

CAMEROON GENERAL CERTIFICATE OF EDUCATION BOARD General Certificate of Education Examination

0580 PHYSICS 1

JUNE 2018

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.

USE A SOFT HB PENCIL THROUGHOUT THE EXAMINATION.

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

Before the examination begins:

Check that this question booklet is headed "0580 Physics 1—Ordinary Level"

Fill in the information required in the spaces above.

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

Answer **ALL** the 50 questions in this Examination. All questions carry equal marks.

Calculators are allowed.

Each question has **FOUR** suggested answers: **A, B, C** and **D**. Decide on which answer is best. 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:

Q) [B] ☒ [C] [D]

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.

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.

Do all rough work in this booklet using the blank spaces in the question booklet.

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 constant useful:

Acceleration of free fall $g = 10 \text{ ms}^{-2}$

Turn Over

0580/1/B/MCQ
2018 CGCEB

SECTION I
(Forty two questions)
Questions 1 - 42

Directions:

Each of the questions or incomplete statements in this section is followed by four suggested answers. Select The best answer in each case.

1. The linear magnification of a plane mirror is always
A 0.
☒ B 1.
C greater than 1.
D less than 1.

2. Racing cars are very stable because they
☒ A have a low centre of gravity.
B run very fast.
C are low.
D are not massive.

3. The wave property that makes it possible for sound to be heard round a bend is
☒ A diffraction.
☒ B reflection.
C refraction.
D interference.

4. A note produced on a piano can be distinguished from that played on a guitar by its
A intensity.
☒ B pitch.
☒ C quality.
D loudness.

5. Figure 1 below shows two identical balls X and Y that are to be released from the same height simultaneously. X is allowed to fall vertically from rest while Y is projected horizontally at the same instant.

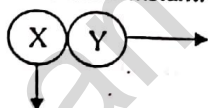
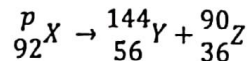


Figure 1

Which of the following statements is true?

- A X hits the ground before Y.
☒ B Y hits the ground before X.
C Both balls hit the ground at the same time.
☒ D X moves only vertically while Y moves only horizontally.
6. In comparing light and sound waves, which of the following pairs of properties is true?
- | | |
|---|-------------------------------|
| <u>Light waves</u> | <u>Sound waves</u> |
| A are longitudinal. | are transverse. |
| B do not interfere. | interfere. |
| C are easily diffracted. | are not easily diffracted. |
| <input checked="" type="radio"/> D can travel through vacuum. | cannot travel through vacuum. |

7. Consider the following nuclear equation
(Note X, Y and Z are not real symbols).



The correct value of P is

- ☒ A 234.
B 148.
C 126.
D 54.

8. Which of the following diagrams as shown in figure 2 is correct for a ray parallel to the principal axis?

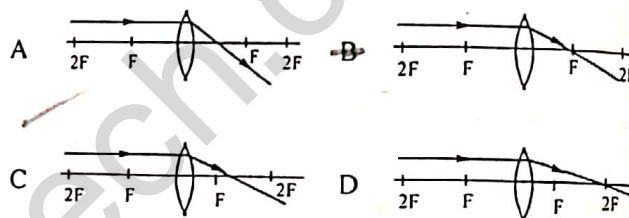


Figure 2

9. The temperature of pure boiling water at standard atmospheric pressure in kelvin is
A 273.
☒ B 373.
C 100.
D -273.

10. Which of the following properties of the image seen in a plane mirror is NOT correct?
☒ A image is larger than the object.
B image is virtual.
C image is same size as the object.
D Image is as far behind the mirror as object is in front.

11. Which of the following pairs of particles are all present in the nucleus of all atoms?
☒ A Electrons and protons.
☒ B Neutrons and protons.
C Alpha particles and electrons.
D Electrons and neutrons.

12. Figure 3 shows a circuit diagram containing a resistor R, a voltmeter X and a milliammeter Y.

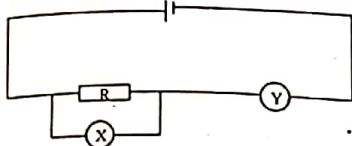


Figure 3

If the readings of X and Y are respectively 2.0 V and 0.04 A, the resistance of R is

- ☒ A 50.0 Ω .
☐ B 0.08 Ω .
☐ C 20.0 Ω .
☐ D 80.0 Ω .
- Handwritten calculations: $V = IR$, $R = \frac{V}{I}$, $R = \frac{2.0V}{0.04} = 50 \Omega$
13. In electrostatics, induction is the process of
- ☒ A charging a body by contact with a metallic conductor.
☐ B charging a body by contact with a charged plastic rod.
☒ C producing a separation of equal amount of positive and negative charges without contact.
☐ D charging a plastic rod by rubbing it with a piece of woolen cloth.

