Chapter-06

Force and Motion

1. A person is hurt on Kicking stone due to –

(A) Inertia (B) Velocity

(C) Reaction (D) Momentum

Ans. (C) **[SSC Tax Asst. 2009]**

Exp: According to Newton's third law of motion, for every action, there is an equal and opposite reaction.

2. A body with uniform motion–

(A) Can't be accelerated (B) Can be accelerated

(C) Always accelerated

(D) Remains in uniform velocity

Ans. (B) **[SSC CHSL 2014]**

Exp: Speed = Constant but acceleration can be attained by simply changing direction of velocity.

3. If a bullet of mass 'm' is fired in a wooden block with acceleration 'a' what is the final velocity of system?

(A) $\frac{Ma}{m+M}$ (B) ———

(C) $\frac{Ma}{M}$ (D) $\left(\frac{m+M}{M}\right)+a$

Ans. (B) **[SSC CHSL 2015]**

Exp: Since no external force is acting, Linear momentum will remain conserved.

$ma = (M + m)v$

$\frac{ma}{(M+m)} = v$

4. If Horizontal range of a projectile is four times of its maximum height, the angle of projection is.

(A) 30° (B) 45°

(C) $\sin^{-1}\left(\frac{1}{4}\right)$ (D) $\sin^{-1}\left(\frac{3}{4}\right)$

Ans. (B)

Exp: Horizontal Range $R = \frac{U^2 \sin 2\theta}{g}$

For maximum height = $H_{Max} = \frac{U^2 \sin^2\theta}{2g}$

$R = 4\ H_{Max}$

$\frac{U^2 \sin 2\theta}{g} = 4\frac{U^2 \sin^2\theta}{2g}$

$2 \times 2\sin \cos = 4\sin^2$

$\cot = 1$

$= 45°$

5. Which of the following force is a virtual force?

(A) Centripetal force

(B) Centripetal Reaction force

(C) Centrifugal force (D) Strong Nuclear force

Ans. (C) **[SSC CGL 2013]**

Exp: Centrifugal force is an inertial/pseudo force that is acted upon an object moving in a curved path. It acts outwardly away from the centre of rotation.

6. Which of the following force is dissipative?

(A) Gravitation (B) Frictional

(C) Electrostatic (D) Magnetic

Ans. (B) **[SSC CGL 2012]**

Exp: Frictional force is a dissipative force Disspative forces do not store energy and also called as non conservative force.

7. An object covers distance which is directly proportional to the square of time. Its acceleration is–

(A) Increasing (B) Decreasing

(C) Zero (D) Constant

Ans. (D) **[SSC CHSL 2014]**

Exp: Distance = x

$x = Kt^2$

$\frac{dx}{dt} = 2kt$

$V = 2kt$

$\frac{dv}{dt} = 2kt$

$a = 2k$

Acceleration will be constant

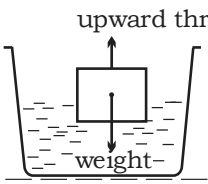
8. When a body is immersed in a fluid, then force acting on it is –

(A) Upward thrust (B) Weight

(C) Mass (D) Both (A) and (B)

Ans. (D) **[SSC CHSL 2013]**

Exp: When a body is immersed in a fluid, weight acts in down ward direction and upthrust acts upwardly.



9. Cream gets separated out from milk when it is churned. This is due to–

(A) Gravitational Force (B) Centripetal Force
(C) Centrifugal Force (D) Frictional Force

Ans. (C) **[SSC Tax Asst. 2007]**

Exp: Centrifugal force is an psuedo force that acts outwards away from the centre of motion. Due to centrifugal force, cream gets seperated from milk, when it is churned.

10. The cause of seperation of cream from milk is–

(A) Friction (B) Centrifugal force
(C) Gravitational force (D) Viscous force

Ans. (B)

Exp: Same as above

11. Newton's 1st law of motion gives the concept of –

(A) Energy (B) Work
(C) Momentum (D) Inertia

Ans. (D) **[SSC Tax Asst. 2007, SSC CHSL 2011]**

Exp: Newton's 1st Law of Motion is also known as Law of Inertia. According to it, a body remains at rest and a body in motion stays in motion in same direction unless an external force is applied on it.

12. A person dropped a ball from a train moving with a uniform speed. An observer standing on platform observes it, what will be the path observed by the observer?

(A) Rectilinear (B) Circular
(C) Parabolic (D) None of these

Ans. (C) **[SSC CHSL 2011]**

Exp: Whenever a body separates from another body, it takes its velocity from that body. Hence, ball will acquire the train's velocity (horizontal). Also, there is a vertical motion due to gravity. Hence, motion will be parabolic due to horizontal and vertical component of velocity.

13. The motion of the wheel of a bull cart while moving on the road is an Example of–

(A) Oscillatory and rotatory motion
(B) Oscillatory and translatory motion
(C) Translatory and rotatory motion
(D) Translatory motion only

Ans. (C) **[SSC CGL 2014]**

Exp: Since, the axle of the wheel moves horizontally in a straight line, its translatory motion. Also, the wheel rotates around axle. Hence it is both translatory and rotatory.

14. A Tennis ball and a cricket ball with Heavy mass throw with same velocity, then to stop the cricket ball we need out of the following–

(A) More force (B) Less Force
(C) Equal force (D) Infinite force

Ans. (A) **[SSC MTS 2006]**

Exp: As velocity of both tennis ball and cricket ball is equal, amount of force needed to stop the ball will depend upon the mass of the ball. Cricket ball has more mass than tennis ball. Hence, more force will be needed to stop the cricket ball.

15. A cyclist should lean in a circular motion–

(A) Forward (B) Backward
(C) Sidewise towards the center
(D) Sidewise away from the center

Ans. (C) **[SSC Steno. 2012, 13]**

Exp: In circular motion cyclist should lean sidewise towards the center of the circular path.

16. Motion of a body around a circular path is an Example of–

(A) Uniform velocity and variable acceleration
(B) Uniform speed and constant velocity
(C) Uniform speed and variable velocity
(D) Uniform speed and variable acceleration

Ans. (C) **[SSC MTS 2014]**

Exp: A body in a uniform circular motion has its speed constant but its direction keeps on changing. Hence, velocity is variable.

17. Angle of Friction and angle of Repose found to be as –

(A) Equal to each other
(B) Not equal to each other
(C) Proportional to each other
(D) None of these

Ans. (A) **[SSC CGL 2010]**

Exp: Angle of repose is the minimum angle made by an inclined plane with the horizontal such that object just begins to slide. It is equal to the angle of friction.

18. Rocket acts on Law of conservation of

(A) Angular momentum (B) Mass
(C) Energy (D) Linear Momentum

Ans. (D) **[SSC CHSL 2014]**

Exp: Rocket acts on law of conservation of Linear momentum. The gases it emits in downward direction provides a thrust to rocket in upward direction.

19. A bullet hits and gets embedded in a solid block resting on a horizontal frictionless table. Which quantity is conserved in this process?

(A) Momentum and kinetic Energy
(B) Momentum alone (C) Kinetic Energy alone
(D) Neither momentum nor Kinetic Energy

Ans. (B) **[SSC CHSL 2014]**

Exp: Since, no external force is being acted upon the system (bullet + block). Linear momentum will remain conserved.

20. Why the needle of iron swims on water surface when it is kept gently?

(A) Surface tension (B) Density
(C) Reaction (D) Momentum

Ans. (A) **[SSC Section officer 1997]**

Exp: When iron needle is not gently placed on water surface, it will sink because density of needle is more than density of water and when it is placed gently, it will swim due to the surface tension of water.

21. A boat will not submerge when it displaces water equal to its own

(A) Volume (B) Weight
(C) Surface area (D) Density

Ans. (A) **[SSC CGL 1997]**

Exp: An object will not submerge in water, it will displace an amount of water equal to its volume.

22. An ice block with a piece of lead embeded in it floats in water. If ice melts the water level

(A) Rises (B) Falls
(C) Remains same
(D) Falls first and then rises

Ans. (B) **[SSC Section officer 2011]**

Exp: The level of water will fall as the volume of water replaced by lead reduces on melting.

23. What principle/law explains the working of the hydraulic brakes in automobiles?

(A) Bernoulli's law (B) Posieulle's principle
(C) Pascal's law (D) Archimedes' principle

Ans. (C) **[SSC Combined Graduate Level 1997]**

Exp: Hydraulic brakes works on the principle of Pascal's Law.

24. An oil drop spreads over water because

(A) Oil is lighter than water
(B) Oil is more viscous
(C) Oil does not mix with water
(D) Surface tension of oil is much smaller than that of water

Ans. (D) **[SSC Section officer 2005]**

Exp: Oil drop spreads over water because oil has less surface tension than that of water. It spreads to cover more surface area than water.

25. A fountain pen works on the principle of

(A) Flow of liquids from higher to lower potential
(B) Capillary action
(C) Bernoulli's principle (D) Viscosity of liquids

Ans. (B) **(SSC Tax Assistant (Income Tax & Central 2006)**

Exp: Fountain pen works on the principle of both gravity and capillary action.

26. The hair of shaving brush clings together when removed from water due to

(A) Surface tension (B) Viscosity
(C) Elasticity (D) Friction

Ans. (A) **(SSC CPO S.I 2008)**

Exp: Due to surface tension of water hair of shaving brush will cling together, when it is removed from water. As Surface tension tends to minimize the surface area.

27. A falling drop of rain water acquires the spherical shape due to

(A) Viscosity (B) Surface Tension
(C) Atmospheric pressure (D) Gravitational force

Ans. (B) **(SSC Section officer 2008)**

Exp: Water droplets acquires spherical shape due to surface tension. It tends to minimize the surface area.

28. The weakest of all fundamental forces is

(A) Gravitational force (B) Electrosatic force
(C) Magnetic force (D) Nuclear force

Ans. (A) **(SSC Section Officer Adult 2008)**

Exp: Gravity is the weakest of all fundamental forces. Nuclear force is the strongest force.

29. The modulus of rigidity is the ratio of

(A) longitudinal stress to longitudinal strain
(B) Volume stress to volume strain
(C) Shearing stress to shearing strain
(D) Tensile stress to tensile strain

Ans. (C) **(SSC Combined Graduate Level 2010)**

Exp: Ratio of Modulus of Rigidity

$$= \frac{\text{Shear Stress}}{\text{Shear Strain (displacement per unit sample length)}}$$

30. A spherical ball made of steel when dropped in mercury container will

(A) Sink in mercury
(B) Will be on the surface of mercury
(C) Will be partly immersed
(D) Will dissolve in mercury

Ans.(B) **(FCI Assistant Grad-III 2012)**

Exp: The density of mercury is greater than the density of steel. This implies that spherical steel ball will float on the surface of mercury.

31. Damp clothes are dried in spin dryers by the action of

(A) Centripetal forces (B) Centrifugal forces
(C) Central forces (D) Non central forces

Ans. (B) **(SSC Combined Matric Level 2002)**

Exp: In spin dryers, damp clothes are dried by the action of centrifugal force, the water is spun out at the high speed and then drained away.

32. Which of the following is a result of surface tension?

(A) Gravitational pull (B) Viscosity
(C) Capillary action (D) Radiation

Ans. (C) **(SSC Combined Matric Level 2002)**

Exp: Capillary action takes place when adhesive force between water and surface of the material is greater than cohesive force between the molecules of water.

33. The wall of a dam is broader at the base

(A) Because streamlining is required
(B) To withstand pressure that increases with depth
(C) To withstand pressure that increases in a horizontal plane
(D) To withstand pressure that is increased with atmospheric pressure

Ans. (B) **(SSC Combined Matric Level 2002)**

Exp: At the bottom of the Dam, pressure is very high. To tolerate this pressure the wall of a dam made thicker at the base.

34. Which of the following liquid is most viscous?

(A) Oil (B) Milk
(C) Water (D) Petrol

Ans. (A) **(SSC Combined Matric Level 2002)**

Exp: Viscosity determines the fluidity of a liquid. Oil is the most viscous liquid among given liquids.

35. The surface tension of water on adding detergent to it

(A) Increases (B) Decreases
(C) No change (D) Becomes zero

Ans. (B) **(SSC Combined Matric Level 2002)**

Exp: Adding detergent to water lowers the surface tension of water. Detergent weakens the hydrogen bonding of water.

36. Rise of oil in a wick is due to

(A) Density of the oil (B) Viscosity of the oil
(C) Surface tension of the oil
(D) Pressure of the oil

Ans. (C) **(SSC Combined Matric Level 2002)**

Exp: Due to capillary action, oil rises in a wick of lamp. Capillary action is the result of adhesive force between molecules of oil and thread of the wick. Surface tension is the cause of capillary action.

37. If an ordinary glass tube and a glass capillary tube are both dipped in a beaker of water rises in

(A) Both (B) Only the glass tube
(C) Only the capillary tube
(D) Radiation

Ans. (A) **(SSC Combined Matric Level 2002)**

Exp: Water will rise in both ordinary glass tube and a glass capillary tube. The height of rise and fall of liquid depends upon the narrowness of the tube.

38. Two rods, one of copper and other of steel, experience the same upthrust when placed in water. Thus both have

(A) Equal volume (B) Equal weight
(C) Equal density (D) Equal mass

Ans. (A) **(SSC Combined Matric Level 2002)**

Exp: When a body is placed in water, upthrust depends upon volume of the body submerged in the liquid, density of liquid & volume of liquid displaced. Since densities of copper and steel are different. So, for equal upthrust, volume of both bodies should be equal.

39. A single fixed pulley is used to draw water from a well because

(A) Efficiency is 100% (B) Velocity ratio is low
(C) Mechanical advantage is high
(D) Force is applied in a convenient direction

Ans. (D) **(SSC Combined Matric Level 2006)**

Exp: Pulley is a simple machine, it changes the direction of applied force, hence it is used to lift the heavy weights.

40. Ball pen functions on the principle of

(A) Viscosity (B) Boyle's law
(C) Gravitational force (D) Surface tension

Ans. (D) **(SSC Steno. 2010)**

Exp: Ball pen works both on the principle of gravitational force and surface tension.

41. Water from soil enters into the root hairs owing to:

(A) Atmospheric pressure
(B) Capillary pressure
(C) Root pressure (D) Osmatic pressure

Ans. (B) **(SSC MTS 2011)**

Exp: Due to capillary action, water from soil enters into the root hairs.

42. Water drops cannot stick to the oily surface due to

(A) Lack of adhesive force
(B) Surface tension
(C) Cannot mix each other
(D) Water is lighter than oil

Ans. (B) **(SSC (10+2) Level DEO & LCD 2011)**

Exp: Cohesive force between the molecules of water is stronger than adhesive force. Water molecules stick together very strongly.

43. If cream is removed from milk, its density

(A) Increases (B) Decreases
(C) Remains the same
(D) May increase or decrease

Ans. (A) **(SSC (10+2) Level DEO & LDC 2012)**

Exp: The density of cream is lesser than the density of milk. So, when cream is removed from milk, its density will increase.

44. Materials for rain proof coats and tents owe their water proof poperties to

(A) Surface tension (B) Viscosity
(C) Specific gravity (D) Elasticity

Ans. (A) **(SSC (10+2) Level DEO & LDC 2012)**

Exp: Materials used to make rain proof coats and tents have high surface tension due to this water droplets do not stick to the surface of its material.

45. When two ice cubes are pressed together they join to form one cube. Which one of the following helps to hold them together?

(A) Hydrogen bond formation
(B) Vander waals forces
(C) Covalent attraction (D) Dipole interaction

Ans. (A) **(SSC Graduate Level Tier-I 2012)**

Exp: When two ice cubes are pressed together, they join to form one cube due to formation of hydrogen bond between them.

46. When a piece of stone is immersed in water it displaces water of equal

(A) Density (B) Specific gravity
(C) Mass (D) Volume

Ans. (D) **(SSC MTS 2013)**

Exp: According to Archimedes principle, when a body is immersed into water, it displaces water equal to its weight and weight is equal to the product of mass and gravity.

47. The minimum number of forces to keep a particle in equllibrium is

(A) 1 (B) 2
(C) 3 (D) 4

Ans. (B) **(SSC CAPF's SI, CISF ASI & Delhi Police 2014)**

Exp: Minimum number of forces to keep a particle in equilibrium is two. When the resultant of all forces acting on a body is zero, body will be in equilibrium.

48. Purity of a metal can be determined with the help of

(A) Pascal's law (B) Boyle's law
(C) Archimedes priciple
(D) Conservation of mass principle

Ans. (C) **(SSC CAPF's SI, CISF ASI & Delhi Police 2014)**

Exp: Archimedes principle is used to determine the purity of metal. According to it, the weight of the fluid displaced by an object is equal to its volume.

49. In a particular system, the units of length, mass and time are chosen to be 10 cm, 10 g and 0.1 s respectively. The unit of force in this system will be equivalent to

(A) 0.1 N (B) 1 N
(C) 10 N (D) 100 N

Ans. (A) **(SSC CAPF's SI, CISF ASI & Delhi Police 2014)**

Exp: F = ma
= 10 gm × 10 m/sec^2
= 0.01 kg × 10 m/sec^2 = 0.1 N

50. The weight of a body at the centre of earth is:

(A) Half the weight at the surface
(B) Zero
(C) Twice the weight at the surface
(D) Infinite

Ans. (B) **(SSC CAPF's (CPO) SI, CISF ASI & DP 2016)**

Exp: At the centre of the earth, the value of 'g' is zero.
As W (weight) = mg
W = 0
Weight will also be zero.

51. On a clean glass plate a drop of water spreads to form a thin layer whereas a drop of mercury remains almost spherical because

(A) Mercury is a metal
(B) Density of mercury is greater than that of water
(C) Cohesion of mercury is greater than its adhesion with glass
(D) Cohesion of water is greater than its adhesion with glass

Ans. (C) **(SSC CGL Tier-I 2016)**

Exp: Cohesive force between the molecules of mercury is greater than the adhesive force between mercury and glass plate.

52. Name the process by which bubbles from liquid are formed?

(A) Effervescence (B) Surface Tension
(C) Surface Energy (D) Degasification

Ans. (A) **(SSC CGL Tier-I 2016)**

Exp: Effervescence is the process of formation of bubbles in a liquid by a chemical reaction due to escape of gas. For example - Fizz in Carbonated Drinks.

