RRB

General Science

Chapterwise Solved Papers

Computer Based Test

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CONTENT

Section-1 : Physics

Section-2 : Chemistry

Section-3 : Biology

Section-4 : Computer

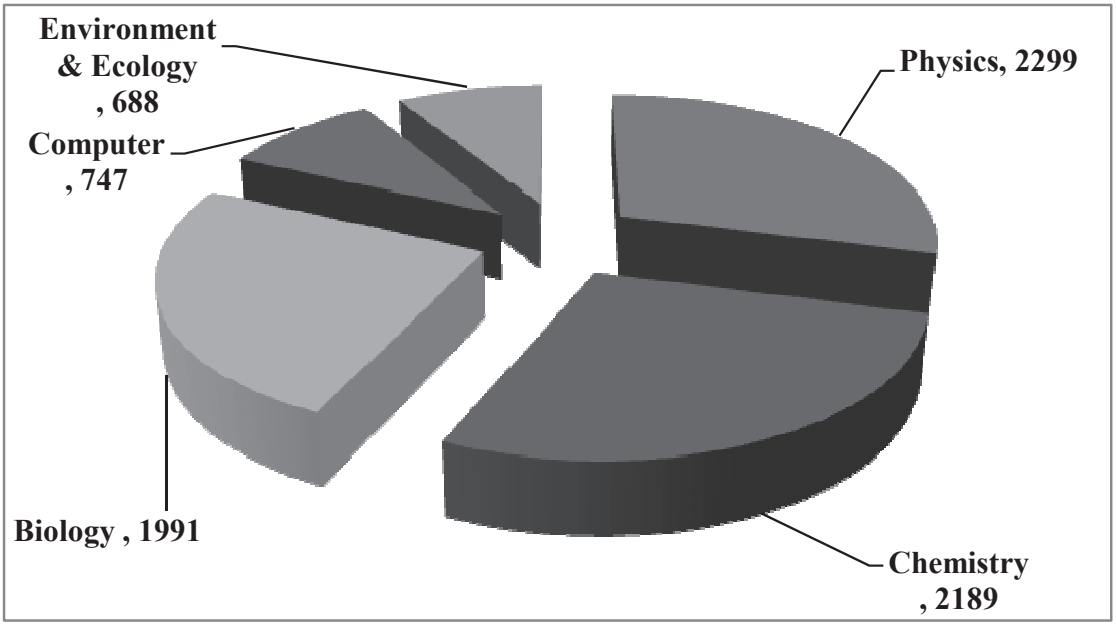
Section-5 : Environment And Ecology

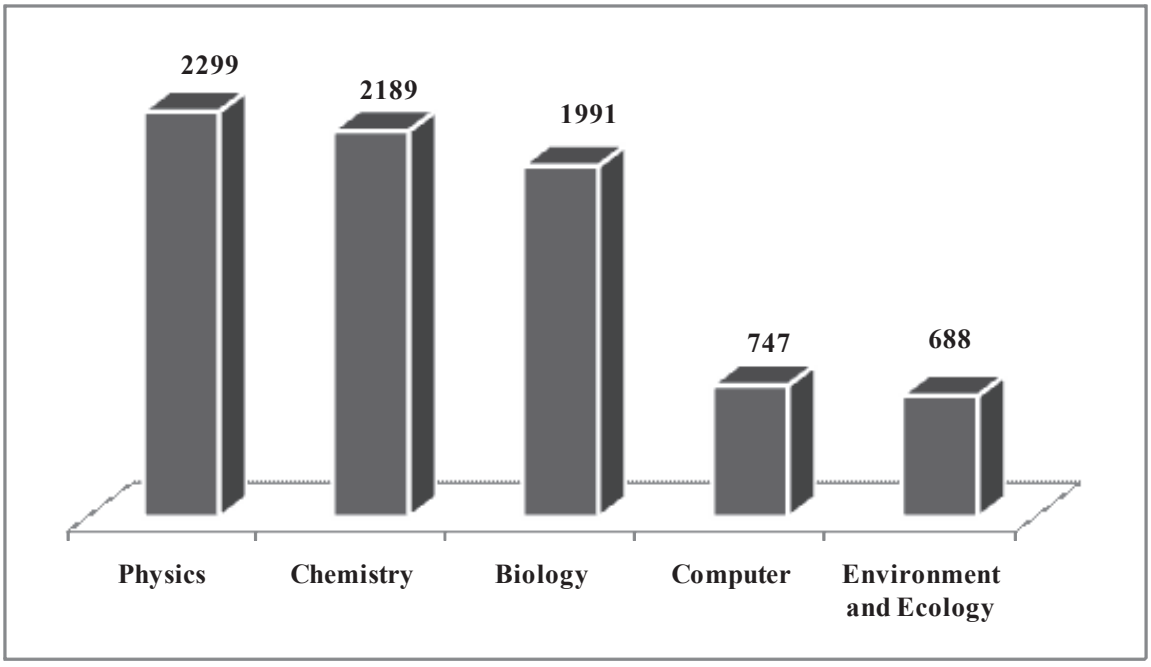
Analysis Chart of Question Papers of Various Previous Exams of RRB