14. Figure 4 represents a metal conductor supported on an insulated stand. A positively charged rod is placed near the end X of the conductor while the end Y is earthed.

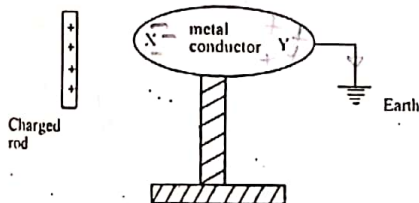


Figure 4

The charge(s) at the ends X and Y is(are)

- | | X | Y |
|------------------------------------|----------|-----------|
| A | positive | negative |
| B | positive | no charge |
| C | negative | positive |
| <input checked="" type="radio"/> D | negative | no charge |
15. Which of the following quantities is represented by the ratio $\frac{\text{Force}}{\text{Mass}}$?
- ☒ A Velocity
☐ B Pressure
☐ C Density
☒ D Acceleration

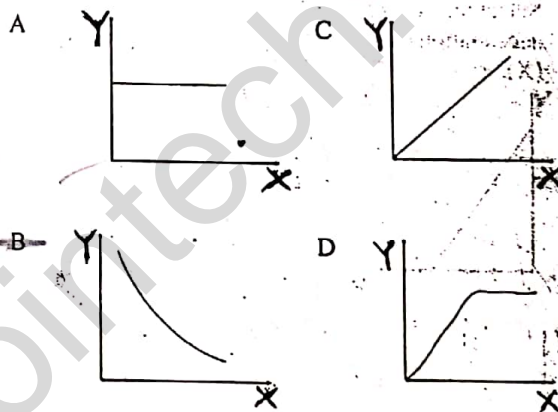
16. Power is a measure of the
- ☒ A rate of change of energy.
☐ B total work done.
☐ C rate of change of momentum.
☐ D force which produces motion.

17. A glass prism can split up white light into the colours of the spectrum. This process is called
- ☐ A deviation.
☐ B diffraction.
☒ C refraction.
☒ D dispersion.

18. When two resistors of 2.0 Ω and 4.0 Ω are connected in parallel, the effective resistance is

- ☐ A 0.7 Ω .
☒ B 1.3 Ω .
☐ C 6 Ω .
☐ D 8 Ω .

19. Which of the graphs below best describes the pressure exerted by a body, Y as a function of the area of contact with the surface.



20. The graph in figure 5 below shows the velocity of a body during the first 30 seconds of its motion.

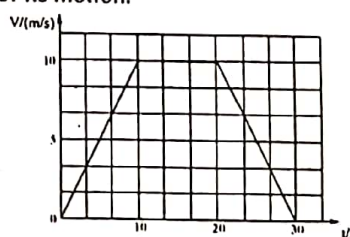


Figure 5

The acceleration of the car in the LAST 10 seconds is

- ☒ A 1.0 m/s^2 .
☐ B 0.5 m/s^2 .
☒ C -1.0 m/s^2 .
☐ D 3 m/s^2 .

$$a = \frac{v - u}{t} = \frac{0 - 10}{10} = -1.0 \text{ m/s}^2$$

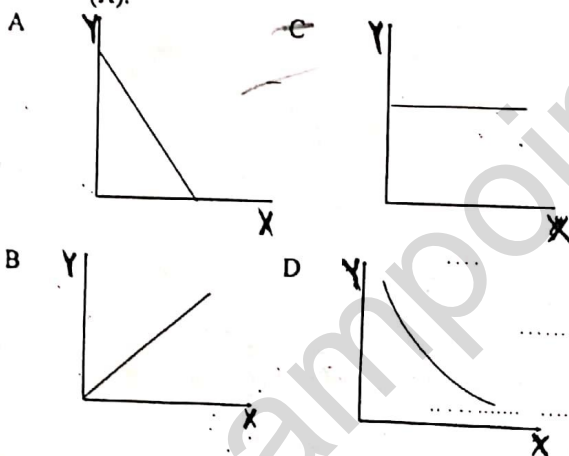
Turn Over

21. A sound wave travels through air at a speed of 330 m/s. If the frequency of the wave is 20 Hz, the wavelength of the wave is
- A 0.06 m.
 - ☒ B 16.5 m.
 - C 6.600 m.
 - ☐ D 33 m.

