MECHANICS (MASS, FORCE, ACCELERATION, WORK, ENERGY, MOMENTUM, VELOCITY) BASED GENERAL SCIENCE MCQ PRACTICE QUESTIONS AND ANSWERS PDF WITH EXPLANATION

For All Competitive SSC, Bank, IBPS, UPSC, Railway, IT & Other Govt. Exams

Created By Careericons Team

Q1. If a ship moves from freshwater into seawater, it will

a) rise a little higher

b) sink a little bit

c) sink completely

d) remain unaffected

Q2. A simple machine helps a person in doing:

a) the same amount of work slowly

b) the same amount of work with lesser force

c) less work

d) the same amount of work much faster

Q3.

Column I	Column II
A. Rocket propulsion	1. Force
B. Agent which causes acceleration	2. Momentum
C. Product of mass and velocity	3. S.I. unit of force
D. Newton	4. Law of conservation of momentum

a) A ? S; B ? P; C ? Q; D ? R

b) A ? P; B ? S; C ? R; D ? Q

c) A ? S; B ? P; C ? R; D ? Q

d) A ? P; B ? S; C ? Q; D ? R

Q4. Consider the following statements:

- The gravitational force exerted by the sun on the moon is greater than the gravitational force exerted by the earth on the moon.
- A heavy body falls at a faster rate than a light body in vacuum.

Which of the statements given above is/are correct ?
a) 1 and 2 both

b) 1 only

c) 2 only

d) None

Q5. A couple produces a

a) no motion.

b) pure rotational motion

c) pure linear motion

d) both linear and rotational motion

Q6. A truck, a car and a motorcycle have equal kinetic energies. If equal, stopping forces are applied and they stop after travelling a distance of X, Y and Z respectively, then

a) X = Y = Z

b) X Y Z

c) X > Y > Z

d) X ? 4Y ? 8Z

**Q7.** How much time will it take to perform 440 J of work at a rate of 11 W?

a) 30 s

b) 40 s

c) 50 s

d) 20 s

Q8. Regarding mechanical energy, which of the following statements is/are **correct**?

- Kinetic energy of a body depends upon the direction of motion.
- When a body falls freely, its P.E. is converted into K.E.
- A body at rest may possess P.E.

a) 2 only

b) 1 and 2

c) 2 and 3

d) 3 only

Q9. The centre of mass of triangle shown in figure has coordinates
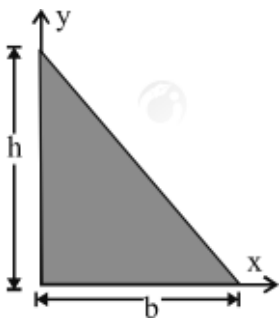
a) $x = b/3, y = h/3$

b) $x = b/2, y = h/2$

c) $x = h/2, y = b/2$

d) $x = h/3, y = b/3$

Q10. A monkey is climbing up a rope, then the tension in the rope

a) must be greater than the force applied by the monkey on the rope.

b) must be less than the force applied by the monkey on the rope.

c) must be equal to the force applied by the monkey on the rope.

d) may be equal to, less than or greater the force applied by the monkey on the rope.

Q11. The sum of the change in kinetic and potential energy is always

a) Negative

b) Positive

c) Zero

d) None of the above

Q12. The following four wires are made of the same material. Which of these will have the largest extension when the same tension is applied ?

a) length = 200 cm, diameter = 2 mm

b) length = 50 cm, diameter = 0.5 mm

c) length = 100 cm, diameter = 1 mm

d) length = 300 cm, diameter = 3 mm

Q13. As the train starts moving, the head of the passenger sitting inside leans backward because of

a) Moment of Inertia

b) Inertia of Motion

c) Inertia of Rest

d) Conservation of Mass

Q14. Consider the following two statements:

- Linear momentum of a system of particles is zero.
- Kinetic energy of a system of particles is zero.

Then
a) 1 implies 2 and 2 implies 1.

b) 1 implies 2 but 2 does not imply 1.

c) 1 does not imply 2 but 2 implies 1.

d) 1 does not imply 2 and 2 does not imply 1.