53. The washing machine works on the principle of

(A) Dialysis (B) Diffusion
(C) Reverse osomosis (D) Centrifugation

Ans. (D) **(SSC CGL Tier-I 2016)**

Exp: Washing machine works on the principle of centrifugation.

54. What type of force acts on a car moving around a curve?

(A) Centrifugal force (B) Cohessive force
(C) Centripetal force (D) Gravitational force

Ans. (C) **(SSC CGL Tier-I 2016)**

Exp: Centripetal force acts on a body which moves on a circular path. It acts towards the centre of a circular path.

55. Acceleration is

(A) Inversely proportional to force
(B) Inversely proportional to mass
(C) Directly proportional to mass
(D) Directly proportional to force

Ans. (D) **(SSC CHSL (10+2) Tier-I (CBE) 2016)**

Exp: According to Newton's 2nd law of motion, acceleration is directly proportional to force acting upon an object.

56. If a ball is thrown up, which of the following does not change?

(A) Acceleration (B) Speed
(C) Potential energy (D) Distance

Ans. (A) **(SSC CHSL Tier-I 2016)**

Exp: When a ball is thrown up, it is constantly under gravitational acceleration. So its acceleration will not change.

57. If a body is moving on a circular path, what is its average velocity if it completes one cycle in one second?

(A) Average velocity depends upon time taken to complete one cycle
(B) One
(C) Average velocity is same as average speed
(D) Zero

Ans. (D) **(SSC CHSL Tier-I 2016)**

Exp: In a circular motion, the average velocity of an object for one complete cycle will be zero, as the displacement is zero

58. If a force acts upon two objects at rest, and having different masses for the same amount of time, then which one of the following will be the same for both the objects?

(A) Acceleration (B) Kinetic Energy
(C) Velocity (D) Momentum

Ans. (D) **(SSC CHSL Tier-I 2016)**

Exp: Since $F = \frac{dP}{dt}$

$dP = F.dt$

As force and time for both objects are equal, their momentum will be equal.

59. If an object is thrown upwards, what will be its velocity, when it reaches its maximum height?

(A) 0 m/s (B) 4.9 m/s
(C) 14.7 m/s (D) 20 m/s

Ans. (A) **(SSC CHSL Tier-I 2016)**

Exp: An object is thrown upwards, then at its maximum height, velocity will be zero because there will be no kinetic energy at its maximum height.

60. In a projectile motion, the horizontal range achieved is same when the body is projected at and –

(A) 180 degree minus theta
(B) 60 degree minus theta
(C) 120 degree minus theta
(D) 90 degree minus theta

Ans. (D) **(SSC CHSL Tier-I 2016)**

Exp: In a projectile motion,
Horizontal Range.

$$R = \frac{v^2 \text{Sin}2\theta}{g}$$

For , and (90 –), Achieved horizontal range will be the same.

61. If a body slides over a surface, the force resisting the motion between them is called.

(A) Centripetal force (B) Friction
(C) Centrifugal force (D) Inertia

Ans. (B) **(SSC CHSL Tier-I 2016)**

Exp: When a body slides over another body or surface, friction occurs between them which resist the motion.

62. An object is in static equilibrium when it is _____.

(A) At rest
(B) Moving in a circular path
(C) Moving with uniform velocity
(D) Accelerating at high speed

Ans. (A) **(19 January Evening)**

Exp: In static equlilibrium when a body is at rest resultant of all forces acting on a body equals to zero.

63. Newton's first law is also known as _____.

(A) Law of friction (B) Law of moments
(C) Law of Inertia (D) Law of motion

Ans. (C) **(20 January Evening)**

Exp: Newton's 1st law of motion is also known as Law of Inertia. According to it, a body at rest stays at rest and a body in motion stays in motion in same direction unless an external force is applied on it.

64. The path of a projectile is called its _____.

(A) Altitude (B) Range
(C) Trajectory (D) Flight

Ans. (C) **(SSC CHSL Tier-I 2016)**

Exp: In projectile motion, the path an objects follows is called its trajectory.

65. In a projectile motion, a large angle with the horizontal produces _____.

(A) Flat trajectory (B) Curve trajectory
(C) Straight trajectory (D) High trajectory

Ans. (D) **(SSC CHSL Tier-I 2016)**

Exp: In a projectile motion, higher the angle higher vertical distance will be covered by any object.

66. Motion of a train is an example of _____.

(A) Rotatory motion (B) Spin motion
(C) Projectile motion (D) Translatory motion

Ans. (D) **(SSC CHSL Tier-I 2016)**

Exp: In translatory motion, all points of a body moves with uniform velocity, in same line and direction.

67. ____ is a pair of forces, equal in magnitude, opposite directed and displaced by perpendicular distance or moment.

(A) Bond (B) Couple
(C) Pair (D) Duo

Ans. (B) **(SSC CHSL Tier-I 2016)**

Exp: In mechanics, couple is a pair of parallel forces, equal in magnitude and opposite in direction.

68. A large force on a rotating body results in larger__.

(A) Mass (B) Torque
(C) Axis of rotation (D) Centre of mass

Ans. (B) **(SSC CHSL Tier-I 2016)**

Exp: The turning effect of a force on a object is known as torque. Larger force will result into larger torque.

69. If an object moves in a purely rotatory motion, then each constituent particle of the body moves in a circle, the centre of which is located on a line is called _____.

(A) The axis of rotation (B) The line of rotation
(C) The spinning rod (D) The fixed line

Ans. (A) **(SSC CHSL Tier-I 2016)**

Exp: Rotatory motion is a type of motion in which an object moves in a circular path around an axis. That axis is known as axis of rotation.

70. The mass of an object_____

(A) Changes from place to place
(B) Remains same everywhere
(C) Is equal to its weight
(D) Is greater at mountains

Ans. (B) **(SSC CHSL Tier-I 2016)**

Exp: The mass of an object is constant it does not change unless it gains or loses matter.

71. What is the SI unit of Torque?

(A) Newton/meter (B) Newton meter
(C) Newton second (D) Newton/meter squared

Ans. (B) **(SSC CHSL Tier-I 2016)**

Exp: Torque = Force × perpendicular distance.
SI unit of Torque will be = Newton metre

72. If a body moves with a uniform speed in a circular motion, then_____.

(A) Its acceleration is increasing
(B) Its acceleration is zero
(C) Its velocity is changing
(D) Its velocity is uniform

Ans. (C)

Exp: In a circular motion, the direction of speed changes continously. Hence, velocity being a vector quantity, changes continously in circular motion.

73. In projectile motion, the total flight time is _____.

(A) Equal to the time required to reach the maximum height
(B) Thrice the time required to reach the maximum height
(C) Four times the time required to reach the maximum height
(D) Twice the time required to reach the maximum height

Ans. (D) **(SSC CHSL Tier-I 2016)**

Exp: Total flight time in projectile motion is amount of time a body spends in the air. It is equal to twice the time required to reach the maximum height.

74. What is the direction of torque?

(A) Perpendicular to the direction of applied force
(B) Same as the direction of applied force
(C) Opposite to the direction of applied force
(D) Parallel to the radius

Ans. (A) **(SSC CHSL Tier-I 2016)**

Exp: Torque is an amount of force which is needed to rotate any object. The direction of torque is always perpendicular to the direction of force.

75. A cannon ball is fired. The motion of this ball is an example of _____.

(A) Straight line motion (B) Projectile motion
(C) Hyperbolic motion (D) Horizontal motion

Ans. (B) **(SSC CHSL Tier-I 2016)**

Exp: The motion of the cannon ball is an example of projectile motion. In projectile motion, an object follows a parabolic path.

76. Upward force on a floating body is called _____.

(A) Jerk (B) Buoyancy
(C) Archimedal force (D) Anti-gravity

Ans.(B) **(SSC CHSL Tier-I 2016)**

Exp: Buoyancy force acts upon an object that is floating on a fluid or totally submerged in a fluid.

77. When a bus starts suddenly, then passengers in the bus tend to fall backwards. This event is an example of _____.

(A) Inertia of rest (B) Inertia of motion
(C) Inertia of direction (D) None of these

Ans. (A) **(SSC CPO 2017)**

Exp: Inertia of rest is the tendency of an object (or body) to continue its state of rest unless it is acted upon by an external force.

78. Which of the following quantity is a measure of inertia?

(A) Velocity (B) Acceleration
(C) Mass (D) Weight

Ans. (C) **(SSC CPO 2017)**

Exp: Mass is that quantity that is solely dependent upon the inertia of an object. The more inertia that an object has, the more mass it will have.

79. Friction can be reduced by which of the following?

I. Polishing surfaces II. Use of lubricants
III. Decreasing area of contact

(A) Only I (B) Only II
(C) Only I and II (D) All options are correct

Ans. (D) **(SSC CPO 2017)**

Exp: Friction can be reduced by number of ways:
(i) By polishing the surfaces
(ii) With the use of lubricants.
(iii) By making the object more streamlined.
(iv) By reducing the forces acting on the surfaces.
(v) By reducing the contact between the surfaces.

80. Action and reaction _____.

(A) Always act on same body
(B) Are equal in magnitude
(C) Are in same direction
(D) Always act independently

Ans. (B) **(SSC CPO 2017)**

Exp: Newton's Third Law of Motion states that for every action there is an equal and opposite reaction. Action and reaction forces are always equal in magnitude but opposite in direction.

81. Law of Inertia is also known as _____.

(A) Newton's first law of motion
(B) Newton's second law of motion
(C) Newton's third law of motion
(D) None of these

Ans. (A) **(SSC CPO 2017)**

Exp: Law of Inertia is also known as Newton's First Law of Motion. Newton's First Law of Motion states that an object at rest stays at rest and an object in motion stays in motion with the same speed and in the same direction unless an external force applied on it.

82. Which scientist gave 'laws of motion'?

(A) Galileo (B) Newton
(C) Einstein (D) Boyle

Ans. (B) **(SSC CPO 2017)**

Exp: 'Sir Isaac Newton' gave the 'Laws of Motion'.

83. The force acting on an object perpendicular to the surface is called_____.

(A) Pressure (B) Work
(C) Thrust (D) Friction

Ans. (C) **(SSC CPO 2017)**

Exp: When a system expels or accelerates mass in one direction, the accelerated mass will cause a force of equal magnitude but opposite direction on that system.
The force applied on a surface in a direction perpendicular or normal to the surface is called Thrust. Thrust is measured in Newton.

84. Which contact force is responsible for changing the state of motion of an object?

(A) Magnetic force (B) Frictional force
(C) Muscular force (D) Electrostatic force

Ans. (B) **(SSC CPO 2017)**

Exp: Frictional force refers to the force generated by two surfaces that contacts and slide against each other. Hence, frictional force is responsible for changing the state of motion of an object.

85. What is the SI unit of Force?

(A) Pascal (B) Boyle
(C) Newton (D) Watt

Ans. (C) **(SSC CGL 2017)**

Exp: The S.I. unit of force is Newton. It is denoted by N. 1 Newton is defined as the force required to accelerate a body having a mass of 1kg at 1 meter per second square (1 m/s^2).

86. What is the other name of Galileo's law of falling bodies?

(A) Law of motion (B) Newton's first law
(C) Newton's second law (D) Newton's third law

Ans. (A) **(SSC CGL 2017)**

Exp: Galileo's law of falling bodies states that the rate of fall caused by gravity is the same for all objects, regardless of weight. This means that all objects have a free falling acceleration of 9.8 m/s^2

87. Soap bubble attains spherical shape due to _____.

(A) Inertia (B) Pressure
(C) Surface tension (D) Viscosity

Ans. (C) **(SSC CGL 2017)**

Exp: Surface tension is the property of any liquid by virtue of which it tries to minimize its surface area. Soap bubble attains spherical shape due to the property of surface tension.

88. In science a push or pull of an object is called _____.

(A) Pick (B) Lift
(C) Force (D) Shut

Ans. (C) **(SSC CGL 2017)**

Exp: A force is a push or pull upon an object resulting from the object's interaction with another object.

89. The sliding friction is _____ than the static friction.

(A) Double (B) Same
(C) Greater (D) Smaller

Ans. (D) **(SSC CGL 2017)**

Exp: The sliding friction is smaller than static friction because of the interlocking of irregularities in two surfaces. When the object starts sliding, the contact points on its surface, do not get enough time to lock into the contact points on the floor

90. In a qualitative way, the tendency of undisturbed objects to stay at rest or to keep moving with the same velocity is called _____.

(A) Force (B) Acceleration
(C) Friction (D) Inertia

Ans. (D) **(SSC CGL 2017)**

Exp: Law of Inertia/ Newton's first Law of Motion, in Newtonian physics is defined as the tendency of an object to remain in either uniform motion (at a constant speed) or at rest when an external forces is applied upon it.

91. If the mass of an object is 60 kgs, what will be its weight on the moon? (N=Newton)

(A) 60N (B) 600N
(C) 100N (D) 10N

Ans. (C) **(SSC CGL 2017)**

Exp: 1kg = 9.807 N or kg × 9.807 = N
weight on moon = 1/6 × mass of an object on earth
1/6 × 60 = 10 kgs × 9.807 = 98.07 ≅ 100N

92. Contact force is another name for _____.

(A) Friction (B) Magnetic force
(C) Electrostatic force (D) Muscular force

Ans. (A) **(SSC CGL 2017)**

Exp: Contact force is another name of friction force.

93. If the force applied on the object is in the direction opposite to the direction of motion, the speed of the object _____.

(A) Increases (B) Stops
(C) Decreases (D) No effect

Ans. (C) **(SSC CGL 2017)**

Exp: If an object is moving and there is an applied force in the opposite direction of the motion, the object will decelerate or slow down. A decelerating force can cause a moving object to stop.

94. The SI unit of acceleration is _____.

(A) Meters per seconds squared
(B) Meters per second
(C) Seconds per meter
(D) Seconds per meter squared

Ans. (A) **(SSC CGL 2017)**

Exp: Acceleration is change in velocity per unit time. It S.I. Unit is m/s^2. (meter per seconds squared)

95. According to the Second Law of Motion, for a given force, acceleration is inversely proportional to the ____ of an object.

(A) Density (B) Volume
(C) Force (D) Mass

Ans. (D) **(SSC CGL 2017)**

Exp: Newton's second law states that acceleration is directly proportional to net force when mass is constant.

$a \propto F$ ..... (A)

And that acceleration is inversely proportional to mass when net force is constant.

$a \propto \frac{1}{m}$ ..... (B)

and the net force is directly proportional to mass when acceleration is constant.

$F \propto m$ ..... (C)

According to eq. (A), (B) and (C), we get

$a = \frac{F}{m}$ or $(F = ma)$

This is the Newton's Second Law of Motion.

96. The force of friction between two surfaces will increase if:

(A) A layer of lubricant is kept between the two surfaces

(B) The two surfaces are pressed harder

(C) Air gap is created between the two surfaces

(D) Irregularities on both the surfaces are removed

Ans. (B) **(SSC CGL 2017)**

Exp: Since the friction is due to the interlocking of irregularities in the two surfaces which slide with respect to each other, it is obvious that the force of friction will increase if the two surfaces are pressed harder.

97. For an object, the state of rest is considered to be the state of _____ speed.

(A) Increasing (B) Decreasing

(C) Inverse (D) Zero

Ans. (D) **(SSC CGL 2017)**

Exp: When an object remains at rest or stationary (no moving), the state of rest is considered to be the state of zero speed.

98. A ball rolling along the ground gradually slows down and finally comes to rest is due to _____.

(A) Friction (B) Magnetic force

(C) Electrostatic force (D) Muscular force

Ans. (A) **(SSC CGL 2017)**

Exp: A ball rolling along the ground gradually slows down and finally comes to rest is due to friction because frictional force is acting opposite to the direction of motion of the ball.

99. The motion of a freely falling body is an example of _____ motion.

(A) Uniformly accelerated

(B) Non-uniformly accelerated

(C) Constant velocity (D) Constant speed

Ans. (A) **(SSC CGL 2017)**

Exp: The motion of a free falling body is non-uniform because it experiences an acceleration of 9.81 m/s^2 under the influence of gravity. Hence it's motion is uniformly accelerated.

100. If the force applied on the object is in the direction of its motion, the speed of the object _____.

(A) Increases (B) Stops

(C) Decreases (D) No effect

Ans. (A) **(SSC CGL 2017)**

Exp: When an object is moving in the direction of its motion, the force applied on the object increases the speed of the object.

101. The frictional force exerted by fluids is also called _____.

(A) Drag (B) Buoyancy

(C) Upthrust (D) Convection

Ans. (A) **(SSC CGL 2017)**

Exp: In fluid dynamics drag is a frictional force acting opposite to the relative motion of any object moving with respect to surrounding fluid.

102. During uniform motion of an object along a straight line, the _____ remains constant with time.

(A) Time (B) Velocity

(C) Acceleration (D) Distance

Ans. (B) **(SSC CGL 2017)**

Exp: If an object that is moving in a specific direction at a uniform motion. It means object is moving in a straight line, keeping its speed constant.

103. Friction is caused by the _____ on the two surfaces in contact.

(A) Irregularities (B) Smoothness

(C) Densities (D) Gaps

Ans. (A) **(SSC CGL 2017)**

Exp: When the surfaces is in contact with hills or grooves on the surface of object are called irregularities of surfaces.

Chapter-07

Gravitation

1. Mass of a body on measuring in lift at rest with a physical balance is found to be 'm'. If the Lift is accelerated upward with acceleration 'a'. Now what will be the mass of body?

(A) L (B) m (g + a)

(C) M (D) Zero

Ans. (B) **[SSC CHSL 2013]**

Exp: When body accelerate upwards, the force acting on weighing machine are mg (weight) + ma(pseudo force) Hence, total downward weight = mg + ma $\Rightarrow$ m (g + a)

2. The apparent weight of man in a lift is less than the real weight then–

(A) When the lift is going down with acceleration.

(B) The lift is going up with uniform speed.

(C) The lift is going down with uniform speed.

(D) The lift is going up with acceleration.

Ans. (A) **[SSC CGL 2015]**

Exp: The changes in weight of man in a lift are as follows.

1. When lift moves upward with constant acceleration - weight increases.
2. When lift moves downwards with constant acceleration - weight decreases.
3. When lift moves with constant velocity - No change in weight.

