

CAMEROON GENERAL CERTIFICATE OF EDUCATION BOARD

General Certificate of Education Examination

0580 PHYSICS 1

JUNE 2019

ORDINARY LEVEL

Centre Number	
Centre Name	
Candidate Identification Number	
Candidate Name	

Mobile phones are NOT allowed in the examination room.

MULTIPLE CHOICE QUESTION PAPER

One and a half hours

INSTRUCTIONS TO CANDIDATES

Read the following instructions carefully before you start answering the questions in this paper. Make sure you have a soft HB pencil and an eraser for this examination.

1. USE A SOFT HB PENCIL THROUGHOUT THE 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 "0580 Physics 1 – Ordinary Level"
4. Fill in the information required in the spaces above.
5. Fill in the information required in the spaces provided on the answer sheet using your HB pencil:
Candidate Name, Exam Session, Subject Code and Candidate Identification Number.
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.

How to answer the questions in this examination

6. Answer **ALL** the 50 questions in this Examination. All questions carry equal marks.
7. Non-programmable and cordless calculators are allowed.
8. Each question has FOUR suggested answers: **A, B, C** and **D**. Decide which answer is appropriate. 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 corresponding answer you have chosen.

For example, if C is your correct answer, mark C as shown below:

[A] [B] [C] [D]

9. Mark only one answer for each question. If you mark more than one answer, you will score a zero for that question. If you change your mind about an answer, erase the first mark carefully, then mark your new answer.
10. Avoid spending too much time on any one question. If you find a question difficult, move on to the next question. You can come back to this question later.
11. Do all rough work in this booklet using the blank spaces.
12. **At the end of the examination, the invigilator shall collect the answer sheet first and then the question booklet. DO NOT ATTEMPT TO LEAVE THE EXAMINATION HALL WITH IT.**
You may find the following constants useful
 - acceleration of free fall, $g = 10 \text{ m s}^{-2}$
 - the speed of light in vacuum $c = 3 \times 10^8 \text{ m s}^{-1}$
 - the charge on an electron $e = 1.6 \times 10^{-19} \text{ C}$

Section 1 (Forty Three Questions)

Directions: Each of the questions or incomplete statements in this section is followed by four suggested answers. Select the best answer for each question.

Questions 1 – 43

1. Which of the following is a scalar quantity?
 - A Force
 - B Pressure
 - C Momentum
 - D Displacement
2. Which of the following energy conversions takes place when we use an electric iron?
 - A Electrical energy to heat energy
 - B Light energy to heat energy
 - C Chemical energy to heat energy
 - D Mechanical energy to heat energy
3. A soldier who fires a bullet from a gun has the tendency to move backwards as the bullet flies forward. This observation can be explained by:
 - A Conservation of linear momentum
 - B Newton's First Law of motion
 - C Newton's Second Law of motion
 - D Conservation of mechanical energy
4. The air resistance experienced by a moving car can be reduced by:
 - A driving at a steady speed
 - B driving on a tarred road
 - C increasing the speed
 - D reducing the speed
5. Which of the following instruments can be used to measure the excess pressure of a trapped mass of gas?
 - A Barometer
 - B Manometer
 - C Thermometer
 - D Hygrometer
6. A body falling in air experiences terminal velocity when its:
 - A weight is negligible
 - B velocity is zero
 - C acceleration is zero
 - D velocity decreases at a constant rate
7. Which of the following surfaces absorbs heat best?
 - A Dull black
 - B Shiny black
 - C Shiny white
 - D Dull white
8. A liquid-in-glass thermometer is graduated in mm instead of degrees Celsius. The interval between the lower fixed point (0°C) and the upper fixed point (100°C) is 150 mm. When the thermometer is in contact with an unknown liquid the interval between the lower fixed point and the head of the liquid column is 15mm. The temperature of the unknown liquid is:
 - A 30°C
 - B 25°C
 - C 15°C
 - D 10°C
9. Which of these can be used as a rectifier in electronic circuits?
 - A Transformer
 - B Transistor
 - C Resistor
 - D Diode
10. The image of an object produced by a diverging (concave) lens is always:
 - A magnified, real and inverted
 - B diminished, real and inverted
 - C diminished, virtual and erect
 - D magnified, virtual and erect
11. The acceleration due to gravity on earth is 10 m s^{-2} while on the moon it is 1.6 m s^{-2} . If a person whose weight on earth is 500 N goes to the moon. His weight on the moon will be:
 - A 31.25 N
 - B 51.6 N
 - C 80.0 N
 - D 500 N
12. Which of these is a very important property for a liquid used in a liquid in- glass thermometer
 - A Its volume should change linearly with temperature
 - B Its volume should change for small changes in temperature
 - C It should have a high boiling point
 - D It should be a good conductor of heat

13. Which of these statements is true for an intrinsic semiconductor?
- A It has some impurities at high temperatures
 - B It has more holes than free electrons
 - C It has equal number of holes as free electrons
 - D It has no impurities and no holes at high temperatures..

