



MARCH 2022

The Teachers' Resource Unit and the Regional Inspectorate of Pedagogy, in collaboration with NWAPT	SUBJECT CODE NUMBER 0580	PAPER NUMBER 1
GENERAL CERTIFICATE OF EDUCATION REGIONAL MOCK EXAMINATION	SUBJECT TITLE PHYSICS	
CANDIDATE NAME:		
CANDIDATE NUMBER:		
CENTRE NUMBER:		
ORDINARY LEVEL		

Time Allowed: One and a half hours

INSTRUCTIONS TO CANDIDATES:

Mobile phones are **NOT ALLOWED** in the examination room.

1. USE A SOFT HB PENCIL THROUGHOUT THIS EXAMINATION.
2. DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

Before the Examination begins:

3. Check that this question booklet is headed "Ordinary level -0580 code and subject title—PHYSICS -Paper 1".
4. Insert the information required in the spaces above.
5. Without opening the booklet, pull out the answer sheet carefully from inside the front cover of this booklet. Take care that you do not crease or fold the answer sheet or make any marks on it other than those asked for in these instructions.
6. Insert the information required in the spaces provided on the answer sheet using your HB pencil:

Candidate Name, Centre Number, Candidate Number, Subject Code Number, and Paper number

How to answer questions in this examination:

7. Answer ALL the 50 questions in this examination. All questions carry equal marks.
8. Non-programmable calculators are allowed.
9. For each question there are four suggested answers, A, B, C and D. Decide which answer is correct. Find the number of the question on the Answer Sheet and draw a horizontal line across the letter to join the square brackets for the answer you have chosen. For example, if C is your correct answer, mark C as shown below:

[A] [B] [C] [D]
10. Mark only one answer for each question. If you mark more than one answer, you will score zero for that question. If you change your mind about an answer, erase the first mark carefully, and then mark your new answer.
11. Avoid spending much time on any question. If you find a question difficult, move to the next. You can come back to the question later.
12. Do all rough work in this booklet using, where necessary, the blank spaces in the question booklet.
13. You must not take this booklet and answer sheet out of the examination room. All question booklets and answer sheets will be collected at the end of the examination.

1) Which of the following groups of physical quantities contains only scalars?

- A) acceleration, mass speed
- B) time, force, velocity
- C) acceleration force velocity
- D) mass, speed, time. ✓

2) What measuring instrument will you use to measure the diameter of a copper wire?

- A) metre rule
- B) measuring wheel
- C) vernier caliper
- D) measuring tape

3) The efficiency of an electric generator is 65%. What is the useful output work that can be expected if the energy input to the generator is 12 KJ?

- A) 780 KJ
- B) 19 KJ
- C) 7.8 KJ
- D) 4.2 KJ

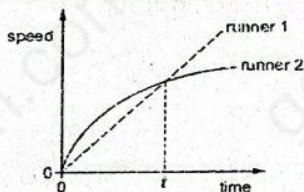
4) A boy whose mass is 50kg runs up a flight of stairs 6.5m high in 5s. How much power does he generate?

- A) 65 W
- B) 325W
- C) 250 W
- D) 650W

5) Ten identical steel balls, each of mass 27g, are immersed in a measuring cylinder containing 20 cm³ of water. The reading of the water level rises to 50 cm³. What is the density of the steel?

- A) 8.1g/cm³
- B) 13.5 g/cm³
- C) 9.0 g/cm³
- D) 0.90 g/cm³

6) Two runners take part in a race. The graph below shows how the speed of each runner changes with time.

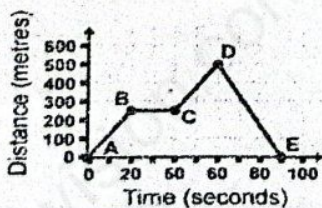


What does the graph show about the runners at time t?

- A) Both runners are moving at the same speed
- B) Runner 1 has zero acceleration
- C) Runner 2 has zero acceleration
- D) Runner 2 is speeding up

7) A car travels 100km. The journey takes two hours. The highest speed of the car is 80km/h and the lowest speed is 40km/h. What is the average speed for the journey?

- A) 40km/h
- B) 50km/h
- C) 60km/h
- D) 120km/h



8) The graph below represents the motion of a car.

What is the displacement of the car from point A to E.

- A) 0m
- B) 500m

- C) 90m
- D) 100m

9) Two states of matter are described as follows.

State 1: The molecules are very far apart. They move about quickly at random in straight lines until they hit something.

State 2: The molecules are quite closely packed together. They move about at random. They do not have fixed positions.

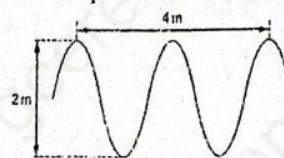
What is state 1 and what state 2?

	State 1	State 2
A	Gas	liquid
B	Gas	solid
C	Liquid	gas
D	Solid	gas

10) The frequency of a wave is doubled. The speed of the wave does not change. What happens to the wavelength of the wave?

- A) it becomes 4 times as large
- B) it does not change
- C) it doubles
- D) it halves

11) The diagram below represents a water wave.