3. Dimension of Universal Gravitational constant is –

(A) $M^{-1}L^3T^{-2}$ (B) $M^{-1}L^3T^2$

(C) ML^2T^{-2} (D) M^{-2}

Ans. (A) **[SSC CHSL 2011]**

Exp: $F = \frac{GM_1M_2}{r^2}$

G = Gravitational constant, F = Force

M_1 & M_2 = mass, r = distance

$G = \frac{Fr}{M_1M_2} = \frac{[MLT^{-2}][L]^2}{[M][M]} = [M^{-1}L^3T^{-2}]$

4. A man standing on the top of tower has two spheres A and B. He drops the sphere A downward and throw sphere B horizontally at the same time. Which of the following is correct?

(A) Both sphere will reach the Ground simultaneoulsy

(B) A will reach the ground first.

(C) B will reach the ground first.

(D) Question is incomplete because the masses of the spheres are not given.

Ans. (A) **[SSC CHSL 2014]**

Exp: Since, vertical component of velocity is responsible for downward movement & here vertical component of velocity is same for both ie. zero. So, both will reach simultaneously on ground.

5. A man standing on a edge of a cliff throws a stone vertically upward with a certain speed. He then thrown another stone downward with a same speed. Find the ratio of speed of the two stones when they hit the ground?

(A) 1 : 1 (B) 1 : 2

(C) 1 : 4

(D) Cannot be found from the given information

Ans. (A) **[SSC CHSL 2013]**

Exp: The stone which is thrown vertically upwards, when returns to the initial level from where it was thrown has same speed but in downward direction, which is now same as second stone. Hence both will have the same speed when they hit the ground.

6. Time period of Revolution for a Geo-stationary satellite is—

(A) 365 days (B) 30 days

(C) 24 hours (D) Continuously changes

Ans. (C) **[SSC CPO Exam, 2007, 2010]**

Exp: Geostationary satellite is placed in the orbit which is directly above the equator and it takes approximately 24 hours to complete one revolution.

7. What is the height of a Geo-Stationary satellite from the surface of earth?

(A) 36,000 Km (B) 42,000 Km

(C) 30,000 Km (D) None of these

Ans. (A) **[SSC MTS Exam, 2011]**

Exp: Geostationary satellite is placed in the orbit which is at an altitude of approximately 36,000 Km above mean sea level.

8. Presence of atmospheric air on the earth is due to–

(A) Gravity (B) By wind

(C) Clouds (D) Rotation of Earth

Ans. (A)

Exp: The gravity of our earth holds the atmosphere in its place.

9. What is the minimum escape velocity of rocket to be launched into space?

(A) 5 km/sec. (B) 6 km/sec.

(C) 11 km/sec. (D) 15 km/sec.

Ans. (C) **[SSC Sec. Officer (Audit) 1997]**

Exp: Escape velocity $V = \sqrt{\frac{2GM}{R}}$

where M = Mass of Earth
R = Radius of Earth
G = Gravitational Constant
V = 11.2 km/s

10. The shape of our milky way galaxy is

(A) Circular (B) Elliptical
(C) Spiral (D) None of the above

Ans. (C) **[SSC CPO SI 2003]**

Exp: Our milky way is a large barred spiral galaxy.

11. Who defined the law of gravitation?

(A) Newton (B) Archimedes
(C) Galileo (D) Faraday

Ans. (A) **[SSC Sec. Officer (Audit) 2006]**

Exp: Law of gravitation is defined by Newton. It states that two objects exert a gravitational force on each other.

12. The sensation of weightlessness in a spacecrft in an orbit is due to the

(A) Absence of gravity outside
(B) Acceleration in the orbit which is equal to the acceleration due to gravity outside.
(C) Presence of gravity outside but not inside the spacecraft
(D) Fact that spacecraft in the orbit has no energy

Ans. (A) **[SSC Tax Asst. (Income Tax) 2007]**

Exp: The effect of gravity decreases as the space craft moves outwards from earth's atmosphere. In orbit, the effect of gravity is negligible, Hence, we feel weightlessness.

13. The spoon dropped by an astronaut in a satellite will

(A) Fall to the floor (B) Remain stationary
(C) Continue to follow the motion of the satellite
(D) Move tangentially away

Ans. (C) **[SSC Tax Assit. (Income Tax & Central Excise) 2008]**

Exp: Since the spoon is inside the satellite, it will acquire the velocity of satellite. Hence, on dropping, it will keep moving with the satellite velocity.

14. Intensity of gravitational field of earth is maximum at

(A) Poles (B) Equator
(C) Centre of earth (D) Surface

Ans. (A) **[SSC SAS Exam 2010]**

Exp: As earth is flattened at the poles and more bulged towards outside, at the equator and accelaration due to gravity is inversely proportional to the distance from the center of the earth, gravity is maximum at the poles.

15. The time period of a pendulum when taken to the Moon would:

(A) Remain the same (B) Decrease
(C) Become zero (D) Increase

Ans. (D) **[SSC CGL 2011]**

Exp: Time period of a Pendulum

$T = 2p\sqrt{l/g}$

on Moon, gravity will be = g/6

T is inversely proportional to $\sqrt{g}$. Hence time period will increase, when a pendulum will be taken to moon.

16. The atmospheric air is held to the Earth by:

(A) Gravity (B) Winds
(C) Clouds (D) Rotation of the Earth

Ans. (A) **[SSC CGL 2011]**

Exp: Atmospheric air is composed of gas like Nitrogen, Oxygen, Carbon dioxide, etc. Due to gravitational pull on the atoms of these gas, they are held to the earth.

17. It is easier to carry two buckets of water in one hand each, than to carry only one in one hand because

(A) Weights of buckets are balanced
(B) Centre of gravity falls within the body
(C) Centre of gravity and centre of equilibrium fall within the feet
(D) Resultant weight of buckets is zero

Ans. (B) **[SSC Combined Matric Level 2002]**

Exp: On carrying two buckets of water, one in each hand, balances the weight symmetrically due to which centre of gravity falls within the body, making it easier to carry them.

18. The minimum number of geostationary satellites needed for uninterrupted global coverage is:

(A) 3 (B) 2
(C) 4 643(D) 1

Ans. (A) **[SSC MTS 2011]**

Exp: Satellites in geo-stationary orbit would cover the whole earth. Therefore, any communication originating from any of the region of the world can communicate around the globe.

19. As we go from Equator to North pole the value of 'g', the acceleration due to gravity.

(A) Remains the same (B) Decreases
(C) Increases (D) None of the above

Ans. (C) **[SSC CHSL 2011]**

Exp: Same as Q. No. 14

20. In the Earth, the weight of a body is maximum at the

(A) North Pole (B) South Pole
(C) Equator (D) Surface

Ans. (A) **[SSC CHSL 2011]**

Exp: As earth is flattened at the poles and more bulged towards outside, at the equator and accelaration due to gravity is inversely proportional to the distance from the center of the earth, gravity is maximum at the poles. Hence, weight of any body will be maximum at poles.

21. A man inside an artificial satellite feels weightlessness because the force of attraction due to earth is

(A) Zero at that place

(B) Is balanced by the force of attraction due to moon

(C) Equal to the centripetal force

(D) Non-effective due to particular design of the satellite

Ans. (A) **[SSC CHSL 2011]**

Exp: The gravitational attraction of earth decreases as body moves up from the surface of Earth. In space, this value is very near to zero, hence a feeling of weightlessness is experienced.

22. The mass of a body measured by a physical balance in a lift at rest is found to be m. If the lift is going up with an acceleration a, its mass will be measured as

(A) $m\left(1-\frac{a}{g}\right)$ (B) $m\left(1+\frac{a}{g}\right)$

(C) m (D) zero

Ans. (C) **[SSC CHSL 2013]**

Exp: Since, mass always remains constant. Hence, no matter the lift goes up or down with acceleration, the mass remains constant.

23. The weight of a body acts through the centre of

(A) Gravity (B) Mass

(C) Both (1) and (2) (D) Buoyancy

Ans. (A) **[SSC MTS 2014]**

Exp: Centre of gravity is defined as a point at which the entire weight of a body is concentrated.

24. Two bodies kept at a certains distance feel a gravitational force F to each other. If the distance between them is made double the former distance, the force will be

(A) 2 F (B) $\frac{1}{2}$ F

(C) 4 F (D) $\frac{1}{4}$ F

Ans. (D) **[SSC CAPFs SI, CISF ASI & DP SI 2014]**

Exp: Gravitational force is inversely proportional to the square of distance between two bodies

$$F \propto \frac{1}{r^2}$$

When distance will be doubled,

$r = (2r)$

$$F \propto \frac{1}{(2r)^2}$$

$$F \propto \frac{1}{4r^2}$$

Force will = $\frac{F}{4}$

25. The apparent weight of a man in a lift is less than the real weight when:

(A) The lift is going up with an acceleration

(B) The lift is going down with uniform speed

(C) The lift is going up with uniform speed

(D) The lift is going down with an acceleration

Ans. (D) **[SSC CGL 2015]**

Exp: Same as Q. No. 2

26. Why the Earth is having its own atmosphere?

(A) Winds (B) Clouds

(C) Gravity (D) Rotation of the Earth

Ans. (C) **[SSC CGL 2016]**

Exp: The atmosphere is made up of various gases like oxygen, nitrogen, Carbon dioxide, etc. They are held up together composing atmosphere due to the attraction of gravity.

27. The point where total mass of a body is supposed to be concentrated is known as.

(A) Dead centre (B) Centre of mass

(C) Centre of gravity (D) Centre of motion

Ans. (B) **[SSC CGL 2016]**

Exp: Centre of mass is the point in the body at which the total mass of the body is supposed to be concentrated.

28. If there were no gravity, which of the following will not be there for a fluid?

(A) Viscosity (B) Surface Tension

(C) Pressure (D) Upward Thrust

Ans. (D) **[SSC CGL 2016]**

Exp: Since, upward thrust is equal to the weight of the liquid displaced by the object. No gravity means no weight. Hence, no upthrust will be experienced.

29. The weight of an object is maximum.

(A) On the equator

(B) On the surface of the earth

(C) At the centre of the earth

(D) On the poles of the earth

Ans. (D) **[SSC CGL 2016]**

Exp: Same as Q. No. 21

30. The tides in the sea are primarily due to

(A) The atmospheric effect of the Earth

(B) The gravitational effect of Venus on the Earth

(C) The gravitational effect of the Sun on the Earth

(D) The gravitational effect of the Moon on the Earth.

Ans. (D) **[SSC CGL 2016]**

Exp: Tides are caused by the combined effects of gravitational pull of sun and moon.

31. Why is weightlessness experienced while orbiting the earth in space ships ?

(A) Inertia (B) Acceleration

(C) Zero gravity (D) Orbital motion

Ans. (C) **[SSC CGL 2016]**

Exp: The gravitational attraction of earth decreases as body moves up. In space this value is very near to zero, hence, a feeling of weightlessness is experienced.

32. What will happen if an object is dropped from a height and there is no air resistance?

(A) It will fall with a constant speed and acceleration
(B) Its acceleration will increase
(C) Both speed and acceleration will increase
(D) Its speed will increase

Ans. (D) **(SSC CHSL 2016)**

Exp: Its speed will increase as the object will be constantly under gravitational acceleration while falling.

33. The value of acceleration due to gravity (g) at a distance of 2R from the surface of earth, where R is the radius of earth is _____.

(A) g/3 (B) g/4
(C) g/9 (D) g/2

Ans. (B) **[SSC CHSL 2016]**

Exp: $F = \frac{GMm}{r^2}$

$r = 2R$

$F = \frac{G\,M}{R^2}$

$\frac{GM}{R^2} = g$

$\frac{Gm}{4R^2} = \frac{g}{4}$

Value of acceleration due to gravity at a distance of 2R from the surface of earth = g/4

34. If an object, on a free fall a certain height, reaches the ground in 1 second, what is its velocity on the impact with the ground?

(A) 4.9 m/s (B) 9.8 m/s
(C) 14.7 m/s (D) 19.6 m/s

Ans. (B) **(SSC CHSL 2016)**

Exp: $v = u + gt$

$t = 1$ second

$u = 0$

$v = 0 + 9.8 \times 1$

$v = 9.8$ m/s

35. The apparent weight of a person in a lift which is moving down with uniform acceleration is _____.

(A) Greater than the weight when the person is stationary
(B) Twice the weight when the person is stationary
(C) Less than the weight when the person is stationary
(D) Same as the weight when the person is stationary

Ans. (C) **[SSC CHSL 2016]**

Exp: *Same as Q. No. 2*

36. As per Newton's Law of Gravitation, the force between two bodies is _____.

(A) Directly proportional to the product of their masses
(B) Directly proportional to the distance between them
(C) Directly proportional to the product of their radius
(D) Directly proportional to the product of forces

Ans. (A) **[SSC CHSL 2016]**

Exp: $F = \frac{GM_1M_2}{r^2}$

According to Newton's Law of Gravitation, the force between two bodies is directly proportional to the product of their masses.

37. Acceleration due to gravity on a planet decreases with _____.

(A) Decrease in radius of the planet
(B) Increase in mass of the planet
(C) Decrease in mass of the body
(D) Increase in altitude from surface of the planet

Ans. (D) **[SSC CHSL 2016]**

Exp: Acceleration due to gravity is inversely proportional to the square of distance from center of the planet. Hence, on increasing the altitude, gravitational acceleration decreases.

38. If the radius of the earth decreases and its mass remains the same, then the value of "acceleration due to gravity" will _____ .

(A) Decrease (B) Increase
(C) Remain the same (D) Become zero

Ans. (B) **[SSC CHSL 2016]**

Exp: Since, acceleration due to gravity is inversely proportional to the square of radius of earth. Hence on decreasing radius, gravity increases.

39. With reference to gravity, what is G called?

(A) Gravitational constant
(B) Gravitational attraction
(C) Gravitational force
(D) Acceleration due to gravity

Ans. (A) **[SSC CHSL 2016]**

Exp: Gravitational constant is a proportionality constant, which is used in Newton's Law of Gravitation. It is denoted by 'G'.

40. What is the value of acceleration due to gravity at the centre of earth?

(A) 1 (B) 0
(C) –1 (D) Infinity

Ans. (B) **[SSC CHSL 2016]**

Exp: At the centre of the earth, gravity will be zero, because there is equal mass pulling on a body from all side and it all gets cancel.

41. Who first determined the value of G (gravitational constant)?

(A) Lord Cavendish (B) R.R Heyl
(C) Boyle (D) Poynting

Ans. (A) **[SSC CHSL 2016]**

Exp: In 1978, Henry Cavendish determined the value of gravitational constant.

42. Law of gravitation applies to _____.

(A) Any pair of bodies
(B) The earth and the moon
(C) The planets around the Sun
(D) The earth and the objects of earth

Ans. (A) **[SSC CHSL 2016]**

Exp: Newton's Law of gravitation applies to any pair of the bodies in the universe.

43. What is the approximate height of any geostationary satellite from earth's surface (in km)?

(A) 36000 (B) 45000
(C) 48000 (D) 30000

Ans. (A) **(SSC CPO 2017)**

Exp: A geostationary is an earth-orbiting satellite, placed at an altitude of approximately 35,800 kilometers, (Approx. 36000) directly over the equator, that revolves in the same direction the earth rotates (west to east).

44. Which of the following is CORRECT about Moon's gravitation?

(A) Moon's gravitation = 1/6th of Earth's gravitation
(B) Moon's gravitation = 1/6th of Mars gravitation
(C) Moon's gravitation = 1/8th of Earth's gravitation
(D) Moon's gravitation = 1/8th of Mars gravitation

Ans. (A) **(SSC CPO 2017)**

Exp: Moon's gravitation = 1/6th of Earth's gravitation

45. At which of the following place, weight of an object is maximum?

(A) At poles (B) At equator
(C) At tropic of Capricorn (D) At tropic of Cancer

Ans. (A) **(SSC CGL 2017)**

Exp: Same as Q. No. 20

46. If the orbit of a planet is an ellipse then what is the point at which the Sun is located called?

(A) Centre (B) Circumcentre
(C) Incentre (D) Focus

Ans. (D) **(SSC CGL 2017)**

Exp: Due to the force of gravity, which goes as the inverse of the square, planet trace out an ellipse in space as they orbit around the sun which is located at a single focus.

Chapter-08

Work Energy & Power

1. Which of the following pair of physical quantity has same dimensions?

(A) Work and Energy (B) Force and Power
(C) Work and Power (D) Power and Motion

Ans. (A) **[SSC CHSL 2015]**

Exp: Work = Force × Distance = $[MLT^{-2}][L] = [ML^2T^{-2}]$
Energy = $[ML^2T^{-2}]$
Hence, work and energy have same dimensions.

2. Energy stored in a spring in watch–

(A) Kinetic Energy (B) Potential Energy
(C) Heat Energy (D) Chemical Energy

Ans. (B) **[SSC Tax Asst. 2007]**

Exp: Potential energy is a stored energy which exists due to position and configuration of an object.

3. A stone is dropped from the roof of a House towards ground. When will be the K.E. of stone maximum?

(A) Just after it drops
(B) Just before reaching the ground
(C) Just after touching the ground
(D) After covering the half distance

Ans. (B)

Exp: just before reaching the ground, Kinetic energy will be maximum and Potential energy will be minimum.

4. Which of the following is the cleanest source of energy?

(A) Bio-fuel (B) Fossil fuel
(C) Nuclear power (D) Wind energy

Ans. (D) **[SSC CGL Tier-I 2016]**

Exp: Wind energy is the cleanest source of energy. In nuclear energy, nuclear waste is produced. In fossil fuel and bio-fuel, fumes are produced.

5. Which one of the following is not a non-conventional source of energy?

(A) Solar Energy (B) Natural Gas
(C) Wind Energy (D) Tidal Power

Ans. (B) **[SSC CGL Tier-I 2016]**

Exp: Non conventional source of energy includes solar energy, wind energy, tidal energy, geo-thermal energy etc. Conventional sources of energy includes coal, petroleum, natural gas etc.

6. Kinetic energy depends on

(A) The velocity or speed of the moving body
(B) The mass of the moving body
(C) The pressure of the moving body
(D) Both mass and velocity of the moving body

Ans. (D) **[SSC CGL Tier-I 2016]**

Exp: Kinetic energy of a body depends upon mass of the body and its velocity.