S.N.	Exam	Exam year	Total Question Papers	General Science
1.	RRB NTPC-2019 Stage-II	2022	15	20×15= 300
2.	RRC Group-D 2019	2022	99	25×99= 2475
3.	RRB NTPC-2019 Stage-I	2020-2021	133	30×133= 3990
4.	RRB JE-2018 Stage-II	2019	9	15×9 = 135
5.	RPF Constable 2018	2019	17	30×17 = 510
6.	RPF SI 2018	2019	23	30×23 = 690
7.	RRB JE-2018 Stage-I	2019	38	15×38 = 570
8.	RRB ALP/Tech.-2018 Stage-II	2019	18	10×18 = 180
9.	RRB ALP/Tech.-2018 Stage-I	2018	30	10 × 30 = 300
10.	RRB Group D 2018	2018	135	20 × 135 = 2700
11.	RRB NTPC-2015 Stage-II	2017	9	15 × 9 = 135
12.	RRB NTPC-2015 Stage-I	2016	63	30 × 63 = 1890
13.	RRB JE 2015	2015	26	15 × 26 = 390
14.	RRB JE 2014	2014	10	15 × 10 = 150
Total			**625**	**14415**

Note– In this book, out of total **625** papers of JE, ALP, NTPC, RPF Constable, RPF SI, Group D and Paramedical exams conducted by RRB, out of total **14415** questions asked from General Mathematics. Same behavior have been removed and chapterwise compilation of questions of different types has been presented. In this book, every effort has been made by the Examination Special Committee to accommodate maximum variety of questions, so that the examinees can be made aware of the variety of questions asked by RRB.

Trend Analysis of Previous Year RRB JE, ALP, NTPC & Group-D Papers Through Pie Chart and Bar Graph





Part-1

PHYSICS

1. Unit/Measurement/Measuring Instrument

(i) Unit

1. The commercial unit of electrical energy is .....
(a) Watt (b) Calorie
(c) Kilowatt hour (d) Joule
RRB Group-D– 30/09/2022 (Shift-I)

Ans.(c) : The commercial unit of electrical energy is kilowatt hour.
One kilowatt hour
$= 1000W \times 1$ hour
$= 1000 \times 3600$
$= 3.6 \times 10^6$Joule

2. The S.I. unit of resistance is equivalent to:
(a) joule/coulomb (b) volt/ampere
(c) ampere/volt (d) coulomb/joule
RRB Group-D 25-08-2022 (Shift-III)

Ans. (b) : According to ohms law
$V = IR$
$R = V/I$
SI unit of resistance = volt/ampere.

3. The physical quantity having a unit of volt/ampere is ———— .
(a) work (b) Current
(c) charge (d) resistance
RRB Group-D 28-09-2022 (Shift-III)

Ans. (d) : The physical quantity having a unit of volt/ampere is resistance.
Whereas,
- Work = force x displacement
- $\text{Current} = \frac{\text{Voltage (V)}}{\text{Resistance (R)}}$
- $\text{Charge (Q)} = \frac{\text{Current}}{\text{Time}}$

4. The unit of resistance is …… .
(a) Ampere (b) Coulomb
(c) Ohm (d) Volt
RRB Group-D 29-09-2022 (Shift-III)

Ans. (c) : Resistance is a measure of the opposition to current flow in an electrical circuit.
The unit of resistance is ohm.

