

Question No. 1. Choose the correct option.

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 1.
21. Geysers usually occur in
a. Cold region b. Volcanic region c. Mild hot region d. All of these
22. When speed of a body is doubled its
a. K.E is doubled b. P.E is doubled c. Momentum is doubled d. None of these
23. An object of mass 3 kg placed on the surface of table 2 m high. It is moved on the surface by 4 m the change in P.E. is
a. Zero b. 9.8 J c. 19.6 J d. 329 J

24. The work done by a variable force in moving an object between two points is equal to area under
 a. F versus d curve b. $F\cos\Theta$ versus d curve c. $F\sin\Theta$ versus d curve d. zero
25. The tidal energy is due to the pull of
 (a) Sun (b) earth (c) moon (d) All of these
26. The dot product of force and velocity is called
 (a) work (b) power (c) energy (d) force
27. The work done will be maximum if the angle between force \mathbf{F} and displacement \mathbf{d}
 (a) 45° (b) 90° (c) 180° (d) 0°
28. The dimensions of work are
 (a) MLT^{-1} (b) MLT^{-2} (c) ML^2T^{-2} (d) MLT
29. The field in which work done in moving a body along a closed path is zero, is called
 (a) Electric field (b) magnetic field (c) gravitational field (d) conservative field
30. If a body of mass of 2 kg is raised vertically through 2m then the work done will be
 (a) 38.2 J (b) 39.2 J (c) 40 J (d) 392.1 J
31. The ability or capacity to do work is called
 (a) force (b) power (c) kinetic energy (d) energy
31. The energy consumed by 60 watt bulb in 2 seconds is
 (a) 120 J (b) 60 J (c) 30 J (d) 0.02 J
32. The value of acceleration due to gravity at center of earth is
 (a) Zero (b) 9.8 m/s^2 (c) infinity (d) Maximum
33. Work done by the frictional force is
 (a) 9.8 m/s^2 (b) Zero (c) Negative (d) positive
34. The kinetic energy of a 50 gm bullet moving at a speed of 500 m/s is
 (a) 2500 J (b) 1250 J (c) 25000 J (d) None of these
35. All the frictional forces are
 (a) Conservative forces (b) Non-Conservative (c) Constant forces (d) None of these.
36. Kilowatt hour is unit of
 (a) power (b) work (c) force (d) momentum
38. 1 kWh energy is equal to
 (a) 3.6 J (b) $3.6 \times 10^5 \text{ J}$ (c) $3.6 \times 10^4 \text{ J}$ (d) 3.6 MJ
39. The energy stored by the water in dam is
 (a) heat energy (b) P.E (c) K.E (d) nuclear energy
40. The work done by a force 100 N applied parallel to direction of motion upto 20 m is
 (a) 10 J (b) 20 J (c) 200 J (d) 2000 J
41. A 60 kg man runs up a long stairs in 5 seconds. If he covers a height of 5 m and a horizontal distance of 10 m, his power
 a. 490 watt b. 250 watt c. 588 watt d. 2450 watt
42. The intensity of the solar energy reaching the earth's surface is about:
 a. 1.4 KWm^{-2} b. 1.6 KWm^{-2} c. 1.8 KWm^{-2} d. 1.0 KWm^{-2}
43. The dimension ratio of work to power is
 a. J b. T c. L d. KWH
44. The dimension of power are
 a. $[ML^2T^{-1}]$ b. $[ML^2T^{-2}]$ c. $[ML^2T^{-3}]$ d. $[ML^2T^0]$
45. The ratio between orbital and escape velocities are
 a. 1 b. 2 c. $\sqrt{2}$ d. $1/\sqrt{2}$
46. Which one is the biggest unit of energy?
 a. Erg b. joule c. watt hour d. Kilowatt hour
47. A stone is thrown up from the surface of the earth, when it reaches at maximum height, its K.E. is equal to
 a. mgh b. $\frac{1}{2}mv^2$ c. zero d. $2mgh$
48. The force which can not do work on the body on which it acts is called
 a. electric force b. frictional force c. gravitational force d. centripetal force

49. 9 joules of work is done in 3 s then power is
 a. 6 watt b. 3 watt c. 18 watt d. 2 watt
50. The value of solar constant is
 a. 1.4 KWm^{-2} b. 1.6 KWm^{-2} c. 1.8 KWm^{-2} d. 1.0 KWm^{-2}
51. When sun light enters into atmosphere its total energy reduces due to
 a. reflection from dust particles b. absorption from dust particles
 c. scattering from dust particles d. All of these
52. As we move up a body above the surface of earth, its change in P.E. is always
 a. negative b. positive c. zero d. infinite
53. Absolute P.E of an object at infinite height w.r.t. earth is taken as
 a. negative b. zero c. minimum d. virtual
54. The source(s) of geothermal energy is / are
 a. radioactive decay b. residual heat of earth c. compression of materials d. All of these
55. The most common method(s) for conversion of biomass into fuel is/are
 a. direct combustion b. fermentation c. both a&b d. none of these
56. The strong water waves on the surface of ocean are produced due to
 a. wind b. tidal movements c. pull of sun d. both a&b
57. The work done on a body will be negative when angle b/w force and displacement is
 a. less than 90° b. greater than 90° c. equal to 90° d. equal to zero
58. Which of the following is conservative force
 a. gravitational force b. magnetic force c. electric force d. all of these
59. Which of the following is non conservative force
 a. elastic spring force b. electric force c. propulsion force d. gravitational force
60. Which of the following sources is renewable source of energy
 a. tides b. coal c. natural gas d. oil

Assignment No. 2

Note: Write the short answers of the following questions.

- Q.1.** Show that work done against the friction is negative.
- Q.2.** What is meant by kWh?
- Q.3.** Prove that Power = $\mathbf{F \cdot v}$
- Q.4.** What is geothermal energy? How is it generated?
- Q.5.** How you can get energy from tides?
- Q.6.** What is solar energy? How sunlight can be converted into electrical energy?