Kinetic energy = $\frac{1}{2}mv^2$

where m = mass of a body
v = Velocity of a body

7. Which of the following sources has the largest share in power generation in India?

(A) Atomic power (B) Thermal power
(C) Hydro power (D) Wind power

Ans. (B) **[SSC CGL Tier-I 2016]**

Exp: Thermal power has the largest share in power generation in India. About 65% of the electricity in India is generated by thermal power.

8. Which of the following is not a vector quantity ?

(A) Work (B) Force
(C) Displacement (D) Velocity

Ans. (A) **[SSC CHSL Tier-I 2016]**

Exp: Vector quantities have both direction and magnitude. Scalar quantities only have magnitude. Also they should follow parallelogram law of vector addition. Except work, all other are vector quantities.

9. _____ is the mechanical transfer of energy to a system or from a system by an external force on it.

(A) Work (B) Power
(C) Intensity (D) Force

Ans. (A) **[SSC CHSL Tier-I 2016]**

Exp: Work is the energy which is transferred to or from any body, from or to any external force or system.

10. Rate of work done is _____.

(A) Energy (B) Power
(C) Momentum (D) Impulse

Ans. (B)

Exp: Power is defined as rate of work done. It is the amount of energy consumed per unit time.

11. Which of the following is false with reference to a photo-voltaic cell?

(A) It is another name as solar cell
(B) It can be used as infra-red detectors
(C) It can store light energy in the form of electrical energy
(D) It converts electric energy into light energy

Ans. (D) **[SSC CHSL Tier-I 2016]**

Exp: Photovoltaic cells are also known as solar cell. It

converts visible light in the form of electric energy.

12. One Kilowatt hour is equal to–

(A) 3.6 Mega Joule (B) 3.8 Mega Joule
(C) 3.2 Mega Joule (D) 4.0 Mega Joule

Ans. (A) **[SSC Section Officer (Audit) 1997]**

Exp: Power = $\frac{\text{Work done}}{\text{Time taken}}$

1W = 1 J/S
1 KW = 10^3 W
1 Watt/hour = 3600 J
1 KWH = 3.6×10^6 J

13. In which of the following cases, Kinetic energy is being used in performing work?

(A) Paddling the bicycle to cover a distance
(B) Driving a car to cover a distance
(C) Wind mill grinding wheat grain
(D) Rowing a boat in the lake

Ans. (C) **[SSC CPO SI 2004]**

Exp: In wind mill, wind turbines convert the Kinetic energy into work done to grind the wheat grains.

14. Which of the following pairs of physical quantities have the same dimensions?

(A) Force and Power (B) Work and Power
(C) Work and Energy (D) Momentum and Power

Ans. (C) **[SSC CHSL 2015]**

Exp: Same as explained in Q. No. 1

15. The energy stored in a watch spring is

(A) Kinetic energy (B) Potential energy
(C) Heat energy (D) Chemical energy

Ans. (B) **[SSC Tax Asst. (Income Tax) 2007]**

Exp: Same as Q. No. 2

16. Energy that is produced commercially from coal is called

(A) Light energy (B) Kinetic energy
(C) Thermal energy (D) Potential energy

Ans. (C) **[SSC Tax Asst. (Income Tax) 2007]**

Exp: Thermal energy is the form of energy that is generated by heat.

17. In a photocell light energy is converted into

(A) Potential energy (B) Chemical energy
(C) Heat energy (D) Electrical energy

Ans. (D) **[SSC CGL 2008]**

Exp: Same as explained in Q.No.11

18. A kilowatt-hour is unit of

(A) Energy (B) Power
(C) Electric charge (D) Electric current

Ans. (B) **[SSC CPO SI 2008]**

Exp: A kilowatt-hour is the unit of power.

19. Solar energy is converted into chemical energy during

(A) Transpiration (B) Photosynthesis
(C) Diffusion (D) Osmosis

Ans. (B) **[SSC CPO SI 2004]**

Exp: During photosynthesis, plants convert solar energy into chemical energy, in the form of glucose.

20. In a rechargeable cell what kind of energy is stored within the cell?

(A) Electrical energy (B) Potential energy
(C) Chemical energy (D) Kinetic energy

Ans. (C) **[SSC Sec. Officer (Audit) 2007]**

Exp: In rechargeable cells, energy is stored in the form of chemical energy. The stored chemical energy gets converted into electrical energy.

21. The energy emitted by the Sun is due to

(A) Chemical reaction (B) Nuclear fission
(C) Nuclear fusion (D) All of the above

Ans. (C) **[SSC Sec. Officer (Audit) 2005]**

Exp: Nuclear fusion reaction is responsible for the light and heat radiated by sun. This reaction occurs inside the core of the sun.

22. How much mechanical work must be done to completely melt 1 gram of ice at 0°C?

(A) 4.2 J (B) 80 J
(C) 336 J (D) 2268 J

Ans. (C) **[SSC Combined Matric Level 2008]**

Exp: Work done to completely melt 1 gm of ice at 0°C

W = Q = ML
W = 1 × 336 J/gm
= 336 J

Where L = (Latent heat of fusion for water)

23. A bullet is fired from a rifle which recoils after firing. The ratio of kinetic energy of the rifle to that of the bullet is

(A) Zero (B) One
(C) Less than one (D) More than one

Ans. (C) **[SSC Combined Matric Level 2008]**

Exp: Since, no external force is acting on (bullet + rifle) system, momentum will be same for both. Hence, ratio of Kinetic energy will be inverse ratio of their masses.

$$\frac{K.E._{rifle}}{K.E._{bullet}} = \frac{\text{mass of bullet}}{\text{mass of rifle}}$$ (which is less than 1)

24. Direct conversion of solar energy with the use of a photovoltaic cell results in the production of

(A) Optical energy (B) Electrical energy
(C) Thermal energy (D) Mechanical energy

Ans. (B) **[SSC CHSL 2011]**

Exp: Same as explained in Q. No. 11

25. A photo-electric cell converts

(A) Mechanical energy to Electric energy
(B) Heat energy to Mechanical energy
(C) Light energy to Chemical energy
(D) Light energy to Electrical energy

Ans. (D) **[SSC CPO SI 2009]**

Exp: Photo-electric cell is a device which converts light energy into electrical energy.

26. A stone is dropped from the roof of a house towards the ground. The Kinetic Energy of the stone will be maximum:

(A) Just after it is dropped
(B) When it is just on the half-way
(C) Just before it touches the ground
(D) When it touches the ground

Ans. (C) **[SSC CHSL 2011]**

Exp: Same as explained in Q. No. 3

27. A dynamo is used to convert

(A) Mechanical energy into Electrical energy
(B) Electrical energy into Mechanical energy
(C) Electrical energy into Magnetic energy
(D) Magnetic energy into Mechanical energy

Ans. (A) **[SSC Constable (GD) 1912]**

Exp: Dynamo is an electrical generator which converts Mechanical energy into Electrical energy.

28. When a body falls from an aeroplane, there is increase in its

(A) Kinetic energy (B) Mass
(C) Acceleration (D) Potential energy

Ans. (A) **[SSC MTS 2013]**

Exp: When a body falls from an aeroplane, its Kinetic energy increases with decrease in its height and Potential energy increases with increase in its height.

29. In a water lifting electric pump, we convert

(A) Electrical energy into Potential energy
(B) Kinetic energy into Electrical energy
(C) Kinetic energy into Potential energy
(D) Electrical energy into Kinetic energy

Ans. (D) **[SSC MTS 2013]**

Exp: Since, the electricity given to electric pump is used up in providing speed to water to rush up to surface.

30. The device used to convert solar energy into electricity is

(A) Photovoltaic cell (B) Daniell cell
(C) Electrochemical cell (D) Galvanic cell

Ans. (A) **[SSC CGL 2014]**

Exp: Same as explained in Q.No.11

31. A moving neutron collides with a stationary α-particle. The fraction of the kinetic energy lost by the neutron is

(A) $\frac{1}{4}$ (B) $\frac{1}{16}$
(C) $\frac{9}{25}$ (D) $\frac{16}{25}$

Ans. (D) **[SSC CHSL 2014]**

Exp: Fraction of K.E. lost will be $\frac{16}{25}$ times of the initial K.E. of the system.

32. Which of the following have the same unit?

(A) Work and Power
(B) Torque and Moment of Inertia
(C) Work and Torque
(D) Torque and Angular momentum

Ans. (C) **[SSC CHSL 2014]**

Exp: Work done = Force × Displacement
Unit = Newton × meter
Torque = Force × R
Unit = Newton-metre
Hence, work done and torque both have same unit

33. Which of the follwing is the second largest source of global energy?

(A) Fossil fuel (B) Nuclear Energy
(C) Renewable Energy (D) None of these

Ans. (C) **[SSC CPO SI, ASI 2016]**

Exp: Energy generated from natural resources is known as renewable energy. It includes wind energy, tidal energy, solar energy etc.

34. The inexhaustible source of energy of stars is due to _____.

(A) Conversion of hydrogen to helium
(B) Conversion of helium to hydrogen
(C) Decay of radioactive elements
(D) Excess of oxygen

Ans. (A) **(SSC CPO 2017)**

Exp: Fusion is the process in which two hydrogen atoms combine together to form a helium atom, releasing energy. The fusion reaction is a very efficient process, releasing a huge amount of energy.

35. Which of the following reaction is the main cause of energy radiated from Sun?

(A) Nuclear fission (B) Nuclear fusion
(C) Chemical reaction (D) Diffusion reaction

Ans. (B) **(SSC CPO 2017)**

Exp: Nuclear fusion is the main cause of energy radiated from sun.
In Nuclear Fusion reaction, two or more atomic nuclei come close enough to form one or more different atomic nuclei and also release large amount of energy.

36. Energy in the foods can be measured in which units?

(A) Kelvin (B) Joule
(C) Calorie (D) Celsius

Ans. (C) **(SSC CPO 2017)**

Exp: Energy in the foods can be measured in calorie. 1 calorie is defined as the amount of heat required at a pressure of 1 standard atmosphere to raise the temperature of 1 gram of water 1° Celsius.

37. A flying jet possesses _____.

(A) Potential energy (B) Kinetic energy
(C) Wind energy
(D) Both kinetic and potential energy

Ans. (D) **(SSC CPO 2017)**

Exp: A flying jet possesses both kinetic and potential energy. Kinetic energy is $(\frac{1}{2}mv^2)$ due to the velocity of fly jet and potential energy is (mgh) due to the height of the jet. The total energy of the jet is the sum of those two sources of energy.

38. When the speed of a moving object is halved, its _____.

(A) Kinetic energy becomes 1/4 of the original
(B) Kinetic energy becomes 4 times the original
(C) No change in the kinetic energy
(D) Acceleration is doubled

Ans. (A) **(SSC CPO 2017)**

Exp: $K = \frac{1}{2}mv^2$, if $v = \frac{v}{2}$

then $k = \left(\frac{1}{2}mv^2\right)\left(\frac{1}{4}\right)$

$K = \frac{1}{2}m\left(\frac{v^2}{4}\right)$

$K = \left(\frac{1}{2}mv^2\right)\left(\frac{1}{4}\right)$

When speed of a moving object is halved, its kinetic energy becomes $\frac{1}{4}$ of its original Kinetic energy.

39. By the use of photovoltaic cell while converting solar energy which of the following is produced?

(A) Light energy (B) Electric energy
(C) Chemical energy (D) Heat energy

Ans. (B) **(SSC CPO 2017)**

Exp: Same as explained in Q. No. 11

40. When a ball is thrown vertically upwards, which of the following quantities remains constant during its motion?

(A) Energy (B) Displacement
(C) Velocity (D) Acceleration

Ans. (A) **(SSC CGL 2017)**

Exp: When a ball is thrown vertically upwards energy (sum of kinetic energy and potential energy) remains constant during its motion.

41. What is the SI unit of heat energy?

(A) Joule (B) Newton
(C) Calorie (D) Kelvin

Ans. (A) **(SSC CGL 2017)**

Exp: The S.I. unit of heat energy is Joule (J). One Joule is defined as the amount of energy general when a force of One Newton is applied over a displacement of one meter.

42. What is the unit of calorific value?

(A) kN/kg (B) kJ/kg
(C) kW/sec (D) kCal/sec

Ans. (B) **(SSC CGL 2017)**

Exp: Calorific value is measured in units of energy per unit of the substance, usually mass such as KJ/Kg.

43. Energy in the form of heat is wasted when a machine is operated. This heat is generated due to _____.

(A) Burning (B) Friction
(C) Combustion (D) Lubrication

Ans. (B) **(SSC CGL 2017)**

Exp: The heat is generated due to friction because heat produced due to the vibration of molecules, friction is produced by the interaction of surfaces, this friction produces heat and energy in the form of heat and it is wasted when a machine is operated.

Chapter-09

Electro Magnetism

1. The purpose of choke in a fluorescent lamp is –
(A) To decrease the voltage momentarily
(B) To increase the flow of current
(C) To decrease the resistance
(D) To decrease the flow of current

Ans. (D) **[SSC CGL Exam, 2015]**

Exp: Choke in a fluorescent lamp is used to control the flow of current because if flow of current is not controlled, it can damage various electrical components.

2. The cause of magnetism in materials is–
(A) Electrons at rest (B) Protons at rest
(C) All stationary neutrons
(D) Circular motion of electrons.

Ans. (D) **[SSC CPO Exam, 2006]**

Exp: The cause of magnetism is movement of electric charges. Basically movement of electrons causes magnetism.

3. Uniform magnetic field is represented by–
(A) Closed curves (B) Parallel lines
(C) Convergent lines (D) Divergent lines

Ans. (B) **[SSC MTS Exam, 2013]**

Exp: Uniform magnetic field is represented by parallel lines. Magnetic field is the region around the magnet in which there is an affect of magnetic force.

4. What is the unit of electrical conductivity?
(A) Ohm (B) Ohm-cu
(C) Mho (D) Ohm/cu

Ans. (C) **[SSC MTS Exam, 2013]**

Exp: The SI unit of electrical conductance is Siemens/ Meter. The general term for this unit is Mho.

5. Who discovered the link between electricity and magnetism?
(A) Maxwell (B) Diesel
(C) Michael Faraday (D) Volta

Ans. (C) **[SSC CHSL Exam, 2015]**

Exp: Michael Faraday discovered the link between electricity and magnetism. This phenomenon is known as Electro Magnetism.

6. Tesla is the unit of Magnetic field –
(A) Induction (B) Moment
(C) Area (D) Flow

Ans. (A) **[SSC CGL Exam, 2014]**

Exp: Tesla is the SI unit of magnetic field induction. It is denoted by 'T' and is equivalent to 1 weber per meter square.

7. Resistance of a conductor increases on –
(A) Increasing Length
(B) Decreasing area of cross – section
(C) Increasing temperature (D) All of these

Ans. (D) **[SSC Stenographer Exam 2014]**

Exp: Resistance of conductor

$$R = \frac{\rho l}{A}$$

Where
ρ = Resistivity
l = Length of conductor
A = Area of cross section of conductor
According to above expression, Resistance is directly proportional to length and inversely proportional to cross-section area of conductor.

8. Which of the following rated electric bulb?
(A) Power and current
(B) Power and voltage
(C) Current and voltage
(D) Energy and current

Ans. (B) **[SSC MTS Exam, 2006]**

Exp: In an electric bulb power and voltage is mentioned. If it is rated 100 W – 250 V, it means by 250 voltage, 100 W power will be consumed.

9. Chemical Energy is converted into Electric Energy–
(A) Dynamo (B) Electric Fan
(C) Battery (D) Atom Bomb

Ans. (C) **[SSC CGL Exam, 2005]**

Exp: A battery converts chemical energy into electrical energy. Batteries contain electrolyte which allows flow of electric charge between anode and cathode.

10. Certain Substances looses their electrical resistance completely at super low temperature such substances are called.–
(A) Super conductor (B) Semi conductor
(C) Dielectric (D) Perfect conductor

Ans. (A) **[SSC CGL Exam, 2014]**

Exp: Super conductors loose their electrical resistance when cooled at very low temperature near absolute zero temperature.

11. The substance having infinite electric resistance are called –
(A) Conductor (B) Insulator
(C) Resistor (D) Electrolyte

Ans. (B) **[SSC CPO Exam, 2012]**

Exp: Insulators have very low conductivity near zero and have infinite resistance.

12. What is the conductivity of super conductor?
(A) Zero (B) Infinite
(C) Less (D) More

Ans. (B) **[SSC CHSL Exam, 2015]**

Exp: Super conductors are the materials which conducts electricity with almost no resistance. They have very high conductivity.

13. What is the resistance of an ideal voltmeter?
(A) Infinite (B) Zero
(C) High (D) Low

Ans. (A) **[SSC CHSL Exam 2015]**

Exp: An ideal voltmeter has infinite resistance. The current flow in ideal voltmeter is zero.

14. Magnetic keeper are the pieces of –
(A) Nickel (B) Cobalt
(C) Iron (D) Soft Iron

Ans. (D) **[SSC MTS Exam, 2013]**

Exp: Magnetic keepers are the pieces of soft iron.

15. Device used to convert A.C. into D.C. known as–
(A) Dynamo (B) Inductive coil
(C) Generator (D) Rectifier

Ans. (D) **[SSC MTS Exam, 2013]**

Exp: Rectifier is an electrical device that is used to convert Alternating current (AC) to Direct current (D.C.)

16. The Solids which conducts the electricity at high temperature but not at low temperature are called–
(A) Super conductor (B) Semiconductor
(C) Metallic conductor (D) Insulator

Ans. (B) **[SSC CGL Exam, 2013]**

Exp: Semi conductors are the materials which conducts electricity at high temperature. In semi conductors, conductivity increases with increase in temperature.

17. Which of the following is a conductor of electricity?
(A) Rubber (B) Pure water
(C) Salt water (D) Benzene

Ans. (C)

Exp: Salt water is the conductor of electricity because salt water are made up of sodium ions and Chloride ions.

18. The metal used in wires at domestic Level –
(A) Nickel (B) Aluminium
(C) Iron (D) Copper

Ans. (D) **[SSC Stenography Exam 2014]**

Exp: Copper is used in wires at domestic level because copper has high conductivity, high mechanical strength and is cost effective also.

19. Fuse wire used as a safety device in domestic electrical appliances is made up of metal having–
(A) Low resistance (B) Low melting point
(C) Low conductivity (D) Low specific gravity

Ans. (B) **[SSC Steno. 2011, SSC CHSL 2010]**

Exp: Fuse wire is made up of metal which has low melting point and high resistance.