5. The S.I. unit of induced potential difference is:
(a) mV (b) A
(c) V (d) mA
RRB Group-D 22-08-2022 (Shift-III)

Ans. (c) : Induced emf is potential difference only hence its unit is volt only.

6. The S.I. unit of resistivity is:
(a) ohm/m (b) ohm
(c) mho (d) ohm m
RRB Group-D 25-08-2022 (Shift-II)

Ans. (d) : The S.I. unit of resistivity is ohm meter. Electrical resistivity is that property of material, that measures how strongly it resists electric current.

7. Newton is the unit to measure _____.
(a) Power (b) Force
(c) Pressure (d) Resistance
RRB NTPC 08.02.2021 (Shift-II) Stage Ist

Ans : (b) :

Quantity	SI - Unit
Power	Watt
Force	Newton
Pressure	Pascal
Resistance	Ohm

8. The SI unit of sound wave frequency was named in honour of which physicist?
(a) Werner Karl Heisenberg
(b) Heinrich Rudolf Hertz
(c) Albert Einstein
(d) J C Maxwell
RRB NTPC 19.01.2021 (Shift-II) Stage Ist

Ans : (b) The term 'Hertz' was proposed in the early 1920s by German scientists to honour the 19th century German physicist Heinrich Hertz. Hertz is a part of International System of Units or SI System which is based on the Metric System.

9. The work done by a force acting on an object is equal to the amount of force multiplied by the distance travelled in the direction of the force. Which of the following is NOT a unit of work ?
(a) Kgm/sec^2 (b) Kgm^2/sec^2
(c) Newton meter (d) Joule
RRB NTPC 13.03.2021 (Shift-I) Stage Ist

Ans : (a) Work can be defined as 'workdone by a force on an object is equal to the magnitude of the force multiplied by the distance travelled by the object the object in the direction of force.

$$\Rightarrow W = FS\cos\theta$$

The SI unit of work is Newton-metre (N-m) or Joule (J) or $Kg\text{-}m^2/sec^2$ and its CGS unit is Erg. Newton ($Kg\text{-}m/sec^2$) is the unit of Force.

10. The unit of Force is:
(a) gms^{-1} (b) $Kgms^{-2}$
(c) gms^{-2} (d) $Kgms^{-1}$
RRB NTPC 13.03.2021 (Shift-I) Stage Ist

Ans : (b) The SI unit of Force is $kg.ms^{-2}$. The quantity of force is expressed by the vector product of mass (m) and acceleration (a).
$\Rightarrow \boxed{F = ma}$

11. Which of the following is not a unit of temperature?
(a) Fahrenheit (b) Pascal
(c) Celsius (d) Kelvin
RRB Group-D 31-10-2018 (Shift-II)

Ans : (b) Fahrenheit, Celsius and Kelvin are the units of temperature. Pascal is a unit of pressure.

12. The SI unit of electrical resistivity is ……
(a) Ohm-meter (b) Ohm
(d) Coulomb (d) Ampere
RRB Group-D 04-12-2018 (Shift-III)
RRB Group-D 23-10-2018 (Shift-I)

Ans : (a) The electrical resistivity of a substance indicates its ability to resist the flow of electric current by the substance. Low resistivity of materials allow electric charge to flow smoothly. Its SI unit is Ohm meter (Ωm).

13. The commercial unit of electric energy is .....
(a) watt (b) kW
(c) kilowatt-hour (d) joule
RRB Group-D 20-09-2018 (Shift-II)

Ans : (c) The commercial unit of electric energy is the kilowatt hour. A 1 kilowatt hour or a unit is the amount of electrical energy that will be spent in an hour in a circuit by an instrument of 1000 watt of power.
1 kWh = 3.6×10^6 joule = 1 unit

14. The amount of radiation being emitted by a radioactive material is measured using the conventional unit ———.
(a) Watt (b) Pascal
(c) Ampere (d) Curie
RRB NTPC 29.01.2021 (Shift-II) Stage Ist

Ans : (d) The amount of radiation being emitted by a radioactive material is measured in Curie. It is the traditional unit of radioactivity and shows the activity of 1g of pure radium and is equal to 3.7×10^{10} disintegration/second.
Becquerel is also the SI unit of radioactivity and is defined as the amount of a radioactive substance showing one disintegration/second.

