REPUBLIQUE DU CAMEROUN
Paix-Travail-Patrie

MINISTERE DES ENSEIGNEMENTS SECONDAIRES

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TEACHERS' RESOURCE UNIT TRU-RIP-STA
MOCK EXAMS
CMR-BAMENDA
NORTH WEST REGION
A

REPUBLIC OF CAMEROON
Peace-Work-Fatherland

MINISTRY OF SECONDARY EDUCATION

TEACHERS' RESOURCE UNIT
REGIONAL BRANCH FOR THE NORTH WEST

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MARCH 2023

The Teachers' Resource Unit and the Regional Inspectorate of Pedagogy, in collaboration with NWAPT	SUBJECT CODE NUMBER 0780	PAPER NUMBE 1
GENERAL CERTIFICATE OF EDUCATION REGIONAL MOCK EXAMINATION		
CANDIDATE NAME: Ardjange Chia Olwa CANDIDATE NUMBER: 12023702 CENTRE NUMBER: A2023	SUBJECT TITLE PHYSICS	
ADVANCED 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 "Advanced level –0780 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 no 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

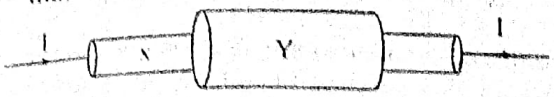
How to answer questions in this examination:

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 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 you 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 question. You can come back to this 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.**

26. Figure 5 shows a copper cylinder that can roll along model railway lines. The diameter of section X is half that of section Y



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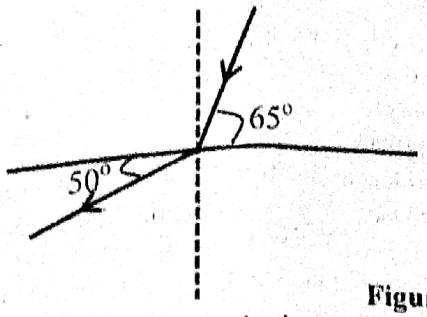

Figure 6

If the velocity of the waves in the medium P is 46.3 cms^{-1}, their velocity in medium Q must be :

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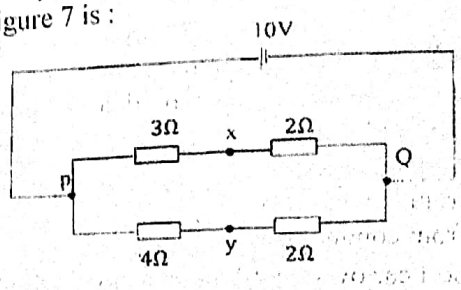

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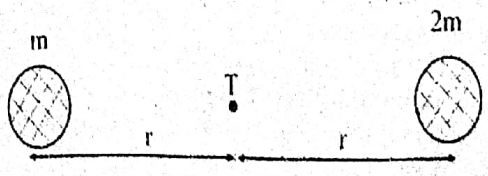

Figure 8

A. $\frac{Gm}{r^2}$ to the right
B. $\frac{Gm}{r^2}$ to the left
C. $\frac{2Gm}{r^2}$ to the right
D. *zero*

13. The manufacturer of a battery specified that it has a 36 ampere-hour capacity. The term 36 ampere-hour denotes the battery's:
    A. Electrical energy content
    B. Electric current
    C. Electric charge
    D. Electrical power

14. An object O is placed 15 cm in front of a converging lens of focal length 10 cm. a diverging lens of focal length 8 cm is placed 24 cm from the converging lens and to the right of it. The distance of the final image from the diverging lens is:
    A. 30 cm
    B. 24 cm
    C. 20 cm
    D. 15 cm

15. Figure 3 shows two straight conductors, x and y placed 0.50m apart and carrying currents of 5.0A and 2.0A respectively in the same direction.