14. Which of the following pairs of forces are both contact forces?
- A Friction and upthrust
 - B Tension and weight
 - C Electrostatic force and friction
 - D Weight and magnetic force

15. Water was fetched from a tap and heated till it boiled. Which of the graphs in figure 1 represents the variation of temperature (Y) with time (X) for the water?

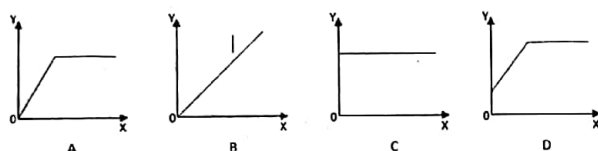


Figure 1

16. The unit of pressure is:

- A newton metre
- B Pascals
- C newton per metre
- D kilogram per metre squared

17. Birds can perch safely on high tension electric cables without being electrocuted because:

- A birds withstand high potential difference
- B the legs of birds are well insulated
- C very little current flows in high tension cables
- D Very little current flows through the body of the bird

18. A machine raises a load of 600 N through a distance of 2.5 m when an effort of 100 N moves through a distance of 20 m. The efficiency of this machine is:

- A 25 %
- B 30 %
- C 45 %
- D 75 %

19. If a particle experiences a deflection in a magnetic field, the particle is most likely:
- A charged and moving perpendicularly to the field lines
 - B charged and moving parallel to the field lines
 - C uncharged and moving perpendicularly to the field lines
 - D uncharged and moving parallel to the field lines

20. Which of the following are both renewable energy sources?

- A Wood and crude oil
- B Wind and solar radiation
- C Nuclear fuel and saw dust
- D Tides and natural gas

21. Which of these radioisotopes is used to monitor the functioning of the thyroid gland?

- A Carbon-14
- B Phosphorus-32
- C Sodium-24
- D Iodine-131

22. The units of specific heat capacity is:

- A $\text{J/kg}^{-1} \text{K}^{-1}$
- B J kg K^{-1}
- C $\text{J kg}^{-1} \text{K}$
- D $\text{J kg}^{-1} \text{K}^{-1}$

23. A current of 0.6 A flows through a point in a circuit for 5 minutes. The quantity of charge that has passed that point is:

- A 180 coulombs
- B 1800 coulombs
- C 3 coulombs
- D 30 coulombs

24. We hear sounds round corners because sound can be easily:

- A reflected
- B refracted
- C diffracted
- D dispersed

25. Cloud chamber tracks for alpha particles are thick and straight because alpha particles:

- A are massive and very ionizing
- B are positively charged
- C are least penetrating radiations
- D contain 2 protons and 2 neutrons

26. An object of mass 50 kg is pulled with a force of 100 N on a smooth runway. Its acceleration is:
- 5000 ms^{-2}
 - 150 m s^{-2}
 - 2 m s^{-2}
 - 0.5 ms^{-2}

27. Which of the graphs in figure 2 best represents the variation of count rate from a radioactive substance (Y) with time (X)

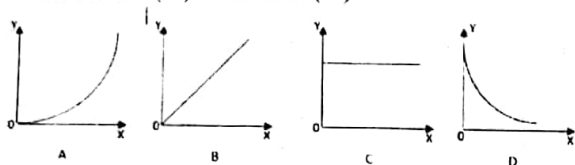


Figure 2

28. On a hydraulic jack a force of 60 N is applied on the smaller piston with area 0.05 m^2 . The force exerted on the larger piston with area 0.6 m^2 will be:

- 720 N
- 12 N
- 120 N
- 72 N

29. Which of the graphs in figure 3 best represents the variation of acceleration (Y) of a small ball dropped from the first floor of a storey building with time (x)?

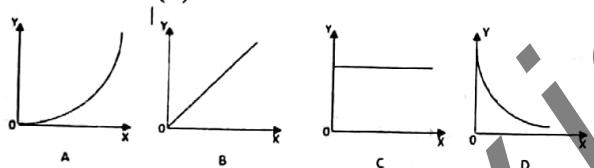


Figure 3

30. An atom is represented by ${}^{17}_{8}\text{X}$. Which of the nuclides below is an isotope of this atom?

- ${}^{17}_{9}\text{X}$
- ${}^{17}_{7}\text{X}$
- ${}^{16}_{8}\text{X}$
- ${}^{16}_{7}\text{X}$

31. A transformer has 3000 turns in the primary coil and 500 turns in the secondary coil. If the input voltage is 240 V, the output voltage is:

- 40 V
- 1440 V
- 500 V
- 3000 V

32. Which of these electromagnetic waves has the longest wavelength?

- Infrared radiation
- Gamma radiation
- Visible light
- X-rays

33. Water for tea is heated in a pot. Heat is transferred from the bottom of the pot into the pot by method of:

- convection
- conduction
- radiation
- combustion

34. Total internal reflection can only occur when the:

- angle of incidence in the denser medium is less than the critical angle
- angle of incidence in the denser medium is greater than the critical angle
- angle of incidence in the less dense medium is greater than the critical angle
- angle of incidence in the less dense medium is less than the critical angle