20. For which of the following ohm's law is correctly applicable?
(A) Insulator (B) Semi conductor
(C) Conductor (D) Super conductor

Ans. (C) **[SSC CHSL Exam, 2013]**

Exp: According to ohm's law, electric current is directly proportional to the voltage applied to it and also inversely proportional to the resistance.

21. When number of turns in a coil are made thrice without any change in the length of coil, then what will be its self inductance?
(A) Three times (B) Nine times
(C) Six times (D) One-third

Ans. (B)

Exp: In a coil having length 'l', numbers of turns N and area of cross-section 'A'.

Self Inductance $L = \frac{\mu N^2 A}{l}$

If number of turns (N) = 3

$L \propto N^2$

Inductance becomes 9 times

22. If a wire of Resistance 'R' is melted and recast to half of its Length, then the new resistance of the wire will be–
(A) R/4 (B) R/2
(C) R (D) 2R

Ans. (A) **[SSC CHSL Exam, 2014]**

Exp: Resistance $R = \frac{\rho l}{A}$

When wire is melted and recast half to its length new length

$l' = l/2$

Volume will remain constant

$Al = A'l/2$

–A' (New area) = 2A

New Resistacne $R' = \frac{\rho l'}{A'} = \frac{\rho l/2}{2A} = \frac{\rho l}{4}$

$R' = \frac{R}{4}$

23. During electro refining, Pure Metal is collected at–
(A) Anode (B) Cathode
(C) Container (D) Electrolyte

Ans. (B) **[SSC CHSL Exam, 2013]**

Exp: Electro-refining – It is the process of refining a metal in which the impure metal is used as anode and refined metal is deposited on the cathode.

24. Which of the following is an electrolytic conductor–
(A) Iron (B) Gas carbon
(C) Copper Sulphate (D) Mercury

Ans. (C)

Exp: Copper sulphate solution is an non-electrolytic conductor Cu^{++} and SO_4^{--} ions are charge carriers.

25. Which of the following is best conductor of electricity?

(A) Copper (B) Iron
(C) Aluminium (D) Silver

Ans. (D) **[SSC MTS Exam, – 2011]**

Exp: Silver is the best conductor of heat and electricity. Decreasing order of conductivity is as follows: Silver > Copper > Aluminium > Iron.

26. During the conduction of current, conductor becomes–

(A) Positively charged (B) Negatively charged
(C) Electrically neutral
(D) Alternatively positively and negatively charged

Ans. (C) **[SSC CGL Exam, 2013]**

Exp: During the conduction of current, conductor becomes electrically neutral because the net charge in the conductor is zero.

27. Current carrying conductor is related to –

(A) Magnetic Field (B) Electric Field
(C) Electro Magnetic Field (D) Electrostatic Field

Ans. (A) **[SSC MTS Exam, – 2014]**

Exp: Current carrying conductor produces magnetic field.

28. A Conducting wire is –

(A) Positively Charged (B) Negatively Charged
(C) Neutral
(D) Charged depending upon the power of current

Ans. (C) **[SSC MTS 2013]**

Exp: Same as explained in Q. No. 26

29. The process of connecting of wires is called –

(A) Catenation (B) Combination
(C) Cohesion (D) Addition

Ans. (B) **[SSC CHSL Exam, 2014]**

Exp: Combination is the process which is used to connect the wires. It is of two types:
(1) Series Combination (2) Parallel Combination

30. In the resistance color code, the fourth band signifies–

(A) Tolerance level (B) Power of ten
(C) Total value to resistance
(D) The material of the resistor

Ans. (A) **[SSC CGL Exam, 2013]**

Exp: In the resistance color code, fourth band signifies tolerance level.

31. A piece of wire having Resistance 'R' is cut into 'n' equal parts and then connected into parallel combination what will be the effective Resistance of combination?

(A) nR (B) $\frac{R}{n}$
(C) $\frac{n}{R}$ (D) $\frac{R}{n^2}$

Ans. (D) **[SSC CHSL 2014]**

Exp: Resistance of given wire = R
After cutting into 'n' equal parts, then resistance of each part = $\frac{R}{n}$

$$\frac{1}{R'} = \frac{1}{R/n} + \frac{1}{R/n} + \frac{1}{R/n} \text{ ... n times}$$

$$\frac{1}{R'} = \frac{n}{R} + \frac{n}{R} \text{ ..... n times.}$$

$R' = R/n^2$

32. Water should not be used to extinguish fire caused by electricity, because –

(A) It may cause electrocution
(B) It may cause dissociation of water
(C) It may cause electric dissociation
(D) Fault may occour in wires

Ans. (A) **[SSC MTS Exam, – 2008]**

Exp: Because water is a good conductor of heat and it may cause electrocution. Electrocution is a phenomenon in which death is caused by electric shock.

33. Metal used for the manufacturing of Lightning conductor is –

(A) Iron (B) Aluminium
(C) Copper (D) Zinc

Ans. (C) **[SSC Sec off Exam 2006]**

Exp: Copper is used to manufacture lightning condutor. It is a metallic rod which is used to prevent building from ligtening.

34. When two semiconductors of P and N type are brought in contact, they form p-n Junction which acts like a/an–

(A) Conductor (B) Rectifier
(C) Amplifier (D) Oscillator

Ans. (B) **[SSC CHSL Exam, 2013]**

Exp: p-n junction acts like an rectifier. Rectifier converts alternating current into direct current.

35. Which of the following statements is incorrect regarding the resistance of a wire?

(A) It depends upon the material of wire
(B) It is proportional to the length of wire
(C) It is proportional to the area of cross-section of wire
(D) On increasing temperature resistance of metal wire increases

Ans. (C)

Exp: Resistance of conductor

$R = \frac{\rho l}{A}$

Where

ρ = Resistivity

l = Length of conductor

A= Area of cross section of conductor

According to above expression Resistance is directly proportional to length of conductor and inversely proportional to cross-section area of conductor.

36. We can find with the help of Galvanometer –
(A) Resistance (B) Energy
(C) Current (D) Temperature
Ans. (C) **[SSC MTS Exam, – 2008]**
Exp: Galvanometer is a device which is used to detect and measure the electric current.

37. Multimeter is used to measure the –
(A) Current (B) Voltage
(C) Resistance (D) All of these
Ans. (D) **[SSC Tax Asst. Exam, 2006]**
Exp: Multimeter is an instrument which is used to measure electric current, voltage and resistance.

38. In A.C. circuits A.C. meter measures –
(A) Mean value (B) Rms value
(C) Peak value (D) Root mean value
Ans. (B) **[SSC CHSL Exam, 2010]**
Exp: In A.C circuits AC meter is used to measure root mean square value.

39. Which of the following instrument is used to measure the electric current?
(A) Ammeter (B) Voltmeter
(C) Wattmeter (D) Anemometer
Ans. (A) **[SSC CHSL Exam, 2015]**
Exp: Ammeter is used to measure the electric current in a circuit. It can measure both alternating current and direct current.

40. S.I. Unit of electric charge is –
(A) Ampere (B) Coulomb
(C) ESU (D) Kelvin
Ans. (B) **[SSC CHSL Exam, 2010]**
Exp: The S.I. unit of electric charge is Coulomb.

41. Who discovered the battery?
(A) Faraday (B) Volta
(C) Maxwell (D) Roentgen
Ans. (B) **[SSC CHSL Exam, 2015]**
Exp: In 1799, Alessandro volta invented the battery. First true battery is known as voltaic pile.

42. What is the unit of electric power?
(A) Watt (B) Volt
(C) KWH (D) Ampere
Ans. (A) **[SSC CGL Exam, 2014]**
Exp: The SI unit of electric power is watt or joule per second. Electric power is known as rate of consumption of electric energy.

43. Alternating current is converted into direct current by using –
(A) Transformer (B) Dynamo
(C) Rectifier (D) Inverter
Ans. (C) **[SSC CPO Exam, 2007]**
Exp: Rectifier is a device which is used to convert alternating current into direct current.

44. Fleming Right Hand Rule is used to find the direction of–
(A) Alternating current (B) Direct current
(C) Induced current (D) Original current
Ans. (C) **[SSC CGL Exam, 2014]**
Exp: According to fleming's Right Hand Rule, keeping first finger, second finger and thumb of right hand at right angle to each other. First finger represents the direction of the line of force, the thumb points in the direction of motion and second finger points in the direction of induced current.

45. Instrument used to change the speed of electric fan –
(A) Amplifier (B) Regulator
(C) Switch (D) Rectifier
Ans. (B) **[SSC CPO Exam, 2009]**
Exp: Regulator is used to change the speed of the fan.

46. Best Liquid for the transformer core is–
(A) Stainless steel (B) Cast steel
(C) Hard steel (D) Soft iron
Ans. (D) **[SSC CHSL Exam, 2010]**
Exp: Best liquid for the transformer core is soft iron.

47. Transformer is used for –
(A) To increase the A.C. voltage
(B) To increase DC. Voltage
(C) To convert Electric Energy into heat energy
(D) To convert AC into DC.
Ans. (A) **[SSC CHSL Exam, 2012]**
Exp: Transformer is a device which is used to increase or decrease the alternating current voltage.

48. The filament of electric bulb is made up of–
(A) Copper (B) Nichrome
(C) Lead (D) Tungsten
Ans. (D) **[SSC FCI Exam, 2012]**
Exp: Filament of electric bulb is made up of tungsten. It has high melting point and great tensile strength.

49. For the filament of electric bulb tungsten is used because–
(A) It is a conductor (B) It is cheaper
(C) It is malleable
(D) Its melting point is very high
Ans. (D) **[SSC CPO Exam, 2005]**
Exp: Tungsten has very high melting point and great tensile strength. Due to these properties tungsten is used in filament of electric bulb.

50. What is filled inside an electric bulb?
(A) Nitrogen (B) Carbon dioxide
(C) Argon (D) Oxygen
Ans. (C) **[SSC FCI Exam, 2012]**
Exp: Inside an electric bulb noble gas argon is filled.

51. A fuse wire can be indentify due to the properties–
(A) High Resistivity and minimum melting point
(B) High Resistivity and high melting Point
(C) Minimum Resistivity and minimum melting point
(D) Minimum Resistivity and minimum melting point
Ans. (A) **[SSC CGL Exam, 2015]**
Exp: Fuse wire is made up of metal which has low melting point and high resistance.

52. Intensity of magnetic field is–

(A) Meter/volt (B) Meter/ampere
(C) Ampere/meter (D) Volt/ampere

Ans. (C) **[SSC LDC Exam, 2005]**

Exp: Intensity of magnetic field can be measured in ampere/meter or weber/meter^2 or Tesla.

53. An electrochemical cell which is used as a source of direct current at constant voltage under standard condition is called as–

(A) UPS (uninterrupted power supply)
(B) Battery
(C) Power transmitter (D) Generator

Ans. (B)

Exp: Battery is a device which is used to convert chemical energy into electrical energy. In these batteries electricity is generated by Redox reactions.

54. The device which is used to store the electric charge is called–

(A) Inductor (B) Capacitor
(C) Generator (D) Transistor

Ans. (B) **[SSC CGL Exam, 2006]**

Exp: Capacitor is used to store electric charge. Capacitor consists of two conductors seperated by insulators.

55. What is the name of the device which is used to record the electrical activity during Heart beat?

(A) Electrocardiogram (B) Electrocardiograph
(C) Stethoscope (D) Sphygnomanometer

Ans. (B) **[SSC Stenographer 2014]**

Exp: Electrocardiograph is a device which is used to record the heartbeat of a person. It is the graphical representation of electrical activity of heart

56. Which of the following element is used in a circuit to block the DC?

(A) Diode (B) Resistor
(C) Inductance (D) Capacitance

Ans. (D) **[SSC CPO 2008]**

Exp: Capacitance is used in a circuit to block the D.C current. It has the ability to store electrical energy.

57. If the length of a resistance wire increases, then its resistance –

(A) Increases (B) Decreases
(C) Remains unchanged
(D) All of these

Ans. (A) **[SSC CGL Exam, 2012]**

Exp: Resistance of conductor

$$R = \frac{\rho l}{A}$$

Where

ρ = Resistivity

l = Length of conductor

A = Area of cross section of conductor

According to above expression Resistance is directly proportional to length of conductor and inversely proportional to cross-section area of conductor.

58. If a spoon is to be electroplated with nickel the spoon is.

(A) Dipped in Nickel sulphate solution
(B) Made anode and pure nickel rod, the cathode
(C) Made cathode and pure nickel rod, the anode.
(D) Dry the spoon after plating Nickel sulphate

Ans. (C)

Exp: In electroplating a thin layer of metal is placed onto the surface of another metal. Process metal acts as cathode and thin layer of metal acts as anode.

59. If a coil is rotated in a magnetic field, then current is induced in the coil. This phenomenon is used in–

(A) For making Electro Magnet
(B) For Making Electric Motor
(C) For Making electric Generator
(D) For making electric watt meter

Ans. (C) **[SSC MTS Exam, – 2006]**

Exp: Electric Generator is based on the principle of Electromagnetic Induction. Faraday's law of Electromagnetic Induction states that whenever the magnetic flux linked with a circuit changes an induced emf is produced in it.

60. When a bar magnet is cut into two equal halves the pole strength of each piece–

(A) Becomes double (B) Becomes half
(C) Becomes zero (D) Remains the same

Ans. (D) **[SSC CPO Exam, 2011]**

Exp: When a magnet bar is cut into two equal halves, each part will act as individual magnet and both magnet will have both north pole and south pole

61. If a Magnet has third pole, then the third pole is called–

(A) Defective pole (B) Consequent pole
(C) Extra pole (D) Arbitrary pole

Ans. (B) **[SSC CPO Exam, 2008]**

Exp: If the magnet has three poles the third pole is known as consequent pole.

62. Instruments can be shielded from the outside magnetic effect by surrounding them with–

(A) Iron shield (B) Rubber shield
(C) Brass shield (D) Glass shield

Ans. (B) **[SSC CGL Exam, 2012]**

Exp: Rubber is used to shield the instruments from external magnetic field.

63. In electronics what comes under tank circuit?

(A) Resistance and Capacitor
(B) Resistance and Inductance
(C) Capacitor and Inductance
(D) Resistance, Capacitor and Inductance

Ans (C) **(SSC COMBINED GRADUATE 2002)**

Exp: A tank circuit consists of a inductor and a capacitor.

64. The substance which conducts current in the solid state is

(A) Diamond (B) Graphite
(C) Iodine (D) Sodium chloride

Ans (B) **(SSC CPO SI 2003)**

Exp: Graphite is a solid substance it conducts electricity in the solid state.

65. Good conductor of electricity is

(A) Dry air (B) Paper
(C) Kerosene (D) Graphite

Ans (D) **(SSC CPO SI 2004)**

Exp: Same as above

66. Tungsten is used for the manufacture of the filament of an electric bulb, because

(A) It is a good conductor (B) It is economical
(C) It is malleable
(D) It has a very high melting point

Ans (D) **(SSC CPO SI 2005)**

Exp: Same as explained in Q.No. 49

67. The device which converts AC to DC is

(A) Oscillator (B) Amplifier
(C) Rectifier (D) None of these

Ans (C) **(SSC TAX ASSISTANT 2005)**

Exp: Rectifier is an electrical device that is used to convert Alternating current (AC) to Direct current (D.C.)

68. When the main switch of the house is put off it disconnects the

(A) Live wire only
(B) Live wire and the earth wire
(C) Live wire and the neutral wire
(D) Earth wire and the neutral wire

Ans (B) **(SSC TAX ASSISTANT 2005)**

Exp: Live wire is disconnected from the neutral wire when the main switch of the house is put off

69. Magnetism in materials is due to

(A) Electrons at rest
(B) Circular motion of electrons
(C) Protons at rest
(D) All neutrons at rest

Ans (B) **(SSC CPO SI 2006)**

Exp: Magnetism is caused due to circular motion of charged particles.

70. The fuse in our domestic electric circuit melts when there is a high rise in

(A) Inductance (B) Current
(C) Resistance (D) Capacitance

Ans (B) **(SSC TAX ASSISTANT 2009)**

Exp: The amount of heat produced is proportional to the square of current flowing in a circuit. If there is high rise in current amount of heat produced in circuit will increase and fuse wire will melt due to low melting point of fuse wire.

71. The device used to change the speed of an electric fan is

(A) Ampliffer (B) Regulator
(C) Switch (D) Rectifier

Ans (B) **(SSC CPO SI 2009)**

Exp: Regulator is used to change the speed of the fan.

72. A transformer works on the principle of

(A) Self induction (B) Mutual induction
(C) Generator (D) Inverter

Ans (B) **(SSC SAS 2010)**

Exp: Transformer works on the principle of mutual induction between two or more windings Transformer is used to increase or decrease the alternating current voltage.

73. Pure water is bad conductor of electricity because it is

(A) Feebly ionized (B) Not volatile
(C) A very good solvent (D) A non-polar solvent

Ans (D) **(FCI ASSISTANT GRADE-III 2012)**

Exp: Pure water does not contain any salts due to this pure water is bad conductor of electricity.

74. The nature of fuse wire is

(A) High resistance and low melting point.
(B) High resistance and high melting point.
(C) Low resistance and high melting point.
(D) Low resistance and low melting point.

Ans. (A) **(FCI ASSISTANT GRADE-III 2012)**

Exp: Same as explained in Q. No. 51

75. Electric current in a metal wire is due to the flow of-

(A) Electrons (B) Protons
(C) Ions (D) Holes

Ans (A) **(SSC COMBINED MATRIC LEVEL 1999)**

Exp: Due to movement of free electrons electric current flows in a metal wire.

76. Which of the following is a good conductor of heat but a bad conductor of electricity?

(A) Celluloid (B) Rubber
(C) Asbestos (D) Mica

Ans. (D) **(SSC COMBINED MATRIC LEVEL 2002)**

Exp: Mica is good conductor of heat and bad conductor of electricity.