Which row shows the amplitude and the wavelength?

	Amplitude/m	Wavelength/m
A	1	2
B	1	4
C	2	2
D	2	4

12) Which row shows the nature of light waves, sound waves and X-rays?

	Light wave	Sound wave	X-rays
A	longitudinal	longitudinal	Transverse
B	longitudinal	Transverse	longitudinal
C	Transverse	longitudinal	transverse
D	Transverse	Transverse	longitudinal

13) A boy throws a small stone into a pond. Waves spread out from where the stone hits the water and travel to the side of the pond. The boy notices eight waves reach the side of the pond in 5.0s. What is the frequency of the wave?

- A) 6.20Hz
- B) 0.63Hz
- C) 1.6Hz
- D) 40 Hz

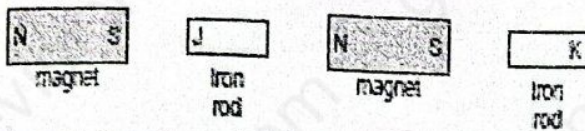
14) Light waves pass from air into glass and are refracted. What always remains constant when this happens?

- A) direction
- B) frequency
- C) speed
- D) wavelength

15) Which procedure may be used to demagnetize a steel bar?

- A) cooling it in a freezer
- B) earthing it with a copper for several seconds
- C) Removing it slowly from a coil carrying an alternating current
- D) rubbing it in one direction with a woollen clothe

16) The diagram shows two magnets and two iron rods placed in a line.



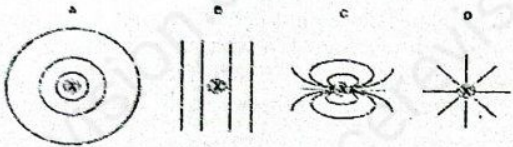
Which magnetic poles are induced at the ends J and K of the iron rods?

	Pole induced at J	Pole induced at K
A	N	N
B	N	S
C	S	N
D	S	S

17) A transformer is needed to convert a supply of 240V into 4800 V output. Which pair of coils would be suitable for this transformer?

	N ^o of turns on primary N _p	N ^o of turns on secondary N _s
A	50	1000
B	240	48000
C	480	24
D	2000	100

18) The direction of the current flowing in a straight wire X is into the paper. Which diagram shows the shape of the magnetic field pattern around the wire?



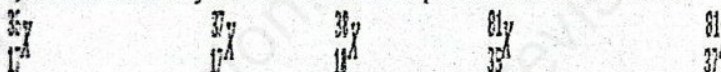
19) What effect does increasing the number of coils have on an electromagnet?

- A) It makes it bulky and less functional
- B) It decreases the strength of the magnetic field
- C) It makes the electromagnet a permanent magnet
- D) It increases the strength of the magnetic field

20) The nuclide notation for radium-226 is ${}^{226}_{88}\text{Ra}$. How many electrons orbit the nucleus of the neutral atom of radium-226?

- A) 0
- B) 88
- C) 138
- D) 226

21) Below are the symbols for five isotopes of a certain element.



Nuclide 1 Nuclide 2 Nuclide 3 Nuclide 4 Nuclide 5

Which two nuclides are isotopes of the same element?

- A) nuclide 1 and 2
- B) Nuclide 2 and 3
- C) Nuclide 2 and 5
- D) Nuclide 4 and 5

22) Which of the statements below describes nuclear fusion?

- A) Two helium nuclei join to form a hydrogen nucleus
- B) A helium nucleus joins with a hydrogen nucleus to form an alpha particle
- C) Uranium nuclei split and produce high energy neutrons causing a chain reaction
- D) Two hydrogen nuclei join to form a helium nucleus

23) A powder contains 400mg of radioactive isotope that emits α -particles. The half-life of the isotope is 5 days. How long will it take for 7/8 of the powder to decay?

- A) 20days

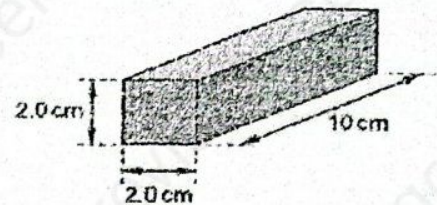
- B) 350days
- C) 15days
- D) 1750days

24) Sodium-24 decays to magnesium-24 according to the following equations

${}^{24}_{11}\text{Na} \rightarrow {}^{24}_{12}\text{Mg} + \text{emitted particle}$. What is the emitted particle?

- A) α -Particle
- B) β -Particle
- C) neutron
- D) proton

25) The diagram shows a cuboid block from a metal of density 25g/cm³. What is the mass of the block in kilograms?



- A) 1.6 kg
- B) 100kg
- C) 0.6 kg
- D) 1kg

26) State what is observed when a perspex rod is taken close to but not touching a positively charged body suspended by a nylon thread.

- A) Ball moves away from rod
- B) Both move toward each other
- C) Both attract each other
- D) Ball does not move

27) Which property is responsible for the formation of rainbow?

- A) Refraction, dispersion and total internal reflection
- B) Diffraction and total internal reflection
- C) Dispersion
- D) Reflection and dispersion

28) A car of mass 900kg is travelling at a speed of 5m/s. What is its momentum?