15. What is measured in 'joules'?
(a) Energy (b) Velocity
(c) Force (d) Power
RRB NTPC 28.01.2021 (Shift-I) Stage Ist

Ans : (a)

Physical Quantity	**SI Unit**
Energy and Work	Joule
Velocity	m/s.
Force	Newton
Power	Watt
Pressure	Pascal
Wavelength	Angstrom

16. Henry per meter is the unit of_____.
(a) Watt per steradian
(b) Electronegativity
(c) Magnetic permeability
(d) electrical conductivity
ALP Stage -II 23.01.2019 (shift - II)

Ans : (c) "Henry per Metre" is the SI unit of magnetic permeability.

17. A light-year is a unit of _____
(a) Time (b) Intensity of light
(c) Mass (d) Distance
RRB NTPC 01.02.2021 (Shift-I) Stage Ist

Ans : (d) A light year is a measurement of distance. A light year is the distance that a beam of light travels in a single Earth year or 6 trillion miles. One light year is equal to 9.461×10^{12} kilometres.
Another units of distance are:
1 Parsec = 3.26 light year
1 Astronomical Unit = 1.496×10^{11}m.

18. Light-year is the unit of –
(a) Time (b) Distance
(c) Speed of light (d) Intensity of light
RRB JE (14-12-2014, Green Paper)

Ans : (b) See the explanation of above question.

19. What is the SI unit of power of a lens called?
(a) Hypermetropic (b) Dioptre
(c) Myopic (d) Presbyopic
RRB NTPC 13.01.2021 (Shift-II) Stage Ist

Ans : (b) Power of lens - The inverse of the focal length of the lens is called the power of lens. If the focal length of a lens is 'f' in meter, then its power 'P' = $\frac{1}{f}$ in diopters. Its SI unit is diopter which is represent by D.
- **Myopia (Near sightedness) →** A person suffering from this disease can see the near object, but is unable to see the distant object. A concave lens is used to correct myopia.
- **Hypermetropia (Far sightedness) →** A person suffering from this disease can see distant objects clearly but near objects are not clearly visible. A convex lens is used to correct hypermetropia.
- **Presbyopia →** Due to old age, the coordination ability of the eye decrease or ends, due to which a person is neither able to see distant objects nor near objects. This defect can be corrected by using bi-focal lens.

20. The SI unit of 'Magnetic Flux' is:
(a) Farad (b) Henry
(c) Pascal (d) Weber
RRB NTPC 03.03.2021 (Shift-II) Stage Ist
RRB NTPC 07.04.2021 (Shift-II) Stage Ist

Ans : (d) The measurement of the total magnetic field which passes through a given area is known as magnetic flux. It is useful in describing the effects of the magnetic force acting on something occupying a given area. The SI unit of magnetic flux is Weber and is represented by wb.

21. Which of the following quantities has the SI unit as Candela?
(a) Impulse (b) Velocity
(c) Force (d) Luminous intensity
RRB JE CBT-II 29–08–2019 (evening)

Ans : (d) The Candela (cd) is the SI unit of luminous intensity, which is a measure of power emitted from a light source.

22. The rate of doing work is called power. The unit of power is
(a) Ampere (b) Volt
(c) Kelvin (d) Watt
RRB NTPC 11.02.2021 (Shift-I) Stage Ist

Ans : (d) In physics, power is the rate of doing work. It is the amount of energy consumed per unit of time. The unit of power is the joule per second (J/s), known as the Watt (in honor of James Watt, the eighteenth century developer of the steam engine). (1 HP =746 watt).

23. Unit of power is known as –
(a) Watt (b) Joule
(c) Newton (d) Pascal

RRB JE (24-05-2019, Shift -I)
RRB Group-D, 01-10-2018 (Shift –II)
RRB Group-D, 22-10-2018 (Shift –I)
RRB ALP & Tec.(21-08-2018, Shift-I)

Ans : (a) See the explanation of above question.

