account for greenhouse effect with five (5) points

b) i) With the aid of the formula state the Newton's law of universal gravitation

ii) Distinguish between Heliocentric and Geocentric theories.

PROBLEM - 42

a) i) We cannot hear echo in a room. Explain with strong reason

ii) Why are all string instruments provided with hollow boxes

PROBLEM - 43

a) i) Explain briefly the effect of applying a forward bias and reverse bias to the junction diode

ii) Describe the meaning and mechanism of a half wave rectifier.

b) i) Describe the meaning of the term "Single stage amplifier"

ii) Give a clear meaning of the term transfer function

PROBLEM - 44

a) i) Define the term Magnetic flux

ii) Describe how a permanent magnet and a current in conductor can be used to demonstrate electromagnetic induction (in both cases explain the linkage)

b) Briefly explain four (4) factors that affect the magnitude of induced EMF

PROBLEM - 45

a) i) Define the term Work function induced EMF

ii) Why Thermionic Emissions occur?

b) i) Why cathode-ray tube evacuated?

ii) Briefly explain the application of X-rays