



PHYSICS

BOOKS - SELINA PHYSICS (ENGLISH)

SIMPLE MACHINES

Theory Based Mcq

1. Machine is a

A. device

B. tool

C. instrument

D. all of these

Answer: D



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2. Machine acts as a

A. force multiplier

B. speed multiplier

C. torque multiplier

D. all the above

Answer: D



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3. Load is

A. exerted by machine

B. resistive force to be overcome by
machine

C. external agency supplied to the machine

D. none of the above

Answer: B



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4. Effort is a

A. exerted on machine

B. supplied by wind

C. external agency supplied to the machine.

D. created by the machine.

Answer: C



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5. Mechanical advantage is ratio of

A. impure quantities

B. pure quantities

C. similar quantities

D. dissimilar quantities

Answer: C



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6. Mechanical advantage being a ratio is an..... quantity.

A. cute, impure.

B. pure, irregular

C. pure, unitless

D. impure, measurable.

Answer: C



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7. Mechanical advantage is ratio of

- A. load to effort
- B. effort to load
- C. useful effort to load
- D. useful load to useful effort.

Answer: A



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8. Velocity ratio is the ratio of

- A. velocity of girl to velocity of boy.
- B. velocity of effort to velocity of load
- C. velocity of load to velocity of effort
- D. none of the above.

Answer: B



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9. Velocity ratio is also called ratio

A. wonderful

B. design

C. displacement

D. pure

Answer: C



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10. Velocity ratio being a pure ratio is a quantity.

A. smart

B. meaningful

C. unitless

D. vector

Answer: C



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11. Efficiency is defined as

A. Mechanical advantage / velocity ratio

B. Mechanical advantage + velocity ratio

C. Mechanical advantage – velocity ratio

D. Mechanical advantage \times velocity ratio

Answer: A



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12. Efficiency for a practical machine

A. greater than one

B. equal to one

C. less than one

D. not defined

Answer: C



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13. Increase in V.R and MA being constant would the efficiency.

A. decrease

B. increase

C. not affect

D. none of these

Answer: A



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14. Decrease in mechanical advantage would
..... the efficiency.

A. increase

B. decrease

C. not affect

D. none of these

Answer: B



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15. Efficiency is generally expressed as a

A. fraction

B. decimal

C. percentage

D. none of these

Answer: C



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16. The losses in case of practical machine are:

A. frictional loss

B. elasticity in the string

C. weight of the movable parts

D. All of the above

Answer: D



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17. A boy uses a single fixed pulley while a girl uses a single movable pulley to draw water from a well. Who has worked efficiently?

A. Boy

B. Girl

C. both

D. none of the above

Answer: A



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18. A villager uses a single fixed pulley while a person in urban areas uses the combination of single fixed and single movable pulley. Which out of the two are more effective?

A. Single fixed

B. Single fixed and single movable

C. None of the above

D. Both (a) and (b)

Answer: B



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19. Greater the effort arm the force multiplication.

A. lesser

B. greater

C. larger

D. both (c) and (b)

Answer: D



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20. Change in design of the machine would the VR of the machine.

A. change

B. alter

C. not affect

D. both (a) and (b)

Answer: D



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21. In a block and tackle system of pulleys the load is lifted through a height of 2m while the

effort is applied for 6m. Hence the velocity ratio of this system is

A. 2

B. 3

C. 6

D. 12

Answer: B



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22. A block and tackle system of pulleys is used to lift a load of 360kgf by applying an effort of 200kgf such that load is lifted to a height of 2m and effort is applied through a distance of 8m. Find MA and VR of the system.

A. $MA = 3.6$ and $VR = 2$

B. $MA = 2$ and $VR = 8$

C. $MA = 1.8$ and $VR=4$

D. $MA = 4$ and $VR = 6$

Answer: C



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Application Based Mcq

1. A single fixed pulley is a modified form of

.....