77. Which of the following is arranged in order of decreasing conductivity?

(A) Copper, Aluminium, Steel, Silver
(B) Aluminium, Silver, Copper, Steel
(C) Copper, Silver, Aluminium,Steel
(D) Silver, Copper, Aluminium, Steel

Ans. (D) **(SSC COMBINED MATRIC LEVLE 2002)**

Exp: Same as explained in Q. No. 25

78. If a copper wire is increased to double its length, its resistance will become

(A) Four times (B) One-fourth
(C) Double (D) Half

Ans. (C) **(SSC COMBINED MATRIC LEVEL 2002)**

Exp: Resistance, $R = \frac{\rho l}{A}$

When length is doubled $l' = 2l$ as resistance is directly proportional to length, resistance will also become double.

79. A device which is used to limit the current in an electrical circuit is called a

(A) Grid (B) Fuse
(C) Hub (D) Conductor

Ans. (B)

Exp: Fuse wire is used to limit the flow of electrical current in a circuit. Fuse wire has very low melting point and high resistance.

80. The earth-wire of a cable is connected to

(A) The outer metallic body of the appliance
(B) The fuse of the appliance
(C) The filament of the appliance
(D) Short circuit of the appliance

Ans. (B) **(SSC COMBINED MATRIC LEVEL PRE. 2006)**

Exp: The earth wire is connected to the fuse wire of appliance to prevent the electric shock making the appliance safe

81. The metal whose electrical conductivity is more, is

(A) Copper (B) Aluminium
(C) Silver (D) Lead

Ans. (C)

Exp: Same as explained in Q. No. 25

82. Moving electric charge produces:

(A) Magnetic field (B) Sound waves
(C) Light rays (D) Heat waves

Ans. (A) **(SSC HIGHER SECONDARY LEVEL 2000)**

Exp: Both magnetic field and electric field is produced due to moving electric charge.

83. Safety fuse wire used in domestic electrical appliances is made of metal of low

(A) Resistance (B) Melting point
(C) Specific gravity (D) Conductance

Ans. (B) **(SSC STENOGRAPHER GRADE 2011)**

Exp: Same as explained in Q. No. 51

84. A fuse wire is made of:

(A) An alloy of tin and copper
(B) An alloy of tin and lead
(C) An alloy of tin and aluminium
(D) An alloy of nickel and chrominum

Ans. (B) **(SSC 10+2, DEO & LDC 2011)**

Exp: Fuse wire is made up of an alloy of Tin and Lead. It is used to limit the flow of electric current in as circuit.

85. A transformer works with

(A) Alternating current only
(B) Direct current only
(C) Both AC and DC (D) Any signal

Ans. (A) **(SSC (10+2) , DEO & LDC 2011)**

Exp: Transformer works with alternating current only. It does not work with direct current

86. Which of the following is a good conductor of heat

(A) Mica (B) Asbestos
(C) Celluloid (D) Paraffin wax

Ans. (A) **(SSC (10+2), DEO, LDC 2012)**

Exp: Mica is good conductor of heat and bad conductor of electricity.

87. For which of the following substances, the resistance decreases with increases in temperature?

(A) Pure silicon (B) Copper
(C) Nichrome (D) Platinum

Ans. (C) **(SSC (10+2), DEO & LDC 2012)**

Exp: Nichrome wire heats up when electricity is applied on it and its resistance decreases with increase in temperature.

88. Indicate the false statement about the resistance of wire

(A) It depends on material of wire
(B) It is directly proportional to the length of wire
(C) It is directly proportional to the area of cross-section of wire
(D) Resistance of metallic wire increases with increase in temperature

Ans. (C) **(SSC (10+2), DEO & LDC 2012)**

Exp: Resistance $R = \frac{\rho l}{A}$

Resistance is directly proportional to length of wire and inversely proportional to its cross sectional area.

89. 'Farad' is the unit of:

(A) Capacitance (B) Inductance
(C) Resistance (D) Conductance

Ans. (A) **(SSC GRADUATE LEVEL TIER-I 2013)**

Exp: The SI unit of capacitance is Farad. It is named after English physicist Michael Faraday

90. Ohm's law is valid in case of

(A) Semiconductor (B) Conductor
(C) Superconductor (D) Insulator

Ans. (B) **(SSC (10+2) LEVEL DEO & LDC 2013)**

Exp: Ohm's law is valid for conductors. According to ohm's law electric current is proportional to voltage and inversely proportional to resistance

91. A current carrying conductor is associated with

(A) A magnetic field (B) An electric field
(C) An electro-magnetic field
(D) An electrostatic field

Ans. (A)

Exp: A current carrying conductor produces a magnetic field.

92. Super conductors are substances that

(A) Offer minimum resistance to flow of electric current
(B) Conduct electricity at low temperature
(C) Conduct electricity at high temperature
(D) Offer high resistance to the flow of electric current

Ans. (A) **(SSC CGL TIER-I 2014)**

Exp: Super conductors are the materials which conducts electricity with almost no resistance. They have very high conductivity.

93. In a conductor

(A) There is no conduction band

(B) The forbidden energy gap is very wide

(C) The forbidden energy gap is very narrow

(D) The valence band and the conduction band overlap each other

Ans. (D) **(SSC CGL TIER-I 2013, 14)**

Exp: In a conductor, the valence band and the condition band overlap eachother.

94. A Fuse wire is characterised by

(A) High resistance and low melting point

(B) High resistance and high melting point

(C) Low resistance and high melting point

(D) Low resistance and low melting point

Ans. (A) **(SSC CGL TIER-I 2015)**

Exp: Same as explained in Q. No. 19

95. Unit of resistance is:

(A) Volt^2×ampere (B) Volt/ampere

(C) Ampere/volt (D) Volt × ampere

Ans. (D) **(SSC CHSL (10+2) LDC, DEO & PA/SA 2015)**

Exp: The SI unit of resistance is ohm which is equal to volt × ampere.

96. S.I. unit of magnetic flux is

(A) Weber (B) Weber/m

(C) Weber/m^2 (D) Weber-m^2

Ans. (C) **(SSC CHSL (10+2) LDC, DEO & PA/SA 2015)**

Exp: The SI unit of magnetic flux is tesla which is equivalent to Webers per square meter

97. To prevent damage from lightning, lightning conductors are used on tall structures. The lightning conductor

(A) Should be made of a good conductor but can be of any shape

(B) Should be in the form of a vertical rod

(C) Can be of any shape

(D) Should be made of a good conductor like copper with sharp-pointed edges

Ans. (D) **(SSC (10+2) STENOGRAPHER 2016)**

Exp: The lightning conductor should be made of a good conductor like copper with sharp-pointed edges.

98. The magnitude of current flowing between two end points of a conductor is proportional to the potential difference between them and is called as:

(A) Avogadro's law (B) Rault's law

(C) Ohms law (D) Faraday's law

Ans. (C) **(SSC CAPFs (CPO) SI & ASI 2016)**

Exp: According to ohm's law, the current flowing between two points of a conductor is directly proportional to the potential difference between them.

99. Which of the following was the first theory of super conductivity?

(A) Ginzburg landau theory

(B) London theory

(C) Resonating valence bond theory

(D) Quantum field theory

Ans. (A) **(SSC CPO SI, ASI 2016)**

Exp: First theory of super conductivity was given by Ginzburg landau.

100. A galvanometer can be converted into a voltmeter by connecting with it a

(A) High resistance in parallel

(B) Low resistance on parallel

(C) High resistance on series

(D) Low resistance in series

Ans. (C) **(SSC CGL TIER-I (CBE) 2016)**

Exp: Galvanometer can be converted into voltmeter by connecting it to high resistance in series.

101. Which one of the following is an ohmic conductor?

(A) Germanium (B) Silicon

(C) Carbon (D) Silver

Ans. (D) **(SSC CGL TIER-I (CBE) 2016)**

Exp: Metals are ohmic conductors. All semi conductros and insulators are non ohmic substances.

102. Flemings "Left hand Rule" is associated with the effect of

(A) Electric field on current

(B) Magnetic field on magnet

(C) Electric field on magnet

(D) Magnetic Field on current

Ans. (D) **(SSC CGL TIER-I (CBE) 2016)**

Exp: According to Fleming's left hand rule if a current carrying conductor is placed inside a magnetic field, a force will act on a conductor and the direction of the force will be perpendicular to the both the directions of current and magnetic field.

103. Electromagnet is constructed with which of the following?

(A) Steel (B) Soft Iron

(C) Aluminium (D) Nickel

Ans. (B) **(SSC CGL TIER-I (CBE) 2016)**

Exp: Electromagnet is made up of soft iron.

104. Copper wires are generally used for electrical power transmission instead of iron wire because:

(A) Copper is cheaper than iron

(B) Copper is lighter than iron

(C) Copper is a better conductor of electricity than iron

(D) Copper can take higher power than iron

Ans. (C) **(SSC CGL TIER-I (CBE) 2016)**

Exp: Copper is used in wires at domestic level because Copper has high conductivity, high mechanical strength and is cost effective also.

105. The fuse in an electric circuit is connected in

(A) Series with neutral (B) Parallel to live
(C) Parallel to neutral (D) Series with live

Ans. (D) **(SSC MULTI-TASKING STAFF 2017)**

Exp: Fuse electric circuit is always connected in series with live wire

106. What is the unit of the physical quantity "Magnetic field stregth"?

(A) Joule per meter (B) Newton per meter
(C) Kelvin per meter (D) Ampere per meter

Ans. (D) **(SSC CHSL Tier-I 2016)**

Exp: The S.I unit of magnetic field strength is ampere per meter.

107. Which physical quantity is measured in 'siemens'?

(A) Electric potential (B) Electrical conductance
(C) Magnetic flux (D) Refractive index

Ans. (B) **(SSC CHSL Tier-I 2016)**

Exp: Siemens is the SI unit of electrical conductance. Electrical conductance determines how easily a current can flow through a conductor.

108. _____ states that the total current entering a junction is equal to the total current leaving the junction.

(A) Lenz's Law (B) Hooke's Law
(C) Ohm's Law (D) Kirchhoff's First Law

Ans. (D) **(SSC CHSL Tier-I 2016)**

Exp: Kirchhoff's first law is also known as Kirchhoff's junction law According to this law the total current entering a junction is equal to the total current leaving the junction.

109. _____states that the induced e.m.f. is directly proportional to the rate of change of magnetic flux linkage or rate of cutting of magnetic flux linkage.

(A) Lenz's Law (B) Hooke's Law
(C) Ohm's Law (D) Faraday's Law

Ans. (D) **(SSC CHSL Tier-I 2016)**

Exp: Faraday's law of Electromagnetic Induction states that whenever the magnetic flux linked with a circuit changes an induced emf is produced in it.

110. What is the unit of the physical quantity "Capacitance"?

(A) Weber (B) Farad
(C) Tesla (D) Ohm

Ans. (B) **(SSC CHSL Tier-I 2016)**

Exp: The SI unit of capacitance is Farad. It is named after English physicist Michael Faraday

111. What is the unit of the physical quantity "Inductance"?

(A) Weber (B) Farad
(C) Henry (D) Tesla

Ans. (C) **(SSC CHSL Tier-I 2016)**

Exp: The S.I unit of inductance is Henry. It is equivalent to one kg metre squared per second a squared per ampere square ($kgm^2s^{-2}A^{-2}$).

112. Unit of impedance is _____.

(A) Ohm (B) Henry
(C) Tesla (D) Hertz

Ans. (A) **(SSC CHSL Tier-I 2016)**

Exp: Impedance is the equal to the square root of the sum of squares of resistance and reactance of electric circuit. It is denoted by 'Z' and its SI unit is Ohm.

113. Where do the electrical charges reside in a charged conductor?

(A) At the core (B) Throughout the body
(C) Depended upon the nature of the body
(D) On surface of the body

Ans. (D) **(SSC CHSL Tier-I 2016)**

Exp: In charged conductors, electrical charges reside on the surface of conductor because conductors have free electrons and when it is placed in electric field, electrons move to the outer surface of conductor.

114. If electric resistance is to be decreased, then the number of resistances should be connected in___

(A) Series (B) Parallel
(C) Mixed arrangement (D) None of these

Ans. (B) **(SSC CHSL Tier-I 2016)**

Exp: In parallel combination, inverse of total resistance is equal to the sum of the inverse of each individual resistance

$$\frac{1}{R} = \frac{1}{R^1} + \frac{1}{R^2} + \frac{1}{R^3}$$

= + +

So, if the resistance is to be decreased, than resistances should be connected in parallel.

115. The material used in electric heater is

(A) Tungsten (B) Nichrome
(C) Brass (D) Steel

Ans. (B) **(SSC CHSL Tier-I 2016)**

Exp: Nichrome is used in electric heaters and furnaces to make heating elements.

116. Which one among the following components is used as an amplifying device ?

(A) Transformer (B) Diode
(C) Capacitor (D) Transistor

Ans. (D) **(SSC CHSL Tier-I 2016)**

Exp: Transistors are used as an amplifying agent. They can also be used as switching device.

117. The complete form of 'IC' in electronics is

(A) Internal circuit (B) Independent circuit
(C) Integrated circuit (D) Inbuilt circuit

Ans. (C) **(SSC CHSL Tier-I 2016)**

Exp: The full form of IC in electronics is Integrated circuit. It is also called as chip or microchip. It contains resistors, capacitors and transistors etc.

118. Transformer is a device to convert

(A) D.C. to A.C.
(B) Low voltage D.C. into high voltage D.C.
(C) Low voltage A.C. into high voltage A.C.
(D) Mechanical energy into Electrical energy.

Ans. (C) **(SSC CHSL Tier-I 2016)**

Exp: Transformer is used to increase or decrease the alternating current voltage.

119. Which one among the following components can not be developed within a "integrated circuit"?

(A) Diode (B) Triode
(C) Transformer (D) Transistor

Ans. (C) **(SSC CHSL Tier-I 2016)**

Exp: Integrated circuit is device which consists of resistors, transistors, capacitors etc. Hence, transformer cannot be developed within a "Integrated circuit".

120. Maxwell is the unit of which one of the following?

(a) Magnetic flux (b) Permeability
(c) Magnetic susceptibility
(d) Intensity of magnetization

Ans. (A) **(SSC CPO 2017)**

Exp: Maxwell is the unit of Magnetic Flux. The unit name honours James clerk Maxwell who presented the unified Theory of Electromagnetism.

121. The force of attraction between an electron revolving around the nucleus and the nucleus is a _____ force?

(a) Mechanical (b) Electric
(c) Magnetic (d) Gravitational

Ans. (B) **(SSC CPO 2017)**

Exp: According to Coulomb's Law, the value of the electrostatic force of interaction between two charges is directly proportional to the scalar multiplication of the charges, and inversely proportional to the square of the distance between them.

122. Which of the following elements has the highest electrical conductivity?

(a) Copper (b) Silver
(c) Zinc (d) Lead

Ans. (B) **(SSC CPO 2017)**

Exp: Electrical Conductivity is the measure of the amount of electrical current a material can carry or it's ability to carry a current. Electrical Conductivity is denoted by the symbol (σ) and has S.I. units Siemens per meter (s/m).
Increasing order of conductivity as follows-
Lead < Zinc < Copper < Silver.

123. What is measured by Ammeter?

(a) Voltage (b) Electric Current
(c) Resistance (d) Conductance

Ans. (B) **(SSC CPO 2017)**

Exp: An Ammeter is a measuring instrument used to measure the electric current in a circuit. Electric currents are measured in Amperes (A).

124. When resistors are connected in series, then net resistance _____.

(a) Increases (b) Decreases
(c) Remains same (d) None of these

Ans. (A) **(SSC CPO 2017)**

Exp: When two or more resistors are connected together end-to-end in a single branch, the resistors are said to be connected together in series. Resistors in series carry the same current, but the voltage across the individual resistor is not same, hence net resistance increases.

125. What is the unit of resistance?

(a) Ohm (b) Farad
(c) Henry (d) Weber

Ans. (A) **(SSC CGL 2017)**

Exp: The S.I. unit of resistance is ohm ( ) or volt/Ampere. 1 ohm is defined as an electrical resistance between two points of a conductor when a constant potential difference of one volt is applied to points, produces a current of 1 ampere in the conductor.

126. What is the SI unit of electric current?

(a) Newton (b) Joule
(c) Ampere (d) Watt

Ans. (C) **(SSC CGL 2017)**

Exp: The S.I. unit of electric current is Ampere. It is denoted by 'A'. 1 ampere is defined as the flow of electric charge across a surface at the rate of one coulomb per second.

127. Electric Motor converts _____ energy to mechanical energy

(a) Sound (b) Mechanical
(c) Chemical (d) Electrical

Ans. (D) **(SSC CGL 2017)**

Exp: An electric motor is an electrical machine that converts electrical energy into mechanical energy. Working of an electric motor mainly depends upon the interaction of magnetic field with current.

128. The force exerted by a magnet is an example of _____.

(a) Non-contact force (b) Muscular force
(c) Contact force (d) Electrostatic force

Ans. (A) **(SSC CGL 2017)**

Exp: The force which acts on object without coming physically in contact with it is called non contact force. For example, the force exerted by a magnet.

129. The coil wire in the electric room heater or electric cooking heater is called _____.

(a) Circuit (b) Element
(c) Filament (d) Cells

Ans. (B) **(SSC CGL 2017)**

Exp: The element or heating elements converts electricity into heat through the process of Joule heating. Electric current passing through the elements encounters resistance, resulting into heating of the element.

Chapter-10

Miscellaneous

MODERN PHYSICS

1. NOT Gate can be operated by–

(A) Single diode (B) Two diodes
(C) Single Resistor (D) Single Transistor

Ans. (D) **(SSC CGL 2013)**

Exp: NOT gate is a logic gate and referred as an inverter. It can be operated by only one transistor.

2. Silicon is a–

(A) Semiconductor (B) Insulator
(C) Conductor (D) Electric Resistor

Ans. (A) **(SSC MTS 2013)**

Exp: Semiconductors have conductivity between conductors and insulators both silicon and Germanium can be used as semi-conductor.

3. What will be the effect on the resistance of a semiconductor on increasing its temperature?

(A) Increase (B) Decrease
(C) Unchanged (D) Increase-decrease

Ans. (B) **(SSC MTS 2006)**

Exp: On increasing the temperature of semi conductor, its resistivity decreases due to increase in free valance electrons.

4. For which one of the following, 'Diodes' are generally used for?

(A) Rectification (B) Amplification
(C) Modulation (D) Filtration

Ans. (A) **(SSC CGL Tier-I 2016)**

Exp: Generally diodes can be used as rectifiers. They allow current to pass in one direction but block in another direction.