35. The activity of a radioactive sample drops from 800 counts/second to 200 counts/second in 24 hours. The half-life of the sample is:

- 3 hours
- 8 hours
- 12 hours
- 24 hours

36. Which of the following materials can be used to make the needle of a navigation compass?

- Zinc
- Soft iron
- Aluminum
- Steel

37. "The EMF induced across a coil acts such as to oppose the change that produces it." This is a statement of:

- Ohm's law
- Hooke's law
- Lenz's law
- Faraday's law

38. The neutron to proton ratio for $^{131}_{54}\text{I}$ is:

- A 131 : 54
- B 77 : 54
- C 54 : 77
- D 77 : 131

39. A freely suspended bar magnet comes to rest in an approximately north-south direction. This shows that the:

- A earth has charge carriers
- B earth can be used as a compass
- C earth has a magnetic field
- D bar magnet is charged

40. Which of the graphs in figure 4 best represents the variation of pressure on an object immersed in a liquid (Y) and the depth of the object (X)

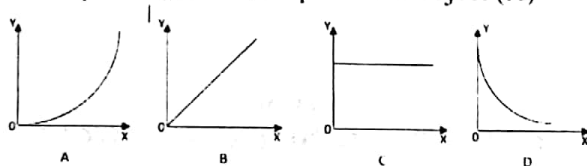


Figure 4

41. A body is said to be in mechanical equilibrium when the:

- A Resultant external force on it is zero and sum of moments is zero
- B Sum of external forces on it is zero
- C Weight is equal to reaction force
- D Resultant moment on the body is zero.

42. A soft magnetic material is one which:

- A cannot be easily magnetized and demagnetized
- B can be easily magnetized and easily demagnetized
- C can be easily magnetized but not easily demagnetized
- D cannot be easily magnetized but easily demagnetized

43. A temperature of 27°C converted to kelvin gives:

- A 300 K
- B 303 K
- C 246 K
- D 127 K

Section 2 (Seven Questions)

Directions: These groups of the questions deal with practical situations. Each situation is followed by a set of questions. Select the best answer for each question.

Questions 44 - 47

The setup in figure 5 is used to study the relationship between current (I) and potential difference (V) for a wire X.

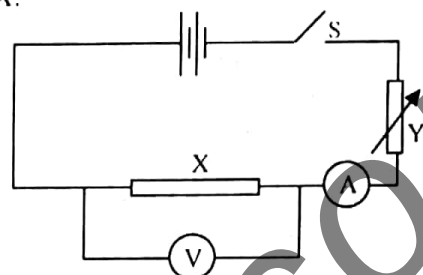


Figure 5

44. The ammeter is connected as shown because it has a:

- A very high resistance and so allows little current to flow through it
- B very high resistance and so allows high current to flow through it
- C very low resistance and so does not alter the current flowing through it
- D very low resistance and so alters the current flowing through it

45. If the material X is a copper wire, the relationship between V and I when the switch S is closed at constant temperature is;

- A Hooke's law
- B Lenz's rule
- C Ohm's law
- D Coulomb's law

46. The rheostat, Y is used to;

- A vary the resistance of the wire
- B vary the current in the circuit
- C vary electromotive force
- D keep the temperature constant

47. The most likely shape of the graph of the potential difference (Y) against current (X) for the copper wire in figure 6 is:

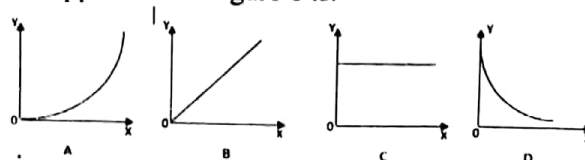


Figure 6

Questions 48 – 50

Figure 7 shows an arrangement which is used to investigate collisions between two trolleys. Trolley B is initially stationary and the end of Y of the tape is closer to trolley A.

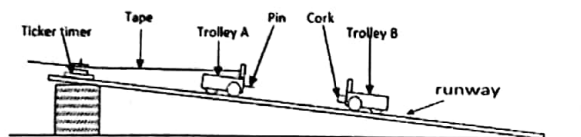
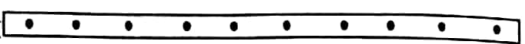
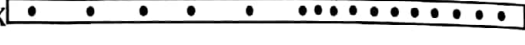


Figure 7

48. The runway is inclined to:

- A cause acceleration of trolley a
- B reduce friction
- C give trolley a an initial velocity
- D compensate for friction

49. A ticker tape produced from this experiment will likely be:

- A X  Y
- B X  Y
- C X  Y
- D X  Y

50. The experiment could be used to verify the:

- A principle of conservation of linear momentum
- B principle of conservation of energy
- C concept of inertia
- D terminal velocity.

STOP

GO BACK AND CHECK YOUR WORK