

Name of the Student: _____

Question No. 1 Encircle the correct option.

(20)

1. The S.I unit of power
(a) joule (b) watt (c) newton (d) dyne
2. Photocell converts light energy into
(a) Chemical energy (b) Electrical energy (c) potential energy (d) heat energy
3. Energy stored in a winding spring is
(a) Elastic potential energy (b) Electrical energy (c) Solar energy (d) K.E
4. The S.I unite of work is
(a) joule (b) newton (c) erg (d) dyne
5. The escape velocity on the surface of earth is given by formula.
(a) \sqrt{gR} (b) $\sqrt{2gR}$ (c) $2\sqrt{rR}$ (d) $2gR$
6. If the direction of forces is perpendicular to the direction of motion of a body, the work done is
(a) Minimum (b) Maximum (c) Zero (d) Infinity
7. The dot product of force and velocity is called
(a) Power (b) Work (c) Energy (d) force
8. The work will be negative when angle b/w force and displacement
(a) 45° (b) 90° (c) 180° (d) 0°
9. Work done in a gravitation field along a closed path is
(a) Zero (b) Maximum (c) positive (d) Negative
10. The source of tidal energy is
(a) Pull of earth (b) pull of sun (c) pull of moon (d) None of these.
11. The area under force displacement graph represents
(a) work done (b) power (c) force (d) momentum
12. The force which cannot do work on the body on which it acts is called
(a) electric force (b) frictional force (c) centripetal force (d) gravitational force
13. K.E can be defined as the dot product of
(a) momentum and force (b) force and velocity (c) ave. momentum and velocity (d) none of these
14. 15 joules of work is done in 5 s, the power is equal to
(a) 45 watt (b) 3 watt (c) 1/3 watt (d) 20 watt
15. If speed of a body is doubled, then its K.E
(a) becomes double (b) remains same (c) becomes four times (d) becomes half
16. The escape velocity of the object from the earths is
(a) 7.9 km/s (b) 11 km/s (c) 11.7 km/s (d) infinite
17. one kilowatt hour work is equal to
(a) 0.36 MJ (b) 3.6 MJ (c) 36 MJ (d) 360 MJ
18. The dimensions of impulse are the same as that of
(a) energy (b) work (c) power (d) momentum
19. As we move a body up above the surface of earth, the change of P.E will always be
(a) negative (b) positive (c) zero (d) infinity
20. The K.E of a body of mass 2 kg and momentum 2 Ns is equal to
(a) 1 J (b) 2 J (c) 3 J (d) 4 J

Question No. 2 Write the short answers any six.

2x6=12

- i. A girl drops a cup from a certain height which breaks into pieces. What energy changes are involved?
- ii. A boy uses a catapult to throw a stone which accidentally smashes green house window. List energy changes.
- iii. Calculate the work done in kilo joules in lifting a mass of 10 kg through a vertical height of 10 m.
- iv. An object has one joule of potential energy. Explain what does it mean?
- v. A force F acts through a distance L. the force is then increased to 3 F and then acts through a further distance of 2L. Draw the work diagram to a scale and calculate the work done.
- vi. When a rocket reenters the atmosphere its nose cone becomes very hot. Where does this heat energy come from?
- vii. Show that work done against frictional force is negative.
- viii. What is geothermal energy? How is it generated?

Q. No. 3 (a) Define and explain absolute gravitational potential energy. Also calculate the expression for it. **(5)**

(b) A brick of mass 2.0 kg is dropped from a rest position 5.0 m above the ground. What is its velocity at a height of 3.0 m above the ground? **(3)**

OR

Q.No. 4 (a) Show that P.E. can be converted into K.E. and K.E. can be converted into P.E. but total mechanical energy of a body falling from certain height remains constant (ignore friction). **(5)**

(b) A force (thrust) of 400 N is required to overcome road friction and air resistant in propelling at 80 km/h. What power in kilowatt must the engine develop? **(3)**