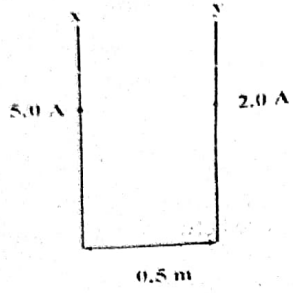

Figure 3

At what point on a line perpendicular to the conductors will the resultant magnetic field be zero?
    A. 0.14m from conductor y
    B. 0.36m from conductor y
    C. 0.14m from conductor x
    D. 0.40m from conductor x

16. A moving sport car overturned along a circular track of radius 100m.If the coefficient of friction between the road and the tyre is 0.2, then the maximum velocity for the overturn of the car is:
    A. 14.0 ms^{-1}
    B. 20.0 ms^{-1}
    C. 1.40 ms^{-1}
    D. 19.8 ms^{-1}

17. Superposition can occur:
    A. for any wave types
    B. only for identical wave types
    C. only for unidentical wave types
    D. if two transverse waves polarized at right angles were to meet.

18. An arrow of mass 120 g is fired into a block of wood of mass 0.60 kg resting on a table .If the arrow and wood fly off the table at 8.0 ms^{-1}, then speed of the arrow is :
    A. 40.0 ms^{-1}
    B. 4.0 ms^{-1}
    C. 1.5 ms^{-1}
    D. 48.0 ms^{-1}

19. A planet follows a circular orbit of radius **r**, round a star. The planet experiences constant centripetal acceleration, **a**. How long does it take for a planet to orbit the star four times?
    A. $4\pi\sqrt{\frac{r}{a}}$ B. $8\pi\sqrt{\frac{r}{a}}$ C. $2\pi\sqrt{\frac{r}{a}}$ D. $\frac{\pi}{2}\sqrt{\frac{r}{a}}$

20. Why does running too many appliances on one circuit cause the fuse to blow or circuit breaker to shut off?
    A. Because current drops to almost zero
    B. As more and more resistors are added in parallel, the total resistance decreases, which causes an increase in the total amount of resistance.
    C. As more and more resistors are added in parallel, the total resistance decreases, which causes an increase in the total amount current.
    D. The voltage becomes too much for the circuit to handle.

21. If a diffraction grating has 2.5×10^3 lines per centimeter, its slit separation would be:
    A. $.4.0 \times 10^4$ cm
    B. 2.0×10^{-4} cm
    C. 2.5×10^3 cm
    D. 4.0×10^{-4} cm

22. Figure 4 shows some of the electron energy levels in an atom. The transition labeled **V** results in the visible light

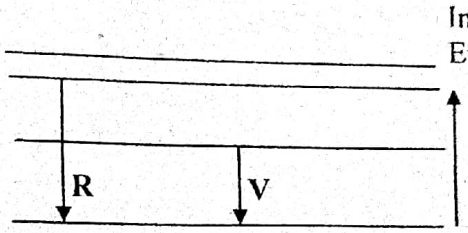

Figure 4

When the transition labeled **R** occur, which reaction would be emitted?
    A. microwave radiation
    B. infrared radiation
    C. ultraviolet radiation
    D. radio wave radiation

23. The de Broglie wavelength of an electron which has been accelerated through a p-d of 100 V is
    A. 3.9×10^{-12} m
    B. 3.9×10^{-10} m
    C. 3.9×10^{-11} m
    D. 3.9×10^{-9} m

24. Which of the following statements is **NOT** true?
    A. Electric forces are always repulsive
    B. Gravitational forces are always attractive
    C. Gravitational potential increases with distance
    D. The electric field between charged parallel plates is uniform

25. A trolley of mass 1.0 kg is attached to a horizontal spring and is moving with simple harmonic motion with period, T. **If** the amplitude of its oscillation is 5cm, then its maximum kinetic energy is:
    A. $\frac{\pi^2}{100T^2}$
    B. $\frac{\pi^2 T^2}{200}$
    C. $\frac{\pi^2}{200T^2}$
    D. $\frac{\pi^2}{2T^2}$

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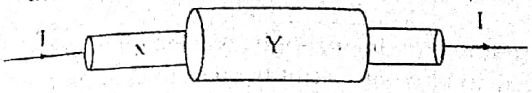

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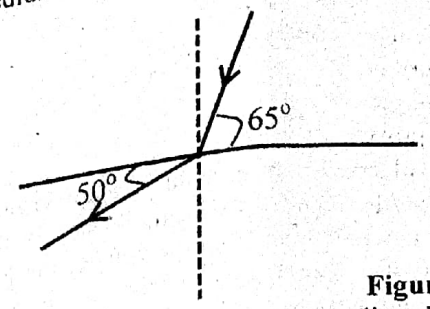

