**NAME ……………………………………………………………………………. ADM NO. ……………………………………………….**

**GATITU MIXED SECONDARY SCHOOL**

**FORM 4 PHYSICS THEORY PAPER 2**

**SECTION A (25 MKS)**

1. Give a difference between a primary cell and a secondary cell. 1mk
2. State two ways of increasing the image formed by a pinhole camera. 2mks
3. With the help of a diagram, explain why convex mirrors are preferred for use as driving mirrors. 2mks
4. Explain why bridges are made of concrete reinforced with steel. 1mk
5. Distinguish between a transverse and a longitudinal wave. 2mks
6. Give one similarity and one difference between elastic and inelastic collisions. 2mks
7. An ammeter, a voltmeter, two dry cells and a bulb are connected in a circuit so as to measure the current flowing and the potential difference across both. Sketch a suitable circuit diagram for the arrangement. 3mks
8. A current of 0.08 A passes in circuit for 2.5 minutes. How much charge passes through a point in the circuit. 2mks
9. State and explain two factors affecting the resistance of a metal conductor. 3mks
10. Show that the velocity ratio(V.R) for a wheel and axle is R/r 2mks
11. Sketch a labeled diagram to show how an arrangement of a single pulley may be used to provide a mechanical advantage of 2. 2mks
12. Show that the velocity ratio for an inclined plane is given by 1/sin$∅$. 3mks

SECTION B (45MKS)

1. The cell in figure 10 has an emf of 2.1 v and negligible internal resistance.



Determine the

1. Total resistance in the circuit. 3mks
2. Current in the circuit. 2mks
3. Reading on the voltmeter. 2mks
4. Fig 1 shows a displacement – time graph of a wave. The velocity of the wave is 50cm/s



1. Determine the,
2. Amplitude 1mk
3. Period 2mks
4. Wavelength. 3mks
5. Frequency 3mks
6. Give the difference between constructive and destructive interference. 2mks
7. The data below shows the results obtained when such an experiment was performed by form three students using various values of real depths, Y of a liquid

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Real depth cm | 30 | 50 | 70 | 90 | 110 | 130 |
| Apparent depth cm | 22 | 37 | 52 | 66 | 81 | 96 |

1. Plot a graph of the real depth (y –axis) against apparent depth. 5mks
2. From the graph, determine the refractive index of the liquid. 3mks
3. State two uses of total internal reflection 2mks
4. The real thickness of crown glass block of refractive index 1.58 is 10 cm. calculate the apparent thickness of the glass. 3mks
5. A body of mass m initially at rest is acted on by a force F for a time t, as a result its velocity changes to a final value V. use this information to show that the grain is kinetic energy E= ½ MV2. 3mks
6. A bullet of mass 22g travelling at a velocity of 18/ms penetrates a sand bag and is brought to rest in 0.6 seconds. find:
7. The depth of penetration in metres. 3mks
8. The average retardeing force of the sand. 3mks
9. A load of 100N is raised 20m in 50s. calculate ;
10. The gain in potential energy . 2mks
11. The power developed 2mks