1. Which one of the following is a fundamental unit?
2. Kgm (b) N/m2 (C) m2 (d) s
3. Which of the following is not a consequence of a force field?
4. Weight (b) magnetic force (c) electrical force (d) gravitational pull
5. Which of the following can be used to measure accurately to 3 decimal places in centimeters?
6. Meter rule (b) ruler (c) vernier (d)calipers
7. The volume of a stone having an irregular shape can be determine using a?
8. meter rule (b) measuring cylinder (c)vernier calipers (d) micrometer screw gauge
9. The slope of a straight line displacement time graph is?
10. Distance travelled (b) uniform velocity (c) uniform acceleration (d) uniform speed
11. If the coefficient of friction is 0.5 and the normal reaction is 60N. calculate the limited frictional force required to prevent an object from moving
12. 30N (b) 3N (c) 13N (d) 25N
13. Which of the statement is correct
14. Centrifugal and centripetal force are the same (b) they act in opposite direction (c) centrifugal force is greater than centripetal force (d )they are not related.
15. The angular velocity of the object of mass 4kg moving in a circle of radius 8m with a uniform velocity of 32m/s is
16. 2rad/s (b) 4rad/s (c) 8rad/s (d) 10rad/s
17. The centripetal force acting on the body is
18. 215N (b) 125N (c) 512N (d) 51N
19. Which of the following statement is true of a body which is moving in a straight line with acceleration? The velocity of the body
20. Is also uniform (b) must always be zero when the body stops accelerating (c) will increase with time in the direction of the acceleration n (d) will remain constant.
21. A body accelerates uniformly from rest at 2m/s² calculate its velocity after travelling 9m (a) 36m/s (b) 18m/s (c) 6m/s (d) 4.50m/s
22. A car travelling at 20m/s is brought to rest with a constant deceleration of 10m/s² calculate the distance travelled (a) 10m (b) 20m (c) 200m (d)400m
23. The force required making an object of mass m, travelling with velocity v, turn in a circle of radius r is? (a) mv2/r (b) mr2/v (c) mr/v (d) mv/r
24. An object moving in a circle has an acceleration towards the center, this is provided by (a) A change of momentum (b) a centripetal force (c) a centrifugal force (d) acceleration due to gravity
25. A fruit falls from a tree of mass 2kg is 5m above the ground. Calculate the potential energy of the fruit above the ground (g=10m/s2) (a) 50J (b) 100J (c) 150J (d)200J
26. A sledge is pulled 10m by a force of 40N. What is the work done?
27. 40J (b)400J (c) 410J (d)450J
28. A boy of weight 300N climbs to the top of a hill of height 20m. The work done by the boy against the force of gravity is?
29. 6000J (b) 600J (c) 320J (d) 15J
30. A pump lifts water into an overhead tank at a height of 12m at the rate of 5kg/s. The power of the pump is?
31. 60w (b) 600w (c) 720w (d) 1200w
32. A car of mass 800kg initially at rest attains a velocity of 10m/s, what is the kinetic energy of the car after 5seconds
33. 60,000J (b) 50,000 (c) 40,000 (d) 30,000
34. Energy is measured as
35. The rate of doing work (b) the product of force and distance (c) product of mass and acceleration (d) the product of work
36. Which of the following explains why a thick glass cup cracks when boing water is poured into it?
37. Large increase in the heat capacity of cup (b) high density of water (c) unequal expansion of the interior walls of the cup (d) anomalous expansion of water.
38. The bursting of water pipes during very cold weather, when the water in the pipes from ice could be attributed to
39. Contraction of pipes when cooled (b)expansion of water on freezing (c) contraction of water on freezing (d) expansion of ice on melting
40. A metal rod 800mm is heated from 10⁰C to 95⁰C if it expands by 1.36mm, the linear expansively of the metal is(a) 20x102/k(b) 2x10-2/k (c)5x10-3/k(d)2x10-5/k
41. The dimension for acceleration is (a) MT² (b) MLT (c) L/T² (d) M/LT²

25. A man runs a distance of 1km in 5minites his average speed is

(a) 20m/s (b) 16.7m/s (c) 3.3m/s (d)0.3m/s

26. Which of the following quantities has the same unit as energy?

(a) Power (b) work (c) force (d) momentum

27. Which of the following is not an example of force

(a) tension (b) weight (c) friction (d)mass

28. The heat from the sun reaches the earth by the process of

(a) Insulation (b) precipitation (c) conversion (d) radiation

29. Power is defined as the

(a) product of force and time (b) capacity extent of a force (c) product of force and distance (d)energy expanded per unit time

30. The inner diameter of a small test tube can be measure accurately using

(a) micrometer screw gauge (b) pair of dividers (c) meter rule (d) pair of varnier calipers

31. Which of the following is not a fundamental S.Iunit

(a) meter (b) kelvin (c) radian (d) second

32. Which of the following is a derived unit

(a) kg (b) meter (c) kelvin (d) newton

33. The system unit for measurement (S.I) for physical measurement are

(a)Ib, ft, sec (b)g, m, sec (c)kg, m, sec (d)cm, g, sec

34. The physical quantity that has the same dimensions as impulse is

(a) energy (b) momentum (c) surface tension (d) pressure

35. Which of the following is a fundamental unit

(a) newton (b) joules (c) watt (d)ampere

36. Which of the following is not an effect of heat

(a) change of the state of the body (b) expansion of the body (c) no change in the physical nature of the object (d)change in temperature

37. The bimetallic strip is used in a

(a)generator (b) electric Iron (c) electric fan (d) radio

38. In domestic water boilers, heat transfer is mainly by

(a) conduction (b) conversion (c)transmission (d)radiation

39. An ebonite rod rubbed with fur attracts a glass rod rubbedwith silk because

(a) ebonite has a negative charge while glass has a positive charge (b) ebonite has a positive charge while glass has a negative charge (c) both have negative charges (d) both has positive charges

40. The sign charge on a charged glass rod may be determined with (a) a charged electroscope (b) an uncharged electroscope (c) galvanometer (d) electrometer.

**THEORY**

1(a) A man is running at 2m/s towards the right. A woman is running at 1m/s. the velocities are relative to the earth. Determine the velocity of (i) the man relative to the woman if they are running in the same direction, (ii) the man relative to the woman if they are running in opposite directions (iii) the woman relative to the man if they are running in the opposites.

1. What are the dimensions of the following quantities?
2. momentum (ii) force (iii) work

2a. A train accelerates for 2sec to attain a velocity of 40m/s, it continues with uniform velocity for a further 10sec and then decelerate so that it stops in 4 sec.

i. Draw the velocity-time graph

ii. Calculate the acceleration

iii. Calculate the deceleration

iv. Calculate the total distance travelled by the train (v) The maximum velocity attained by the train

3a (i) The linear expansivity of copper is 0.00000018/k, explain the meaning of the statement.

(ii) A metal rod of length 20cm at 300C is heated through a temperature of 550C. If the new length of the rod is 20.05cm, calculate its linear expansitivity

b. State four effects of heat on a body

4a. List two sources of renewable energy and two sources of non-renewable energy

b. A boy of mass 400g climbs up 20 steps each of height 0.5m in 30 seconds. Calculate

(i) The work done

(ii) The power of the boy in horsepower

(iii) Find the kinetic energy of a boy of mass 100kg running with a speed of 5m/s towards a building 10m tall.