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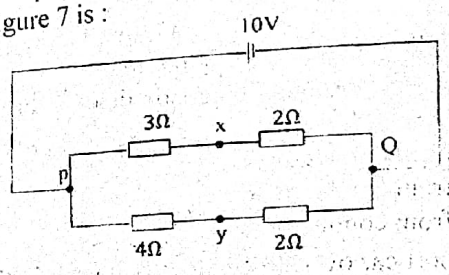

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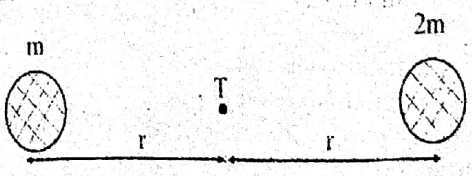

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SECTION II (Ten Questions)
Multiple selection

Questions 36-45

Direction: For each group of questions, below ONE or TWO of the responses given is/are correct. Then choose

A. If 1 and 2 are correct
B. If 2 and 3 are correct
C. If 1 only is correct
D. If 3 only is correct

Direction summarized			
A	B	C	D
1, 2 Only	2, 3 Only	1 Only	3 Only

36. A mass suspended freely from a helical spring oscillates with decreasing amplitude at constant frequency. Its motion is:
    1. Free
    2. Simple harmonic
    3. Damped

37. Figure 9 shows a 20 μF capacitor that is fully charged to a p.d of 24V through a variable resistor R. The charging current is constant and charging takes 10s.

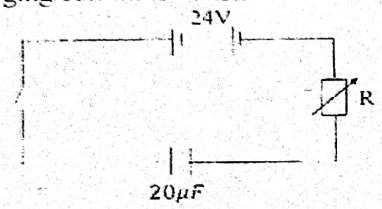

Figure 9

Which of the following statements is/are correct?
1. The potential difference across the resistor is 20V
2. The energy stored in the capacitor is 57.6mJ
3. The energy supplied by the battery during charging is 11.52mJ

38. An electron sets up:
1. only an electric field when it is in motion
2. both electric and magnetic fields when it is in motion.
3. only an electric field when it is stationary.

39. Which of the following procedure(s) would increase the sensitivity of a galvanometer?
    1. Using a coil of smaller surface area
    2. Using a weaker magnet
    3. Using a spring of weak spring constant

40. When the nuclide $^{214}_{83}Bi$ decays, the decay product is either $^{214}_{83}Po$ or $^{210}_{81}Ti$ because the disintegration of the nuclide occur in one or two ways. The half-life of $^{214}_{83}Bi$ is 20.3 minutes. Which of the following statements is/are correct?
    1. $^{214}_{83}Po$ is produced from a $\beta - emission$
    2. $^{210}_{81}Ti$ is produced from and $\alpha - emission$
    3. $Bi, Ti\ and\ Po\ nuclide\ increases\ by\ 50\%$

41. Figure 10 shows a bar magnet placed near a coil connected in series with a resistor, R in a closed circuit.

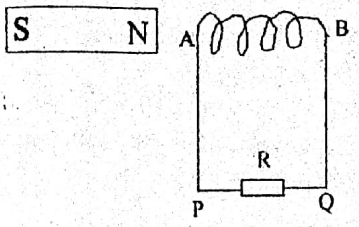

Figure 10

Which of the following actions will generate electric current in the circuit that will flow from P to Q
1. Moving the bar magnet as it is in the horizontal plane towards the coil
2. Moving the bar magnet as it is in the horizontal plane away from the coil.
3. Reversing the polarity of the magnet with its S-pole closer to A and moving it horizontally away from the coil

42. The wavelength of light emitted by a helium-neon laser is 6.33×10^{-7}m. Which of the following is or are correct?
    1. The light corresponds to a photon of 1.96eV
    2. The light is monochromatic because all photons have the same wavelength
    3. The light is emitted when electrons are pumped up to a higher energy level.