5. What is the unit of the physical quantity, (Radioactive) Activity?

(A) Radian (B) Becquerel
(C) Steradian (D) Kelvin

Ans. (B) **(SSC CHSL Tier-I 2016)**

Exp: It refers to the number of decays per second from a sample of radioactive nuclei and is measured in becquerel.

6. Which of the following is used for regulated electric supply?

(A) Zener diode (B) Junction diode
(C) Gunn diode (D) Tunnel diode

Ans. (A) **(SSC COMBINED GRADUATE 2002)**

Exp: Zener diode is a silicon semiconductor which is used to regulate the electric supply. It allows current to flow in forward direction.

7. Radio activity is due to

(A) Unstable nucleus (B) Stable nucleus
(C) Stable electronic configuration
(D) On Stable electronic configuration

Ans. (A) **(SSC COMBINED MATRIC LEVEL PRE. 2002)**

Exp: Radioactive substances have unstable nuclei. To become stable it emits particles such as alpha, beta particles.

8. The width of depletion layer of a p-n junction

(A) Decreases with light doping
(B) Increases with heavy doping
(C) Is independent of applied voltage
(D) Is increased under reverse bias

Ans. (D) **(SSC CHSL 2010)**

Exp: The width of p-n junction decreases under reverse bias as more electrons get free creating void pairs.

9. Curie is an unit of

(A) Radioactivity (B) Energy of Gamma rays
(C) Intensity of Gamma rays
(D) Work function

Ans. (A) **(SSC CGL TIER-I (CBE) 2016)**

Exp: Curie is the SI unit of Radioactivity. 1 curie is equal to 3.7×10^{10} decays per second.

10. Which one among the following components is used as an amplifying device?

(A) Transformer (B) Diode
(C) Capacitor (D) Transistor

Ans. (D) **(SSC CGL TIER-I (CBE) 2016)**

Exp: Transistor is an amplifying device. It can also be used to switch electronic signals.

11. Where is a transistor most likely to be found?

(A) Wrist watch (B) Fuse
(C) Hearing aid (D) Fluorescent lamp

Ans. (C) **(SSC CGL TIER-I (CBE) 2016)**

Exp: Due to its small size and low power, transistor can be used in hearing aid. Transistors have replaced the requirement of batteries in hearing aids. Also they help in amplification of sound.

12. Which of the following is widely used in making semiconductor chips?

(A) Radium (B) Sodium
(C) Germanium (D) Sulphur

Ans. (C) **(SSC CPO 2017)**

Exp: Germanium is a semiconductor and it is widely used in making semiconductor chips. The pure element was commonly doped with arsenic, gallium or other elements and used as a transistor in thousands of electronic applications.

Instrument

13. Instrument used to measure the wind speed is:

(A) Altimeter (B) Anemometer
(C) Chronometer (D) Dogometer

Ans. (B) **(SSC CPO 2003, Sec. Off. 2006)**

Exp: Anemometer is an instrument which is used to measure the speed of the wind.

14. Anemometer is used to measure :

(A) Direction of wind (B) Speed of wind
(C) Pressure (D) Speed of wind and time

Ans. (B) **(SSC DEO 2008)**

Exp: Same as above

15. An instrument used to measure the density of milk is :

(A) Glactometer (B) Lactometer
(C) Calciometer (D) Polarimeter

Ans. (B) **(SSC CHSL Exam, 2014)**

Exp: Lactometer is used to measure the density of milk.

16. Purity of Milk is measured by :

(A) Hydrometer (B) Lactometer
(C) Thermometer (D) Polarimeter

Ans. (B) **(SSC MTS Exam, 2014)**

Exp: Hydrometer - Used to measure specific gravity of liquids.
Lactometer – Used to measure purity of Milk
Thermometer - Used to measure the temperature
Polarimeter - Used to measure the angle of rotation caused by polarized light.

17. The insturment for measuring intensity of earthquakes is called

(A) Ediograph (B) Pantagraph
(C) Ergograph (D) Seismograph

Ans. (D) **(SSC Tax Assistant 2006)**

Exp: Seismograph is an instrument used to detect seismic waves. Earthquakes are caused by propagation of seismic waves.

18. Bolometer is used to measure.

(A) Frequency (B) Temperature
(C) Velocity (D) Wavelength

Ans. (A) **(SSC Tax Ass. In. Tax - 2009)**

Exp: Bolometer is used to measure the power of incident electromagnetic radiation. With the power one can determine frequency.

19. The instrument used to see the distant objects on the Earth is

(A) Terrestrial telescope
(B) Astronomical telescope
(C) compound microscope
(D) Simple microscope

Ans. (A) **(SSC I.T.C- 20009)**

Exp: Terrestrial telescope is used to see the distant objects on earth.

20. An instrument used to measure humidity is :

(A) Anemometer
(B) Hygrometer
(C) Thermometer
(D) Pyrheliometer

Ans. (B) **(SSC CHSL 2011)**

Exp: Anemometer - Used to measure the speed of wind
Hygrometer - Used to measure humidity
Thermometer - Used to measure temperature
Pyrheliometer - Used to measure direct beam of solar irradiance.

21. An instrument that records earthquakes is

(A) Ergograph (B) Ediograph
(C) Thermograph (D) Seismograph

Ans. (D) **(SSC Constable (GD) 2012)**

Exp: Seismograph is an instrument used to detect seismic waves. Earthquakes are caused by Propagation of seismic waves.

22. Hydroscope is an instrument that shows changes in :

(A) Sound under water (B) Atmospheric hunidity
(C) Density of liquid (D) Elevation of land

Ans. (A) **(SSC CAPFs (CPO) SI & ASI, - 2016)**

Exp: Hydroscope is used to see below the surface of water.

23. Sextant is an instrument used in which of the following?

(A) Gynaecology (B) Navigation
(C) Birth control (D) Medical treatment

Ans. (B) **(SSC CGL Tier-I 2016)**

Exp: Sextant is an instrument used for measuring the angular distances between objects and used in navigation.

24. Device used for the detection and measurement of all types of radiation (Alpha, Beta and Gamma)

(A) Geiger counter (B) Polarimeter
(C) Calorimeter (D) Radiometer

Ans. (A) **(SSC CHSL Tier-I 2016)**

Exp: Geiger counter is used to measure and detect the radiation of all types (Alpha, Beta and Gamma)

25. Instrument for measuring time is called _____ .

(A) Diagometer (B) Anemometer
(C) Durometer (D) Chronometer

Ans. (D) **(SSC CHSL Tier-I 2016)**

Exp: Chronometer - Used to measure time
Anemometer - Used to measure the wind speed
Diagometer - It is a sort of electroscope
Durometer - Used for testing the hardness of various plastics and rubber.

26. Meter in a vehicle that calculates distance covered by the vehicle is called _____.

(A) Speedometer (B) Odometer
(C) Thermometer (D) Kilometre

Ans. (B) **(SSC CGL 2017)**

Exp: An odometer is an instrument for measuring the distance travelled by wheeled vehicle, such as car or bicycle etc.

Inventions & Discoveries

27. Who Invented Neon Lamp?

(A) Vint Cerf (B) David Chaum
(C) Georges Claude (D) Josephine Cochrane

Ans. (C) **(SSC CHSL Tier-I 2016)**

Exp: In 1902, Georges Claude, invented the Neon lamp. Georges Claude was a French chemical engineer.

28. Who Invented water turbine?

(A) Enrico Fermi (B) Adolf Gaston Eugen Fick
(C) Sandford Fleming (D) Benoit Fourneyron

Ans. (D) **(SSC CHSL Tier-I 2016)**

Exp: Benoit Fourneyron, in 1826 developed water turbine.

29. Who Invented Electric Stove?

(A) Lloyd Groff Copeman (B) Bartolomeo Cristofori
(C) Leonardo da Vinci (D) Philip Diehl

Ans. (A) **(SSC CHSL Tier-I 2016)**

Exp: In 1892, Lloyd Groff Copeman invented electric stove. Electric stove converts electricity into heat.

30. Electric tram was invented by?

(A) Fyodor Pirotsky (B) Arthur Pitney
(C) Firtz Pfleumer (D) Stephen Perry

Ans. (A) **(SSC CHSL Tier-I 2016)**

Exp: Electric tram was invented by Fyodor Pirotsky in 1880. A tram is a type of train which is normally powered by electricity.

31. Electric chair was invented by

(A) Alfred P. Southwich (B) Isaac Singer
(C) Murasaki Shikibu (D) Hanaoka Seish?

Ans. (A) **(SSC CHSL Tier-I 2016)**

Exp: In 1881, Alfred. P. South wick invented electric chair. Electric chair is used in USA as an option for execution.

32. Who invented Rocket?

(A) Rich K Goyle (B) E M Forster
(C) Robert Goddard (D) James Anderson

Ans. (C) **(SSC CHSL Tier-I 2016)**

Exp: In 1926, American Robert Goddard invented rocket. A Rocket is a aircraft which obtains thrust from its engine.

33. Who invented the contact lens?

(A) Enrico Fermi
(B) Adolf Gaston Eugen Fick
(C) Sandford Fleming
(D) Benoit Fourneyron

Ans. (B) **(SSC CHSL 2016)**

Exp: German ophthalmologist Adolf Gaston Eugene Fick invented contact lens in 1888.

34. Who established the foundations of the Quantum theory?

(A) Max Planck (B) Mark Nicholas
(C) AIbert Einstein (D) AIfred Hitchcock

Ans. (A) **(SSC CHSL Tier-I 2016)**

Exp: Max Planck propounded the theory of Quantum mechanics.

35. Who Invented the nuclear reactor?

(A) Enrico Fermi
(B) Adolf Gaston Eugen Fick
(C) Sandford Fleming
(D) Benoit Fourneyron

Ans. (A) **(SSC CHSL Tier-I 2016)**

Exp: The first patent on nuclear reactor was published by 'Enrico Fermi' in 1955. Nuclear reactors are used to generate power.

36. Who invented the Lightning Rod in 1749?

(A) Benjamin Franklin (B) Nikola Tesla
(C) Eli Whitney (D) George Washington

Ans. (A) **(SSC CHSL Tier-I 2016)**

Exp: In 1749, heightening rod was invented by Benjamin franklin. A lightening rod is a building safety device used for preventing the buildings from lightening.

37. Who invented the vacuum pump?

(A) Otto von Guericke
(B) Cai Lun
(C) Melitta Bentz
(D) William Henry Fox Talbot

Ans. (A) **(SSC CGL 2017)**

Exp: The vacuum pump was invented by Otto von Guericke (1602-1686) in the series of experiments on the production and effects of a vacuum.

38. Who discovered television?

(A) Michael Faraday (B) Joseph Henry
(C) Abbe Caselli (D) John Baird

Ans. (D) **(SSC CGL 2017)**

Exp: John Baird discovered television in 1925.

39. Who invented Dynamite?

(A) J B Dunlop (B) Alfred Nobel
(C) James Simons (D) Peter Hargreaves

Ans. (B) **(SSC CGL 2017)**

Exp: Dynamite is an explosive made of nitroglycerin, sorbents (such as powdered shells/clay) and stabilizers. It was invented by swedish chemist and engineer Alfred Nobel in 1867.

40. Which of the following was invented by Sir Humphry Davy?

(A) Safety Pin (B) Steam Engine
(C) Safety Lamp (D) X-Rays

Ans. (C) **(SSC CGL 2017)**

Exp: Safety lamp (also known as Davy Lamp) was invented by sir Humphry Davy in 1815. It consists of a wick lamp with the flame enclosed into a mesh screen.

41. Who invented Pentium Chip?

(A) C. Kumar Patel (B) Tom Gunter
(C) Vince Emery (D) Vinod Dham

Ans. (D) **(SSC CGL 2017)**

Exp: Vinod Dham invented Pentium Chip. He is popularly known as 'Father of the Pentium Chip' for his contribution to the development of the highly successful Pentium processor of Intel Co.

42. Who developed the theory of relativity?
(A) Issac Newton (B) Charles Darwin
(C) Marie Curie (D) Albert Einstein
Ans. (D) **(SSC CGL 2017)**
Exp: The theory of relativity was developed by Albert Einstein in 1905. The theory of relativity is also known as 'Special Theory of Relativity'.

43. Who invented radar?
(A) Fred Morrison
(B) A. H. Taylor and Leo C. Young
(C) Van Tassel (D) W. K. Roentgen
Ans. (B) **(SSC CGL 2017)**
Exp: A.H. Taylor and Leo C. Young invented Radar in 1937.

44. Who discovered the colour photography?
(A) Robert Noyce (B) Enrico Fermi
(C) John Logie Baird (D) James Clerk Maxwell
Ans. (D) **(SSC CGL 2017)**
Exp: The colour photography was discovered by James Clerk Maxwell in 1855. The first demonstration of colour photography by three colour method was suggested by him in 1855.

45. Who invented the electric tram?
(A) James Cook (B) William Harvey
(C) Fyodor Pirotsky (D) Robert Boyles
Ans. (C) **(SSC CGL 2017)**
Exp: Electric tram was invented by Fyodor Pirotsky in 1880. The world's first electric tram line was operated in sestroretsk near saint petersburg, Russia.

46. Who discovered Uranus?
(A) Sir Isaac Newton
(B) William Henry Fox Talbot
(C) William Herschel (D) Nicolaus Copernicus
Ans. (C) **(SSC CGL 2017)**
Exp: The planet Uranus was discovered by William Herschel on 13th march, 1781.

47. Who invented Space Pen?
(A) Paul C. Fisher (B) Rudolf Diesel
(C) Wright Brothers (D) Alexander Fleming
Ans. (A) **(SSC CGL 2017)**
Exp: The space pen was invented by Paul C. Fisher. The space pen (also known as fisher space pen) is a ball point pen which works with thixotropic ink and a pressurized ink cartridge. It can write on almost any substance ranging from butter to steel.It is also known as zero gravity pen.

48. Who discovered Photon?
(A) George Crum (B) Albert Einstein
(C) Henry Cavendish (D) Humphry Davy
Ans. (B) **(SSC CGL 2017)**
Exp: Photon was discovered by Albert Einstein in 1926. A Photon is a mass less stable particle with two possible polarization states. It does not have any electric charge.

49. Who invented Velcro?
(A) Thomas Edison (B) William Harvey
(C) George de Mestral (D) Robert Boyles
Ans. (C) **(SSC CGL 2017)**
Exp: Velcro is a brand of hook and loop. It was invented by George de mistral in 1940.

50. Who invented the waterproof raincoat?
(A) Robert Hooke (B) Cai Lun
(C) Charles Macintosh (D) William Harvey
Ans. (C) **(SSC CGL 2017)**
Exp: Waterproof raincoat was invented by Charles Macintosh in 1824. He designed one of the first waterproof fabrics by rubberizing sheets.

51. Who discovered Neon?
(A) Robert Noyce (B) Enrico Fermi
(C) Morris W. Travers and William Ramsay
(D) Antonio de Ulloa and Charles Wood
Ans. (C) **(SSC CGL 2017)**
Exp: Neon was discovered by William Ramsay, a Scottish Chemist and Morris M.Travers, an English chemist in 1898. Neon was discovered through the study of liqified air.

52. Who discovered electricity and invented the lightning rod and bifocals?
(A) Kirkpatrick Macmillan
(B) Benjamin Franklin
(C) William Henry Fox Talbot
(D) Sir Alexander Fleming
Ans. (B) **(SSC CGL 2017)**
Exp: Electricity, lightning rod and bifocals were first invented by Benjamin Franklin in Pennsylvania in 1749.

53. Who invented the hot air balloon?
(A) Montgolfier brothers (B) Wright brothers
(C) Lisitsyn brothers (D) Walton brothers
Ans. (A) **(SSC CGL 2017)**
Exp: Hot air balloon was invented by Montgolfier brothers on 21st November 1783 in Paris.

54. Who invented the thermos flask?
(A) Ray Tomlinson (B) Tim Berners-Lee
(C) William Cullen (D) James Dewar
Ans. (D) **(SSC CGL 2017)**
Exp: Thermos flask was invented by Scottish scientist Sir James Dewar in 1892.

Pressure

55. Which of the following is used to measure the pressure?
(A) Hydrometer (B) Aneroid Barometer
(C) Anemomenter (D) Thermometer
Ans. (B) **[SSC CHSL- 2015]**
Exp: Aneroid barometer is used to measure the atmospheric pressure. Aneroid barometer does not use any fluids

56. If a barometer is placed in a ball Jar and air from it removed slowly then
(A) Level of Mercury increases
(B) Level of Mercury decreases
(C) Level of Mercury remains un changed
(D) Ball Jar burst
Ans. (A) **[SSC MTS 2013]**
Exp: If a barometer is placed in a ball jar and air is removed from it then level of mercury rises in barometer

57. It is easy to burst a gas filed balloon with a needle than nail because-

(A) Needle exerts more presure than nail on the balloon.

(B) Nail exert more pressure than needle on the balloon.

(C) Gas is reactive with needle.

(D) Nail is more longer than needle.

Ans. (A) **[SSC CGL 2015]**

Exp: Needle exerts more pressure than nail on the balloon because needle have less cross sectional area and pressure is inversely proportional to the cross-sectional area.

58. Cooking of Rice is Harder-

(A) Top of Mountains (B) Bottom of sea

(C) Under the mine (D) Same at every where

Ans. (A) **[SSC Tax. Asst. 2009]**

Exp: On top of the mountains atmospheric pressure is lower than plains. Due to less pressure, boiling point of water also decreases and water boils below its boiling point. Due to this food/rice gets cooked at lower than 100°C. Hence Cooking rice/food on mountain is harder.

59. Water boils at low temperature on mountains because-

(A) There is cooling on Mountains.

(B) Amount of Carbon dioxide is less at mountaions.

(C) Atmospheric pressure is low at mountains.

(D) Deficiency of oxygen.

Ans. (C) **[SSC DEO 2009]**

Exp: Same as above

60. Pressure cooker reduces the time required for the cooking because-

(A) Boiliing point of water increases inside cooker.

(B) Boiling point of water decreasses inside cooker.

(C) High pressure makes soft the food.

(D) Heat energy distributed equally.

Ans. (A) **[SSC MTS 2014]**

Exp: In pressure cooker, due to increased pressure, boiling point of water also increases and food boils at higher temperature and requires less time to cook.