Q15. 1 kilowatt hour is equal to

a) 36 joule

b) 100 joule

c) 1 joule

d) 3.6×10^3 kilo joule

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Answers to the above questions :

Q1. Answer: (a)

Q2. Answer: (b)

Q3. Answer: (a)

MECHANICS (MASS, FORCE, ACCELERATION, WORK, ENERGY, MOMENTUM, VELOCITY)

FORCE OF GRAVITY, SOLIDS AND FLUIDS   MOTION UNDER GRAVITY

PHYSICAL PROPERTIES OF MATERIALS

LIGHT, HEAT, THERMODYNAMICS, WAVE MOTION, SOUND, OPTICS & OSCILLATIONS

ELECTRIC CURRENT AND MAGNETISM   NUCLEAR PHYSICS AND CONDUCTIVITY

MODERN AND SPACE PHYSICS, SOURCES OF ENERGY

GENERAL CONCEPTS OF CHEMISTRY   NATURE OF MATTER AND COMPOSITION

ATOMIC STRUCTURE MOLECULES AND NUCLEAR CHEMISTRY

CLASSIFICATION OF ELEMENTS, CHEMICAL BONDING, PERIODICITY IN PROPERTIES & PHYSICAL TRANSFORMATION

METALS, NON METALS, MINERALS, ORES, PROPERTIES, USES

ALLOYS, CARBON & ITS VARIOUS FORMS, HYDROGEN & COMPOUNDS, SULPHUR, NITROGEN, HALOGEN & INERT GASES

ACIDS, BASES, SALTS AND METALS

HYDROCARBON, ALCOHOL, POLYMER, ORGANIC ACID AND EXPLOSIVE SUBSTANCE

FUEL, FOOD PRESERVATION, NUTRITION, MEDICINE, DETERGENTS AND FERTILIZERS

INORGANIC CHEMISTRY   ORGANIC CHEMISTRY   ENVIRONMENTAL CHEMISTRY

SOME IMPORTANT MAN MADE MATERIALS   SUB DIVISIONS OF BIOLOGY

GENETICS, EVOLUTION OF LIFE & ECOLOGICAL BIODIVERSITY   TAXONOMY

HEREDITY   BIOFERTILIZER

BIOLOGICAL CLASSIFICATION CELL TISSUES AND DIVISION   HUMAN ANATOMY

BLOOD TRANSPORT SYSTEM   DIGESTION AND EXCRETION   PHOTOSYNTHESIS

VITAMINS, NUTRITION, HEALTH, DISEASE AND TREATMENT

ENDOCRINE GLANDS, HORMONES

PHYSIOLOGY OF PLANTS, HUMANS AND ANIMALS   REPRODUCTION

FOOD PRODUCTION   BIOLOGY IN HUMAN WELFARE

Q4. Answer: (b)

Thus, the gravitational force F between two bodies is directly proportional to the product of the masses of those bodies.

Here, since the product $m_1 m_2$ is greater for the sun and the moon than that of the earth and the moon (because the mass of the sun is greater than that of the earth), therefore F exerted by the sun on the moon is greater than the F exerted by the earth on the moon

Q5. Answer: (b)

Two forces equal in magnitude but opposite in direction form a couple which tends to rotate the body.

Q6. Answer: (a)

Q7. Answer: (b)

Q8. Answer: (c)

Kinetic energy is a scalar quantity it does not have a direction.
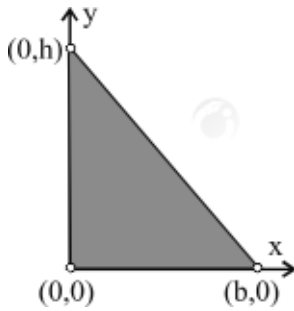
Q9. Answer: (a)

We can assume that three particles of equal mass m are placed at the corners of triangle
${r_1}?{?} = Oi?{?} + Oj?{?},{r_2}?{?} = bi?{?} + Oj?{?}$ and ${r_3}?{?} = Oi?{?} + hj?{?}$
?
$r_{cm}?{?}={m_1{r_1}?{?}+m_2{r_2}?{?}+m_3{r_3}?{?}}/{m_1+m_2+m_3}=b/3{i}?{?}+h/3{j}?{?}$

i.e. coordinates of centre of mass is $(b/3, h/3)$

Q10. Answer: (c)

Q11. Answer: (c)

Q12. Answer: (b)

Y=$\text"T/A"/\text"?l/l"$

$?l={T×l}/{A×Y}=T/Y×l/A$

Hence, T/Y is constant. Therefore, $?l = l/A$

l/A is the largest in the first case.

Q13. Answer: (c)

Q14. Answer: (c)

If $L?{?}$ = 0 ? K. E may or may not be zero.

If K.E = 0, $L?{?}$ = 0

Q15. Answer: (d)

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