22. Heat can travel through a vacuum by
- A convection only.
 - B conduction only.
 - ☒ C conduction, convection and radiation.
 - ☐ D radiation only.

23. Latent heat of vaporization of water is used to
- ☒ A raise the temperature of the water.
 - B increase the average speed of the water molecules.
 - C raise the temperature of the air near the water.
 - ☐ D Completely break the bonds between the water molecules.

24. Select the best graph which shows how the acceleration due to gravity varies with time (X).



25. Which of the following is not a physical quantity?
- ☒ A Refractive index
 - B mass
 - C Force
 - ☐ D Pressure

26. The main function of a step-up transformer is to
- A steps up current.
 - ☒ B steps up voltage.
 - C change alternating current (a.c) to direct current (d.c.).
 - D steps up resistance of a circuit.

27. The value of absolute zero on the Kelvin scale is
- ☒ A 0 K.
 - B -273 K.
 - ☐ C 273 K.
 - D 373 K.

28. A car starting to move from rest, accelerates uniformly on a level road, until it attains a velocity of 10m/s. Select from the list below one of the forces acting on the car that increases continuously during the period of the acceleration.
- A Friction
 - B Normal reaction
 - C Weight
 - ☒ D Air resistance

29. Figure 6 below shows a toy car, being pushed with a force of 20 N acting at an angle of 60° to the horizontal.

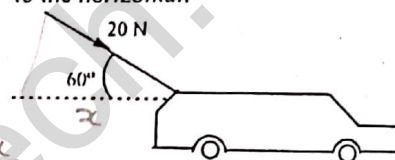
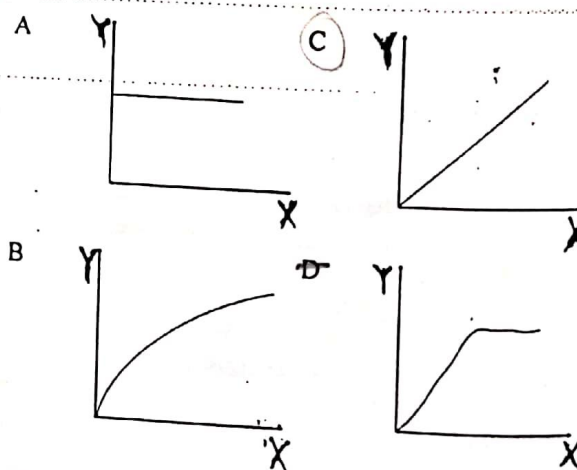


Figure 6

The horizontal component of the force is

- A 17.3 N.
- B 20 N.
- ☒ C 10 N.
- D 15.4 N.

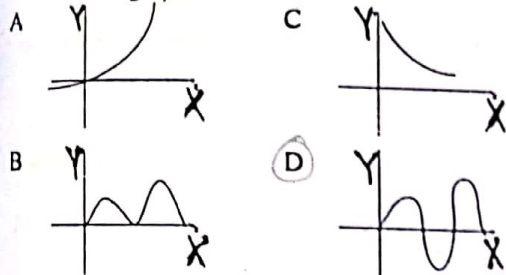
30. Choose from the graphs below the one which best shows how the force Y acting on a spring relates to its extension X when the elastic limit is not exceeded.



31. Which of the following will increase the magnitude of the force between two charged bodies?

A Reducing the quantity of charge in the bodies.
 B Increasing the separation between the charged bodies.
 C Reducing the quantity of charge and increasing the separation.
☒ D Increasing the quantity of charge on the bodies.

32. The current from a transformer Y as a function of time X is best described by which of the graphs below?



33. The frequency of AES Sonel's electric current in hertz is

☒ A 50.
☐ B 60.
☐ C 230.
☐ D 240.

34. The resultant of a number of forces acting at a given point

A is always zero.
 B always has a fixed magnitude but its direction can change.
 C is usually the arithmetic sum of the forces.
☒ D is the single force which produces the same effect at the point, as all the other forces put together.

35. A wave travels from deep water to shallow water. Which of the following statements is/are correct?

☐ A The speed increases.
☐ B The frequency decreases.
☒ C The wavelength decreases.
☐ D Its period increases.

36. A pin is placed 8 cm in front of a convex lens of focal length 12 cm. Which of the following is NOT true of the image formed?

☐ A It is inverted.
☐ B It is magnified.
☒ C It is virtual.
☐ D It is on the same side of the lens as the pin.

37. For a $10\ \Omega$ and $5\ \Omega$ resistors connected in parallel to a 6 V battery.

A The total resistance is greater than any of the resistances.
☒ B The potential difference is 6 V across each of the resistors.
☐ C The current through each is the same.
☒ D The potential difference across the $10\ \Omega$ resistor is double that across the $5\ \Omega$ resistor.