- A) 4.500 kg m/s.
- B) 4500 kg m/s
- C) 150 kg m/s
- D) 0.0055 kg m/s

$$p = mv$$

$$= 900 \times 5$$

$$= 4500$$

29) In an experiment to measure the specific heat capacity of a metal block, why is the metal block lagged.

- A) To enable the thermometer and the heater to fit properly
- B) To cause the metal block to heat up faster
- C) To ensure good electrical contacts
- D) To minimize heat lost to the surroundings.

30) Which statement is true concerning the specific heat capacity of a teaspoon full of water and a 1000 litres tank full of water?

- A) The teaspoon full of water has a smaller specific heat capacity because it has a smaller mass
- B) The tank full of water has higher specific capacity because it has more mass
- C) Water full in teaspoon and water full in a tank have the same specific heat capacity
- D) Their heat content is the same

31) The S.I unit of specific latent heat is:

- A) J
- B) J/kg
- C) J/kg. K
- D) J/kg/K

32) Mechanical energy comprises of two types of energies, these are:

- A) Mechanical and electrical energy
- B) magnetic and electrical energy
- C) kinetic and potential energy
- D) kinetic and magnetic energy

33) The Pressure of a gas can be measured by:

- A) Hydraulic machine
- B) thermometer
- C) manometer
- D) galvanometer

34) Two features that distinguish a clinical thermometer from an ordinary laboratory thermometer are:

- A) A constriction and a bulb
- B) A bulb and a constriction
- C) A short scale and a constriction
- D) A capillary tube and a constriction

35) The freezing point of ethyl alcohol is 156K. This is equal to:

- A) 426 °C
- B) 117 °C
- C) -426 °C
- D) -117 °C

36) The ability of an object to return to its original position after it has been tilted slightly is referred to as:

- A) stability
- B) equilibrium
- C) center of gravity
- D) turning effect.

37) An echo sounder sends down a sound signal with a speed of 2000m/s into the sea. The echo from the bottom is heard 0.1 minutes later. Determine the depth of the sea at that particular point.

- A) 100m.
- B) 2000m.
- C) 6000m.
- D) 200m

38) In which of the simple machines is the load between the effort and the pivot

- A) Wheelbarrow
- B) human forearm
- C) scissors
- D) crowbar

39) A plug connected to a radio contains a 3A fuse. The fuse is needed

- A) to reduce the voltage across the radio
- B) to prevent the wiring from overheating
- C) to make it easier for current to flow
- D) to increase the resistance of the circuit.

40) A wire of length l and cross sectional area A has a resistance of R . If the length is doubled, what is the new resistance?

- A) $R/2$
- B) $2R$
- C) $R/4$
- D) $4R$

41) Customers who use electricity are often paying for

- A) the power consumed
- B) the quantity of charge consumed
- C) the voltage installed across the supply
- D) the energy used

42) If 50C of charge flow through a point in an electric circuit in 10 seconds, what is the current passing through that point?

- A) 500A
- B) 5A

- C) 60A
- D) 0.2A

43) The process of transferring charge by touching or rubbing is called:

- A) induction
- B) conduction
- C) friction
- D) conductor

44) Assume a rubber rod is rubbed against rabbit fur and the rod gains 5 electrons. Which of the following is true?

- A) The fur lost 5 electrons
- B) the fur gained 5 electrons
- C) the fur gained 5 protons
- D) the fur lost 2 electrons

45) Which of the following affect(s) the magnitude of the electrostatic force between two charged objects?

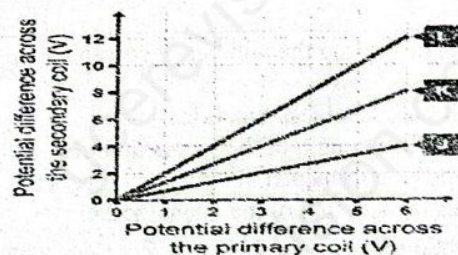
- A) Charge on the first object
- B) the charge on the second object
- C) distance between the charges
- D) all the above answers

46) A form 5 students observed that hot water in a closed aluminum got cold after some time. Which of these methods of heat transfer is responsible for the heat losses?

- A) Conduction only
- B) Convection only
- C) Conduction and radiation
- D) Convection and radiation

Questions 47-50

A student makes three simple transformers, J, K and L. The figure below shows how the potential difference across the secondary coil of each transformer varies as the potential difference across the primary coil of each transformer is changed.



47) In the order J, K and L identify the types of transformer

- A) Step up, step down, and step up
- B) Step down, step up, and step up
- C) Step down, step up, and step down
- D) Step up, step up, and step up

48) What is the turn ratio of L

- A) 1.
- B) 24.
- C) 2.
- D) 0.5

49) Which transformer can be used where large current is needed?

- A) J
- B) K
- C) L
- D) J and K

50) A diode can be connected to the secondary coil of transformer K. What is the function of the diode?

- A) To step down the voltage smoothly
- B) To step down the current smoothly
- C) To amplify the current
- D) To rectify the current

END

GO BACK AND CHECK YOUR WORK