43. Figure 11 shows a sketch of the results of stopping potential plotted against frequency for three different materials x, y, z

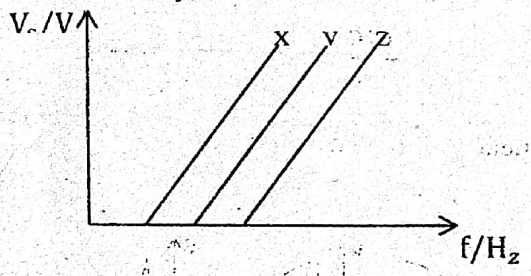

Figure 11

    1. The work function W_0 of the three materials are in the order of $W_{ox} < W_{oy} < W_{oz}$
    2. The plank's constant can be found using any of the graphs
    3. The three materials have the same threshold wavelengths

44. Gravitational, Electrostatic and Magnetic forces:
    1. all action at a distance force
    2. obey the inverse square law
    3. originates form the charge of the body.

45. Which of the following descriptions about heat and temperature is/are correct?
    1. Two bodies at the same temperature may not necessarily have the same heat content.
    2. A temperature change always occur whenever heat is exchanged between a body and its environment
    3. Heat is energy that is transferred when there is a temperature gradient.

SECTION III (Five questions)
Questions 46 – 50

Direction: Each of the questions (46-50) has four sets of graphs $A - D$. Which of the graphs in each question best fits the relationship between x and y?

46.

y	x
Current in an indicator coil in series with steady $d.c$ supply	Time

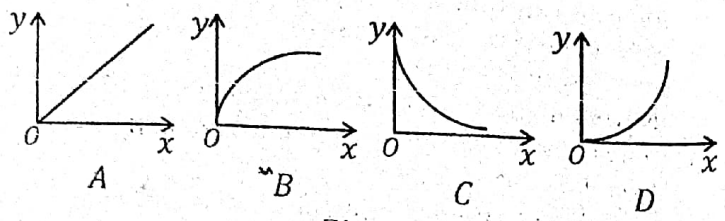

Figure 12

47.

y	x
Displacement of a ball which is dropped, bounces once and then is caught	Time

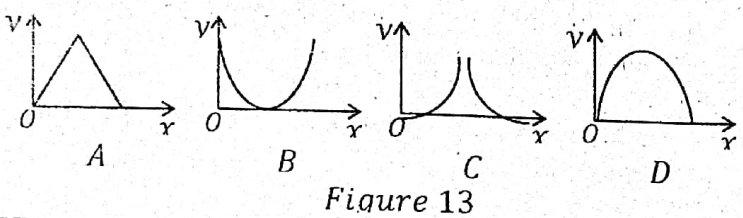

Figure 13

48.

y	x
Gravitational field strength	Distance from a spherical mass with a radius, R

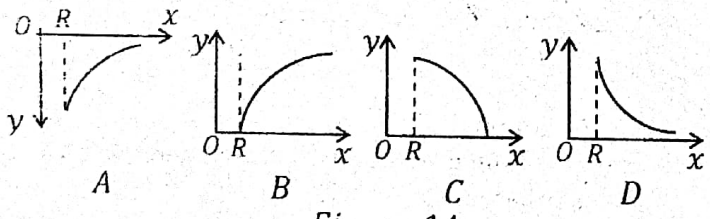

Figure 14

49.

y	x
Current through a charging Capacitor	Time

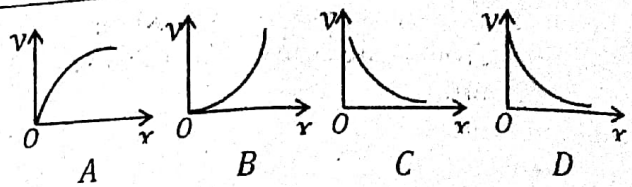

Figure 15

50.

y	x
Velocity of an object executing simple harmonic motion	Displacement from the equilibrium position

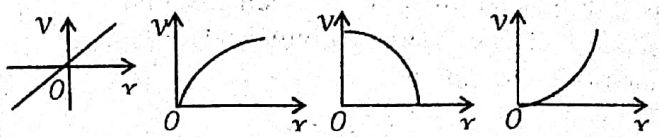

Figure 16

END

GO BACK AND CHECK YOUR WORK