38. The pressure due to a liquid column is NOT affected by

☐ A acceleration due to gravity.
☒ B area of container.
☐ C density of liquid.
☐ D height of liquid column.

39. When a body is moved from the pole of the earth towards the equator.

☐ A its weight remains the same.
☐ B its weight increases.
☒ C its weight decreases.
☐ D its density increases.

40. The nuclide of a certain element is given as ${}_{20}^{41}\text{X}$. Which of the following nuclides is an isotopes of X?

☒ A ${}_{20}^{45}\text{E}$
☐ B ${}_{19}^{41}\text{F}$
☐ C ${}_{41}^{20}\text{G}$
☐ D ${}_{18}^{20}\text{H}$

41. An n-type semi conductor has

☐ A more negative charge carries.
☐ B more positive charge carries.
☒ C equal numbers of negative and positive charges.
☒ D only negative charge carrier.

42. Which of the following is the most ionizing?

☐ A Neutron
☐ B Beta particles
☐ C Gamma radiation
☒ D Alpha particles

Turn Over

SECTION II
(Eight Questions)

Directions: This group of questions deals with practical situations. Each situation is followed by a set of questions. Select the best answer for each question.

Questions 43 – 46

In figure 7 below X Y is a solenoid of insulated wire wound on a cardboard tube. PQ is a soft iron cylinder suspended from a light string.

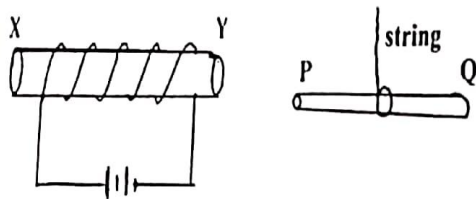


Figure 7

43. Which of the following pairs of poles is correct?
- ☒ A X is north pole and P is south pole.
 - ☐ B Y is north pole and P is north pole.
 - ☐ C X is south pole and P is south pole.
 - ☐ D X is north pole and P is north pole.
44. Which rule is used to determine the polarity of X Y ?
- ☐ A Fleming's left hand rule.
 - ☐ B Maxwell's corkscrew rule.
 - ☒ C Right hand grip rule.
 - ☐ D Fleming's right hand rule.
45. If the cardboard is replaced by a soft iron,
- ☒ A the magnetic field will be stronger.
 - ☐ B the magnetic field will not change.
 - ☐ C the magnetic field will be weaker.
 - ☐ D the current will increase.
46. If the battery is replaced by an a.c. source of the same p.d, the effect of this on xy is a
- ☐ A stronger magnetism.
 - ☒ B fluctuating magnetic field.
 - ☐ C reduced magnetic field strength.
 - ☐ D reversed magnetic field.

Questions 47 – 50

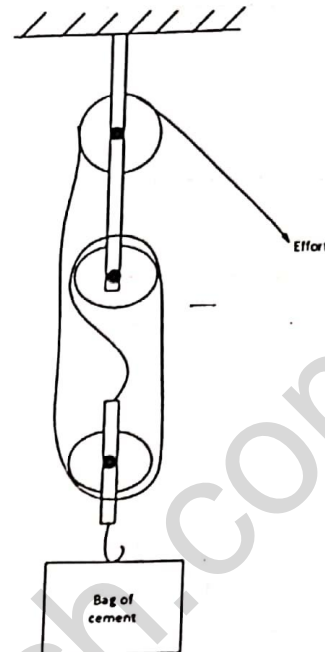


Figure 8

A worker in a construction site uses a pulley system shown to lift a bag of cement of weight 500 N through a height of 5 m.

47. The velocity ratio (V.R.) of the system is
- ☐ A 5.
 - ☐ B 4.
 - ☒ C 3.
 - ☐ D 2.
48. The potential energy (p.e) of the bag of cement at a height of 5m is
- ☐ A 250 J.
 - ☒ B 2500 J.
 - ☐ C 100 J.
 - ☐ D 505 J.
49. The mechanical advantage (MA) of the machine if the effort applied is 250 N is
- ☒ A 0.5.
 - ☐ B 2.
 - ☐ C 20.
 - ☐ D 50.
50. The efficiency of the system is less than 100% because
- ☐ A M.A is greater than V.R.
 - ☐ B efficiency is never equal to 100%.
 - ☐ C the effort is too low.
 - ☒ D some work is done to overcome friction.

STOP
GO BACK AND CHECK YOUR WORK

3-/0580/1/B/MCQ