- A. Class I lever
- B. Class III lever
- C. Class II lever
- D. Frisbee

Answer: A



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2. A single movable pulley is a modified form of

.....

- A. Class I lever
- B. Class II lever
- C. Class III lever
- D. none of these

Answer: B



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3. In block and tackle system consisting of odd number of pulleys, the number of pulleys in the block is more than number of pulleys in tackle.

A. four

B. three

C. two

D. one

Answer: D



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4. In block and tackle system the mechanical advantage is

A. number of pulleys always

B. one less than number of pulleys

C. (2)total number of pulleys

D. load / effort

Answer: D



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5. A block and tackle system of pulleys has a velocity ratio 4.

What is the value of the mechanical advantage of the given pulley system if it is an ideal pulley system?

A. one less than total number of pulleys

B. equal to number of pulleys

C. ratio of displacement of load to displacement of effort

D. none of the above

Answer: B



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6. Jibs, cranes and hoist are examples of

A. complex machines

B. sophisticated machines

C. block and tackle system

D. robotic machines.

Answer: C



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7. The size of pulleys towards the load
and towards rigid support.

A. decreases, increases

B. increases, decreases

C. increases, increases

D. decreases, decreases.

Answer: C



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8. In even number of pulleys the string starts from the hook of Block

A. upper

B. lower

C. both the

D. none of these

Answer: A



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Numerical Based Mcq

1. A pulley system of velocity ratio 6 is used to lift a load of 250kgf through a vertical height

of 30m. Find the distance through which effort is applied.

A. 18m

B. 1800m

C. 180m

D. 1.8km

Answer: C



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2. A pulley is used to lift a load of 180kgf by applying an effort of 90kgf in the downward direction. Calculate the work done by the effort applied on the pulley.

A. 2J

B. 12J

C. 6J

D. 24J

Answer: A



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3. A pulley system consisting of four pulleys has efficiency as 90%. Calculate the Mechanical advantage of the system.

A. 360

B. 3.6

C. 36

D. 0.36

Answer: B





4. Calculate the effort applied in the upward direction in case of a single movable pulley which lifts a bucket of water of weight 30kgf, if efficiency of the given pulley system is 60%.

A. 12.5kgf

B. 25kgf

C. 125 kgf

D. 1.25kgf

Answer: B



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5. Calculate the work done by the effort when a load of 60kgf is lifted through a distance of 20m by applying an effort of 30kgf which is displaced through 60m using a pulley having velocity ratio of 3.

