REVISION WORKSHEET FOR HALF YEARLY (SESSION: 2013-14)

CLASS- XI SUBJECT: PHYSICS

CHAPTER : WORK, ENERGY & POWER

(1 Mark)

Q1. State the factors on which the work done by a force depends.
Q2. What is the work done by the force of tension in the string of simple pendulum?
Q3. Moment of force and work done by a force have same units. What is the difference between them?
Q4. Which physical quantities are concerned in an elastic collision?
Q5.Fricton is non-consecutive force. How?
Q6. What is the significance of the – ve sign in w = -mgd?
Q7. Relate 1 kwh = 1j
Q8. A mass m collides with another mass 2m and sticks to it. What is the nature of the collision?
Q9. A mass is moving in a circular path with constant speed. What is the work done in 3/4th of a rotation?
Q10. Draw the variation of P.E. stored in a spring as a function of extension.
Q11. Mountain roads rarely go straight up but wind up gradually. Why?
Q12. What is meant by mass energy equivalence? Discuss.
Q13. Is its possible to have a situation when E – U < 0?
Q14. What are the dimensions of power? How many walls are there in one horse power?

(2/3 marks)

Q15. Derive an expression for the kinetic energy of a body of mass m moving with velocity 'v' by calculus method.
Q16. Two springs A & B with constants K_A and K_B ($K_A > K_B$) are given. In which of the spring more work is to be done, if:
(i) they are stretched by the same amount. (ii) they are stretched by same force.
Q17. By what factor the velocity of a body should be increased so that its K.E. is increased by a factor of nine?Justify.
Q18. Prove that bodies of identical masses incharge their velocities after head – on elastic collision.
Q19. A body of mass 4 Kg. initially at rest is subject to force 16N. What is kinetic energy acquired by the body at the end of 10S?
Q20. A body is moving unidirectional under the influence of a source of constant power. Its displacement in time t is proportional to: - (i) $t^{½}$ (ii) t (iii) $t^{3/2}$ (iv) t^2
Q21. State & prove work energy theorem.
Q22. Discuss Elastic collision in 1-D. Obtain expression for velocities of two bodies after such a collision.
Q23. The blades of windmill sweep out a circle of area A (a) if wind flows at velocity v perpendicular to circle, what is mass of air passing through it in time t? (b) What is kinetic energy of air? (c) Assume that windmill converts 25% of wind's energy into electrical energy. Given A = 30m2, V = 36 km/hr & density of air = 1.2 kg m-3. What is electrical power produced?
Q24. A pump on the grd floor of a building can pump up water to fill a tank of volume 30 m3 in 15 min. If the tank is 40 m above the grd, and the efficiency of the pump is 30%, how much electric power is consumed by the pump ?
Q25. A particle moves along x-axis from x = 0 to x = 5m under influence of force
F = 7 – 2x + 3x2. Find work done in process.
Q26. A shot traveling at rate 100 ms-1 is just able to pierce plank 4cm thick. What velocity is reqd to just pierce plank 9cm thick?
Q27. A 10 Kg. ball a 20 kg. ball approach each other with velocities 20 ms-1 & 10 ms-1 respectively. What are their velocities after collision if the collision is perfectly elastic ?