**PRESIDENT’S OFFICE**

**REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT**

**LINDI REGIONAL COMMISSIONER’S OFFICE**

**FORM FOUR MOCK EXAMINATION**

**PHYSICS 1**

**CODE NO.031/1 MAY, 2018**

**TIME: 3:00 HOURS**

**INSTRUCTIONS:**

1. This paper consists of section A, B and C.
2. Answer ALL questions in section A and B and one (1) question from section C.
3. Electronic calculators and cellular phones are NOT allowed in the examination room.
4. Write your examination number on every page of your answer booklet(s)
5. Where necessary use the following constant;
6. Acceleration due to gravity, g=10m/s2
7. Specific heat capacity of alluminium = 900J/kg0C
8. Specific heat capacity of water = 4200J/kg0C
9. speed of sound in water = 1500m/s
10. Density of water = 100kg/m3
11. Pie, $π=3.14$

**SECTION A: 30 MARKS**

**Answer all questions in this section**

1. For each of the items (i) – (x), choose the correct answer among the alternatives and write its letter beside the item number in the answer booklet provided.
2. The focal length (f) and radius of a curved mirror(r) are related by the equation,
3. f = $\frac{1}{r}$
4. f = $\frac{r}{2}$
5. f = 2r
6. f = 2r2
7. f = $\frac{1}{r^{2}}$
8. A device that allow current to flow in only one direction;
9. Transformer
10. Generator
11. Motor
12. Induction coil
13. Rectifier
14. Which among the following are the reason for the sky to appear blue while being observed from the sky?
15. Regular reflection of sunlight
16. Diffuse refraction of sunlight
17. Selective scattering of sunlight
18. Irregular refraction of sunlight
19. Regular diffraction of sun ling
20. How many number of images will be formed when the angle between two mirrors is 900?
21. Infinite
22. 4
23. 3
24. 6
25. 7
26. The resistance of an operating lamp rated 115V and 0.25A is;
27. 29$Ω$
28. 114.75Ω
29. 230Ω
30. 460Ω
31. 46Ω
32. The following are used to measure length except;
33. Metre rule
34. Hydrometer
35. Tape measure
36. Vernier Calipers
37. Micrometer Screw gauge
38. The direction of heat flow between two bodies is determined by;
39. Heat capacities of two bodies
40. Direction of wind
41. Temperature difference between the bodies
42. Distance between two bodies
43. Coefficient of expansion between two bodies.
44. The hydrostatic pressure on the dam wall at the bottom of a deep reservoir depends on;
45. Area of the reservoir
46. Depth of the reservoir
47. Volume of water
48. Thickness of the dam wall
49. Impurities in the water.
50. 20g is equivalent to;
51. 0.2N
52. 2N
53. 200N
54. 0.02N
55. 20N
56. The word physics comes from a Greek word that means;
57. Physikos
58. Environment
59. Nature
60. Matter
61. Energy.
62. Match the items in List A with responses in List B by writing the letter of the correct response beside the item number in the answer booklet provided.

|  |  |
| --- | --- |
| **LIST A** | **LIST B** |
| i | Supplies electrical energy | A |  |
| ii | Convert electrical energy to heat and light | B |  |
| iii | Impedes the flow of current | C |  |
| iv | Detect the presence of current | D |  |
| v | Measure current | E |  |
| vi | Store charge | F |  |
| vii | Measures potential difference | G |  |
| viii | Opens and closes circuit | H |  |
| ix | Device that is used to transform an AC voltage to a higher or lower value through a phenomenon of mutual inductance | I |  |
| x | Thin piece of wire that melts and break when the current exceeds its limit in order to protect other electrical components | J |  |
|  |  | K |  |
|  |  | L |  |
|  |  | M |  |
|  |  | N |  |

1. For each of the items (i) – (x) fill the blank spaces by writing the correct answer in the answer booklet provided.
2. The property of light to travel in a straight line is known as ………………..
3. A resistor of low resistance used to convert moving coil galvanometer into an ammeter is called …………..
4. The period within which an event takes place is …………………….
5. ……………… are electrical signals that convey or store information by means of variation in a continuous wave form
6. ……………….. is a major (large) object is in orbit around a star
7. Earthquakes release their energy in wave forms called …………
8. Microphones convert sound energy to …….. energy
9. Lenz’s law of electromagnetic induction can be used to predict the ………..
10. A machine with 100% efficiency is called …………….. machine
11. Material placed between plates in capacitor to increase their capacitance ……….