A. 120J

B. 1200J

C. 180J

D. 1800J

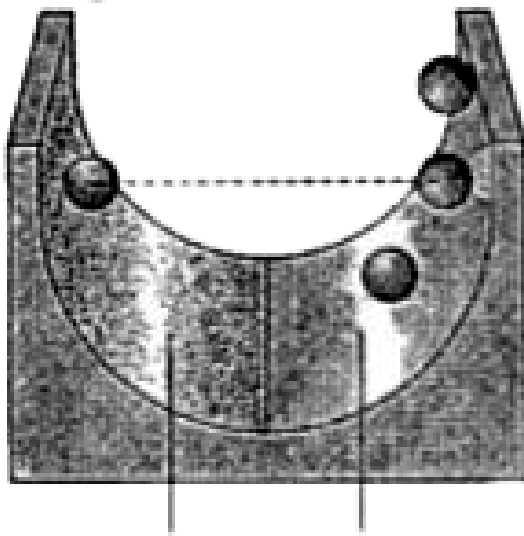
Answer: D



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Diagram Based Mcq

1. State the efficiency of the following system as shown in the figure:



No-slip Frictionless

A. 1

B. 100 %

C. zero

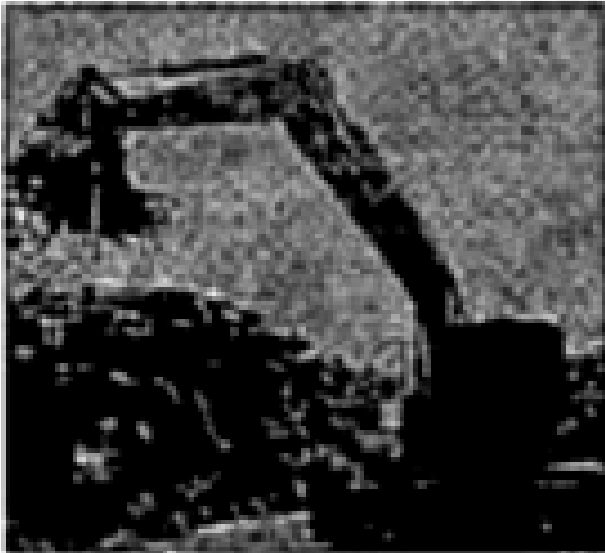
D. infinite

Answer: B



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2. Name the pulley system used in the following application of lifting scrap from a junk yard:



A. Single fixed pulley

B. Single movable pulley

C. Combination of single fixed and single movable pulley

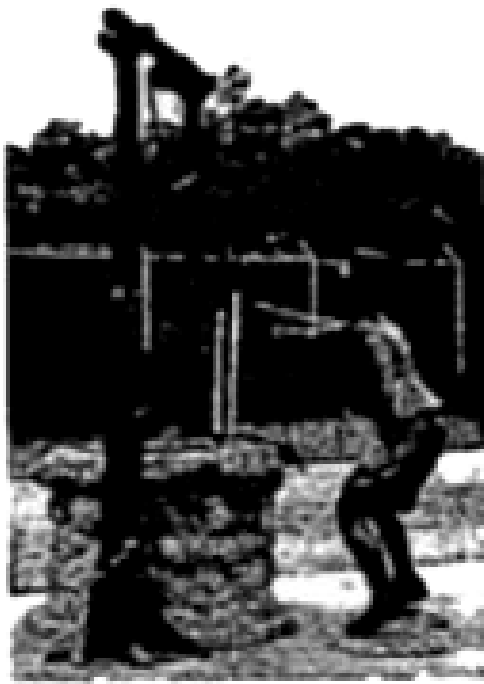
D. Block and tackle system of pulleys

Answer: D



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3. What is the MA and VR of the machine shown in the figure below:



A. $MA = 1$ and $VR = 1$

B. $MA=1$ and $VR =2$

C. $MA = 2$ and $VR = 2$

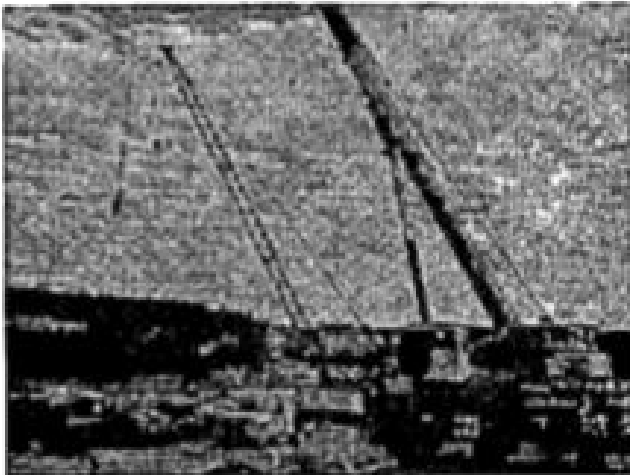
D. $MA= 2$ and $VR =1$

Answer: A



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4. What is the MA of the system of pulleys used in the below combination?



A. 2 times the number of pulleys

B. 2 number of movable pulleys

C. 2/number of pulleys

D. 2 + number of pulleys

Answer: B



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5. What is the ratio of load to effort in case of a tree house elevator shown in the diagram

below?



A. 1:1

B. 2:1

C. 1:2

D. none of the above

Answer: A



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