# Jaffna Zonal Educational Department

**Unit Exam - 4**

| Grade - 10 | Science | Time :- 40 min |
|---|---|---|

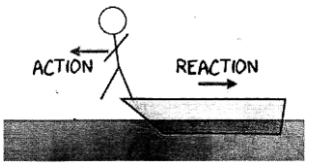
**Unit :-**

*01)* The standard unit of force is

(1) $kg$ (2) J (3) N (4) W

*02)* The mass of a toy car is $600\ g$. What would be the mass of the above car on the moon.

(1) $0.6\ g$ (2) $100\ g$ (3) $0.1\ g$ (4) $600\ g$

*03)* 


The law of motion related to the figure in above.

(1) Newton's first law (2) Newton's second law

(3) Newton's first and third law (4) Newton's third law

*04)* The limiting frictional force is dependent in between objects with rough surface on the

(1) contacting surface (2) normal reaction

(3) shape of the surface (4) gravitational acceleration

*05)* What is the momentum of $5\ kg$ object which is moving with the velocity of $8\ ms^{-1}$

(1) $40\ kg\ ms^{-1}$ (2) $13\ kg\ ms^{-1}$ (3) $400\ kg\ ms^{-1}$ (4) $4\ kg\ ms^{-1}$

$(5 \times 2 = 10$ Marks)

❖ **Put right or wrong.**

01) Maximum frictional force between the surfaces of two bodies in contact with one another is known as the limiting frictional force. ( )

02) The momentum of an object is the product of mass and its weight. ( )

03) When we are going upward the gravitational acceleration increases from the sea level. ( )

04) Frictional force is not essential for the walking process. ( )

05) The frictional forces that act when there is no relative motion, even though a force is applied on the body is called as static frictional force. ( )

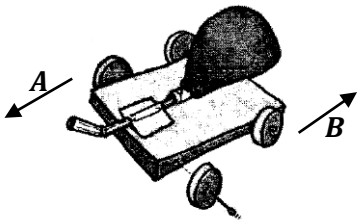
$(5 \times 2 = 10$ Marks)

**Structured Questions**

01) (a) Fill in the blanks of the table given below.

| Force $(N)$ | Mass $(kg)$ | Acceleration $(ms^{-2})$ |
|---|---|---|
| ..... | 4 | 2 |
| 50 | ..... | 10 |
| 30 | 6 | ..... |
| 2 | 250 | ..... |
| ..... | 30 | 1.5 |

$(3 \times 5 = 15$ Marks)

(b) 


The above toy car is made by grade 10 students.

(1) Write down the law related to the motion of that car?

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(2) Which English alphabet indicates the motion of car?

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(3 × 2 = 6 Marks)

(3) Name the laws of motion related to the process given below.

| | Activity | Laws of motion |
|---|---|---|
| (i) | Striking a carom disk | ..... |
| (ii) | Pushing a resting vehicle | ..... |
| (iii) | Driver wearing seat belt | ..... |

(3 × 3 = 9 Marks)

02) A tall cuboidal block of wood of mass 600 $g$ was placed on a horizontal table.

(1) Calculate the weight of this block of wood?

(Consider acceleration due to gravity $g = 10\ ms^{-2}$)

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(2) The force exerted by the block of wood on the table is equal to the weight of the block of wood. How much is the reaction exerted on the block of wood by the table.

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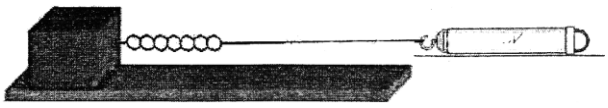
(3) The opposing force of the surfaces of the table, to prevent horizontal motion of the wood block is called as frictional force.



(i) Mark the frictional force in the above diagram.

(ii) What are the factors influence in frictional force?

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(iii) What is the disadvantage of the frictional force in the machines, where parts contact each other? .....

(iv) Give 2 methods to reduced the problem given above? .....

.....

(v) When a motor vehicle is travelling on mud or sand, the wheels bend to rotate in the same place without moving forward. Write down the reason for it?

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(8 × 5 = 40 Marks)