61. Rice is cooked more quickly in a perssure cooker beacuse:

(A) Water boils at Higher temperature

(B) Less quantity of water is used

(C) It is covered (D) None of these

Ans. (A)

Exp: Same as above

62. To calculate the pressure exerted by Liquid at the bottom of container, which of the following is not required?

(A) Height of Liquid column

(B) Surface area of bottom of container

(C) Density of Liquid

(D) Acceleration due to gravity at the bottom of container

Ans. (B) **[SSC CHSL 2011]**

Exp: Pressure exerted by liquid at the bottom of the container can be calculated by P = gh

Where = = density of liquid

h = height of liquid in container

g = acceleration due to gravity

63. 1 Bar is equal to :

(A) 10^3 pa (B) 100 pa

(C) 10^5 pa (D) 10^4 pa

Ans. (C) **[SSC MTS 2013]**

Exp: 1 Bar is equal to 10^5 Pascal. Bar is the metric unit of pressure while Pascal is the SI unit of pressure.

64. A real gas can act as an ideal gas under

(A) High pressure and low temperature

(B) Low pressure and high temperature

(C) High pressure and high temperature

(D) Low pressure and low temperature

Ans. (B) **[SSC CGL 2014]**

Exp: A real gas acts as an ideal gas in low pressure and high temperature.

65. The boiling point of water depends upon the

(A) Atmospheric pressure

(B) Volume

(C) Density (D) Mass

Ans. (A) **[SSC CGL 2016]**

Exp: The boiling point of any liquid depends on atmospheric pressure, vapor pressure of liquid and temperature of liquid.

66. At hill stations, the boiling point of water will be

(A) Same as at sea level

(B) Less than that at sea level

(C) More than that at sea level

(D) Equal to the melting point of ice

Ans. (B) **[SSC CGL 2016]**

Exp: On top of the mountains atmospheric pressure is lower than plains. Due to less pressure, boiling point of water also decreases and water boils below its boiling point. Due to this food/rice gets cooked at lower than 100°C. Hence Cooking rice/food on mountain is harder.

67. Vegetables are cooked in lesser time by adding a pinch of salt while cooking beause

(A) Boiling point of water increases

(B) Latent heat of vaporization of water decreases

(C) Latent heat of vaporization of water increases

(D) Boiling point of water decreases.

Ans. (A) **[SSC MTS 2017]**

Exp: Adding salt to vegetables while cooking increases the boiling point of water which inturn reduces the cooking time.

68. Hydraulic brakes used in automatic vehicles is direct virtual application of which law?

(A) Pascal's law (B) Archemedes' principle

(C) Newton's law (D) Boyle's law

Ans. (A) **(SSC CPO 2017)**

Exp: Hydraulic brakes are based on the principle of pascal's law. It states that if there is a change occuring in pressure at any point in a confined fluid. It will transmit throughout the fluid and same change will occur everywhere.

69. Which law/principle states that when a body is immersed fully or partially in a fluid, it experiences an upward force that is equal to the weight of the fluid displaced by it?

(A) Boyle's law (B) Charles law
(C) Archimedes principle (D) Pascal's law

Ans. (C) **(SSC CPO 2017)**

Exp: According to Archimedes principle:- When a body is immerssed in a fluid it experiences an upward force that is equal to the weight of the fluid displaced by it.

70. What is the SI unit of pressure?

(A) Newton (B) Weber
(C) Pascal (D) Henry

Ans. (C) **(SSC CGL 2017)**

Exp: The S.I. unit of pressure is Pascal (Newton per metre square, symbol Pa). It is named after Blaise Pascal.

$$\text{Pressure} = \frac{\text{force}}{\text{area}} = \frac{1\,\text{newton}}{1\,\text{m}^2} \text{ or Pascal.}$$

71. On which principle does the hydraulic lift works?

(A) Newton's law (B) Pascal's law
(C) Archimedes's law (D) Joule's law

Ans. (B) **(SSC CGL 2017)**

Exp: Hydraulic lifts are based on the principle of Pascal's Law. It states that if there is a change occuring in pressure at any point in a confined fluid. It will transmit throughout the fluid and same change will occur everywhere.

72. For which of the following game, players must have the knowledge of Pascal's law?

(A) Climbing (B) Paragliding
(C) Rafting (D) Scuba diving

Ans. (D) **(SSC CGL 2017)**

Exp: Pascal's Law states that if there is a change occuring in pressure at any point in a confined fluid. It will transmit throughout the fluid and same change will occur everywhere.

DENSITY

73. When the barometer reading dips suddenly, it is an indication of

(A) Bot weather (B) Calm weather
(C) Storm (D) dry weather

Ans. (C) **[SSC Sub-Ins. 2004]**

Exp: When barometer dips suddenly, it indicates the storm like condition in weather

74. The density of a gas is maxium at

(A) Low temperature, low pressure
(B) Low temperature, high pressure
(C) High temperature, low pressure
(D) High temperature, high presure

Ans. (B) **[SSC Section Officer 2008]**

Exp: The density of a gas is maximum at low temperature and high pressure

75. Specific gravity is defined as the ratio of

(A) Denity of the substance to the density of water
(B) Density of the substance to the density of water at 0°C
(C) Density of water at 4°C to the density of the substance
(D) Density of the substance to the density of water at 4°C

Ans. (D) **(SSC MTS- 2011)**

Exp: The specific density of a substance is defined as the ratio of density of the substance to the density of water at 4°C.

76. The density of water is 1 g/cc. This is strictly valid at

(A) 0°C (B) 4°C
(C) 25°C (D) 100°C

Ans. (B) **[SSC Graduate Level 2013]**

Exp: At 4°C water has the maximum density.

77. if ice floating on water in a vessel melts, the water level in the vessel____.

(A) Increases (B) Does not change
(C) First increases before decrasing
(D) Decreases

Ans. (B) **[SSC CHSL 2017]**

Exp: When ice floating on water melts, the water level does not increase or decrease, it remains the same

78. What is the unit of relative density?

(A) Kg/m (B) Kg/m^2
(C) Kg/m^3 (D) It has no unit

Ans. (D) **[SSC CHSL - 2016]**

Exp: Relative density has no unit as it is the ratio of density of substance and density of water

79. Which among the following has the maximum density?

(A) Water (B) Ice
(C) Ethylene (D) Acetone

Ans. (A) **(SSC CHSL Tier-I 2016)**

Exp: Density of water = 1000 kg/m^3
Density of Ice = 917 kg/m^3
Density of Ethylene = 1.18 kg/m^3
Density of Acetone = 784 kg/m^3

80. Which of the following quantities does not have any unit?

(A) Speed (B) Density
(C) Relative Density (D) Acceleration

Ans. (C) **(SSC CPO 2017)**

Exp: Relative Density is the ratio of the density of a material to the density of a reference material. As it is a ratio, it does not have any unit

HUMIDITY

81. Humidity is measured by

(A) Hydrometer (B) Hygrometer
(C) Pyrometer (D) Lactometer

Ans. (B) **[SSC MTS 2013]**

Exp: Hygrometer is used to measure the humidity

82. Amount of water vapour in the atmosphere is measured in terms of

(A) Humidity (B) Droplets
(C) Smog (D) All of the above

Ans. (A) **[SSC Assistant Grade-II]**

Exp: Humidity is the amount of water vapour present in the atmosphere. It can be measured in absolute terms and relative terms.

MISCELLANEOUS

83. A wheel barrow is an Example of :

(A) 1st Class lever (B) 2nd class lever
(C) Pully (D) 3rd class lever

Ans. (B) **(SSC MTS Exam, 2014)**

Exp: A wheel barrow is an example of second class lever. In second class lever fulcrum at one end, the load is in the middle and the effort is at the other end.

84. Lubricant oil is used in vehicle to :

(A) For combustion fuel
(B) To make flow steramline
(C) To incease the firiction
(D) To decrease the friction

Ans. (D) **(SSC Stn. 2005)**

Exp: Lubricant oil is used to reduce friction between two moving surfaces.

85. While ascending a hill, the driver of the vehicle keep the gear ratio :

(A) Equal to one (B) Less than one
(C) Greater Than one
(D) Either Greater or equal to one

Ans. (D) **(SSC CSS Exm - 2014)**

Exp: Gear ratio refers to the ratio of no. of teeths of the driven gear over driver gear. It is kept as greater than or equal to 1 while ascending a hill.

86. Flywheel is an important part of a steam engine because.

(A) It gives strenght to engine
(B) Accelerates the speed of engine
(C) Helps the engine in keeping speed iuniform
(D) Decreases the moment of inertia

Ans. (B) **(SSC (CGL)- 2014)**

Exp: Flywheel is a device which is used to store rotational energy. Energy stored in a flywheel is proportional to its rotational speed.

87. Which of the following is an Example of cantilever beam?

(A) Diving board (B) Bridge
(C) See-Saw (D) Common Balance

Ans. (A) **(SSC Tax Asst. - 2009)**

Exp: Cantilever beam is anchored or hinged at one end. Diving board is an example of cantilever beam.

88. A simple Machine

(A) Cannot increase the force
(B) Cannot increase the speed
(C) Cannot increase the wrok
(D) Cannot change the direction of applied force

Ans. (D) **(SSC MTS exm. - 2014)**

Exp: Simple machines use single force to make work easier. Pulley is an example of simple machine.

89. The working principle of a beam balance is the principle of :

(A) Mass (B) Momentum
(C) Couple (D) Moment

Ans. (D)

Exp: Beam balance works on the principle of moments (Torque). When torque on both the arms is balanced it comes to a stable state.

90. Electrostatic precipitator is used to control the pollution of :

(A) Air (B) Water
(C) Noise (D) Thermal

Ans. (A) **(SSC ITC. 2004)**

Exp: Electrostatic precipitator is device which is used to remove impurities from air. It is used to reduce the air pollution.

91. Knot is a measure of

(A) The speed of ship
(B) The curvature of spherical objects
(C) Solar radiation
(D) Intensity of earthquake shock

Ans. (A) **(SSC Tax Ass. - 2005)**

Exp: Knot is the unit of speed which is used to measure the speed of ships. It is equal to one nautical mile per hour.

92. Vehicle tyres are inflated properly

(A) To ensure smooth running.
(B) To allow the vehicle to take more load.
(C) To avoid skidding and to minimise friction
(D) To go fast and save fuel.

Ans. (A) **(SSC Com. Mat. 1999)**

Exp: In order to provide thermal insulation in a tyre, it is inflated which ensures smooth running.

93. A photostat machine works on :
(A) Electrostatic image making
(B) Magnetic image making
(C) Thermal image making
(D) Thermal image making

Ans. (A) **(SSC Combined Matric 2002)**

Exp: A Photostat machine works on principle of electrostatic image making. It uses electrostatic charge to produce a copy.

94. Flight Recorder is technically called:
(A) Dark box (B) Blind box
(C) Black box (D) Altitude meter

Ans. (C) **(MTS 2011)**

Exp: Flight recorder is also known as "black box". It is used in aircrafts to record specific parameters which is used to investigate the causes of accident of aircrafts.

95. Super conductors are substance that:
(A) Offer minimal resistance to flow of electric current
(B) Conduct electricity at low temperature
(C) Conduct electricity at high temperature
(D) Offer high resistance to the flow of electric current

Ans. (A) **(SSC CGL 2013)**

Exp: Super conductors are materials which offers almost zero resistance and allows electric current to flow freely.

96. The abbreviation LHC stands for which machine?
(A) Light Heat Collider (B) Large Hadron Collider
(C) Long Heavy Collider (D) Large High Collider

Ans. (B) **(SSC CHSL (10+2) LDC, DEO, & PA/SA - 2015)**

Exp: LHC stands for large Hadron Collider. It is a particle acceleration developed by CERN an European Agency.

97. 'Parsec' is the unit measurement of
(A) Density of stars (B) Astronomical distance
(C) Brightness of heavenly bodies
(D) Orbital velocity of giant stars

Ans. (B) **(SSC CGL Tier-I 2016)**

Exp: Parsec is a unit of length which is used in astronomy to measure the distance between astronomical objects.

98. Isaac Newton invented____.
(A) Thermometer (B) Reflecting Telescope
(C) Hydraulic Accumulator
(D) Transistor

Ans. (B) **(SSC CHSL Tier-I 2016)**

Exp: Reflecting telescope was invented by Isaac Newton in 1668. Reflecting telescopes are widely used by astronomers.

99. Name the first Indian who got Nobel Prize in physics.
(A) CK Naidu (B) Rangnath Mishra
(C) Amartya Sen (D) CV Raman

Ans. (D) **(SSC CHSL Tier-I 2016)**

Exp: CV Raman was the first Indian who got Nobel Prize in Physics for his work on scattering of light. This phenomenon is also named after him and known as Raman effect.

100. Name the first Indian to go into Space.
(A) Vidyut Mishra (B) Kaplish Tripathi
(C) Rakesh Sharma (D) Ish Kumar Vaidya

Ans. (C) **(31 January Afternoon)**

Exp: Rakesh Sharma became the first India to travel in space. He is a former Indian Air Force Pilot.

101. What is the unit of the physical quantity "Jerk"?
(A) Meter second (B) Meter per second cube
(C) Meter per second square
(D) Meter per second

Ans. (B) **(SSC CHSL Tier-I 2016)**

Exp: Jerk is the rate of change of acceleration with respect to time. The SI unit of Jerk is metre per second cube.

102. The study of universe is known as___.
(A) Cosmology (B) Astrology
(C) Seismology (D) Limnology

Ans. (A) **(SSC CHSL Tier-I 2016)**

Exp: Cosmology is the branch of astronomy which deals with origin and evolution of origin. According to NASA cosmology is "the scientific study of large scale properties of the universe as whole".

103. What is the study of Moon called?
(A) Selenology
(B) Cosmology
(C) Iridology
(D) Planetology

Ans. (A) **(SSC CHSL Tier-I 2016)**

Exp: Selenology is the branch of astronomy which deals with the scientific study of moon.

104. One nanometer is equal to _____ meters.
(A) 10 raised to the power (–4)
(B) 10 raised to the power (–6)
(C) 10 raised to the power (–9)
(D) 10 raised to the power (–10)

Ans. (C) **(SSC CHSL Tier-I 2016)**

Exp: One nanometer is equal to 10^{-9}. It is the unit of length and commonly used in nano technology.

105. First man to go into space was
(A) Roald Amundsen (B) Reynalt Mayor
(C) Robert Peary (D) Major Yuri Gagarin

Ans. (D) **(SSC CHSL Tier-I 2016)**

Exp: Yuri Gagarin was the first man to travel into space. He was the Russian soviet pilot.

106. Mass of an object is a _____.
(A) Physical Quantity (B) Fundamental Quantity
(C) Scalar Quantity (D) All options are correct

Ans. (D) **(SSC CPO 2017)**

Exp: Mass is defined as the amount of substance that an object has. It has no direction hence, it is physical, fundamental, scalar Quantity.

107. Match the following

Quantity	SI Unit
1. Frequency	a. Ohm
2. Force	b. Hertz
3. Resistance	c. Newton

(A) 1 - b, 2 - c, 3 - a (B) 1 - a, 2 - c, 3 - b
(C) 1 - c, 2 - b, 3 - a (D) 1 - b, 2 - a, 3 - c

Ans. (A) **(SSC CPO 2017)**

Exp: S.I. Unit of frequency is hertz. S.I. Unit of force is Newton and S.I. unit of resistance is ohm.

108. Which is the most suitable unit for expressing nuclear radius?

(A) Micron (B) Nanometer
(C) Fermi (D) Angstrom

Ans. (C) **(SSC CPO 2017)**

Exp: The Fermi (1 fm= 10^{-15}meter) is of the order of magnitude of the size of nucleons and nuclei so, it is more appropriate to describe sizes for nuclear phenomena. (The Fermi, Named after the nuclear physicist Enrico Fermi, and denoted as fm, Fm.)

109. Surface water of a lake is about to freeze. What will be the temperature (in °C) of water at the bottom of the lake?

(A) 0 (B) -1
(C) 1 (D) 4

Ans. (C) **(SSC CPO 2017)**

Exp: When surface water of a lake is about to freeze then the water at the bottom of the lake remains in liquid form. It does not freeze because the temperature of the water at the bottom of the lake is always greater thean 0°C.

110. What is the process of conversion from solid to gas is known as?

(A) Fusion (B) Solidification
(C) Sublimation (D) Condensation

Ans. (C) **(SSC CPO 2017)**

Exp: Sublimation is the process of phase transition of a substance directly from the solid to the gas phase without passing through the intermediate liquid phase.

111. Which of the following is not a vector quantity?

(A) Momentum (B) Displacement
(C) Torque (D) Speed

Ans. (D) **(SSC CGL 2017)**

Exp: Speed being a scalar quantity is the rate at which an object covers a distance. Speed has only magnitude and no direction. Hence it is not a vector quantity.

112. Which of the following is not a vector quantity?

(A) Acceleration (B) Electric current
(C) Force (D) Velocity

Ans. (B) **(SSC CGL 2017)**

Exp: Electric current is the amount of charge that flows per second through a cross-sections of conductor. It has only magnitude and no direction. Hence it is a scalar quantity, not a vector quantity.

113. Which of the following pair is INCORRECT?

I. Parsec - Distance
II. Barrel - Liquid
III. Light year - Time

(A) Only III (B) Only I and III
(C) Only II (D) All are correct

Ans. (A) **(SSC CGL 2017)**

Exp: A light year is defined as the distance that light travels in vacuum is one Julian year (365.25 days). The light-year is a unit of length used to express the astronomical distance, hence it is not used for time.

114. The substances which reduce friction are called _____.

(A) Irregularities (B) Lubricants
(C) Adhesives (D) Viscous

Ans. (B) **(SSC CGL 2017)**

Exp: Lubrication uses a substance (called Lubricant) which separates the solids from direct contact by creating a Lubricant layer. This layer must be easily sheared so that the friction is reduced.

115. The laws which govern the motion of planets are called _____.

(A) Newton's Laws (B) Kepler's Laws
(C) Avogadro's Laws (D) De Morgan's Laws

Ans. (B) **(SSC CGL 2017)**

Exp: Kepler's laws of planetary motion, in astronomy and classical physics, describes the motion of the planets in the solar system. Johannes Kepler gave his first two laws in 1609 and third law in 1619.