**SECTION B: 60 MARKS**

**Answer ALL questions in this section**

1. a) (i) What do you understand by the term Regelation? **1 mark**

(ii) What are the three factors that determine internal energy of the body? $1\_{2 marks}^{1}$

b) A block of Aluminium of mass 0.5kg at a temperature of 1000C is dipped in 1.0kg of water at 200C. Assuming that no thermal energy lost in the environment. What will be the final temperature for the system to be at thermal equilibrium? **5 marks**

c) Briefly explain how pressure cooker can cook food faster than an ordinary cooking utensil with a loose fitting lid **2 marks**

1. a) Explain with ray diagrams, the use of lens;
2. As a magnifying glass **2 marks**
3. In a camera **2 marks**

b) State the characteristics of the images formed in 5(a) above **2 marks**

c) (i) Draw a diagram to show an angle of deviation when a ray of light passes through an equilateral glass prism **2 marks**

 (ii) A converging lens produces an upright image four times the object height. If the focal length is 25cm, find the object distance. **2 marks**

1. a) Briefly explain why:-
2. Nylon clothes crackle when undressed **2 marks**
3. Petrol road tankers usually have a length of metal chain hanging and touching the ground **2 marks**

b) What would happen when;

1. An ebonite rod is robbed with fur **1 marks**
2. A glass rod is rubbed with silk **1 marks**

c) A cell supplies a current of 0.6A through 2Ω coil and a current of 0.2A through a 7Ω coil calculate

1. The e.m.f of the cell **2 marks**
2. Internal resistance of the cell **2 marks**
3. a) Define the following;
4. Mechanical advantage **1 marks**
5. Velocity ratio **1 marks**

b) A load of 500N is raised through 5m by a machine when its effort “E” moves simultaneously through a distance of 25cm along its direction. If the machine has the efficiency of 80% calculate;

1. Total work done by a machine **2 marks**
2. Value of effort (E) **2 marks**
3. Total work done on the machine **2 marks**

c) Draw a well labeled diagram of a single rope pulley block and tackle having a velocity ration of 5 **2 marks**

1. a) What is meant by the following terms;
2. Global warming **1 marks**
3. Green house effect **1 marks**
4. Earth quake **1 marks**

b) Mention three effects of global warming **3marks**

c) (i) What is the major cause of global warming **1 mark**

 (ii) Briefly explain three measures that can be takes to control global warming 3 marks

1. a) Define the term
2. Half life **1 mark**
3. Atomic number **1 mark**

b) Name the three fundamental particles of which atoms of an element are composed. How are these particles distributed in the atom of an element whose atomic number is 3 and mass number is 7? **3 marks**

c) A radioactive nucleus is denoted by the symbol 88X226. Write down the composition of the nucleus at the end of the following stages of disintegration.

1. emission of an alpha ($α$) particle **2 marks**
2. further emission of beta ($β$) particle **2 marks**
3. further emission of a gamma radiation **1 mark**

**SECTION C: 10 MARKS**

**Answer one (1) question from this section**

1. (a) Mention two practical examples in our daily life in which the principle of conservation of energy is applied. **2 marks**

(b) (i) What is a simple pendulum? **1 mark**

 (ii) Describe the energy changes that take place when a simple pendulum swings from

 one side to another. **3 marks**

**(c)** Name a machine or an apparatus used to change the following forms of energy

 **(i)** Heat energy to mechanical energy

 **(ii)** Mechanical energy to electrical energy

 (iii) Sound energy to electrical energy

 (iv) Heat energy to electrical energy

1. a) (i) Distinguish between transverse and longitudinal waves **2 marks**

 (ii) Explain how beat are formed **2 marks**

b) (i) Draw a general wave profile showing the following parameters, Amplitude (A), Crest, Trough and wave length **2 marks**

 (ii) By using mathematical equation show how frequency “f” and period “T” of wave relate **1 mark**

c) A signal is sent to the seabed from the bottom of a ship, the sound signal comes back in one-fifth of a second. How deep is the water? **3 marks**