24. Which of the following units is used to measure the intensity of sound?
(a) Pascal (b) Curie
(c) Decibel (d) Joule

RRB NTPC 25.01.2021 (Shift-I) Stage Ist

Ans : (c) The decibel is the unit used to measure the intensity of sound. It is also widely used in electronics, signals and communication.

25. Unit used for measuring the sound is –
(a) Decibel (b) Hertz
(c) Ohm (d) Volt

RRB NTPC Stage-Ist, 22-04-2016, Shift -II
RRB NTPC Stage-Ist, 18-04-2016, Shift -II

Ans : (a) See the explanation of above question.

26. Which of the following units is used for measuring the amount of a substance?
(a) Lux (b) Mole
(c) Tesla (d) Joule

RRB NTPC 28.12.2020 (Shift-I) Stage Ist

Ans : (b) The mole is used for measuring the amount of a substance. It is the SI unit of amount of substance. One mole contains 6.022×10^{23} molecule of the substance.
Tesla → SI unit of Magnetic flux density.
Joule → SI unit of Work and Energy.
Lux → SI unit of Illumination.

27. What is the SI Unit of amount of substances?
(a) Radian (b) Mole
(c) Jule (d) Kelvin

RPF Constable 05.02.2019

Ans : (b) See the explanation of above question.

28. S.I. unit of weight is -
(a) Kilogram (b) Newton
(c) Gram (d) Dyne

RRB JE (24-05-2019, Shift-I)
RRB Group-D, 03-10-2018 (Shift –II)
RRB ALP & Tec.(17-08-2018, Shift-II)

Ans : (b) The SI unit of measurement of weight is Newton. Since weight is the force on an object due to gravity. The dyne is a derived unit of force specified in the centimeter–gram–second (CGS) system of units.
Dimensional formula of the weight is MLT^{-2}

29. Unit of momentum is –
(a) $kgms^2$ (b) $kgms^{-1}$
(c) kgms (d) $kgms^{-2}$

RRB ALP & Tec.(14-08-2018, Shift-II)
RRB Group-D, 23-10-2018 (Shift –I)
RRB Group-D, 19-09-2018 (Shift –III)

Ans : (b) Momentum (P) = mass (m) × velocity (v)
= kg × m/s
Unit of momentum (P) = $kgms^{-1}$
Dimensional formula of momentum = MLT^{-1}

30. Unit of power in industry is –
(a) Kilowatt (b) Watt
(c) Joule (d) Horsepower

RRB ALP & Tec.(13-08-2018, Shift-III)

Ans : (d) The industrial unit of power is Horsepower.
1 Horsepower (HP) = 746 watt

31. S.I. unit of electric charge is –
(a) Volt (b) Coulomb
(c) Kelvin (d) kg

RRB Group-D, 26-11-2018 (Shift –III)
RRB Group-D, 04-10-2018 (Shift –II)
RRB ALP & Tec.(31-08-2018, Shift-III)
RRB ALP & Tec.(10-08-2018, Shift-III)
RRB NTPC Stage-Ist,28-03-2016, Shift -II

Ans : (b) The S.I. unit of electric charge is coulomb and is represented by the symbol 'C'.
A coulomb is defined as the amount of charge that passes through an electrical conductor carrying one ampere of current in one second.
Electric charge = Electric Current × Time
$E \Rightarrow Q = I.\ t$
$= 1\ I \times 1\ t$
= One Coulomb (c)

32. S.I. unit of resistance is –
(a) Coulomb (b) Ohm
(c) Joule (d) Newton

RRB Group-D, 23-11-2018 (Shift –I)
RRB Group-D, 31-10-2018 (Shift –II)
RRB ALP & Tec.(09-08-2018, Shift-I)
RRB NTPC Stage-Ist,26-04-2016, Shift -III
RRB NTPC 21.01.2021 (Shift-II) Stage Ist

Ans : (b) The SI unit of electrical resistance is ohm (Ω). Its denoted by 'R'. The resistance (R) of an object is defined as the ratio of voltage (V) across to current (I) through it.
Resistance (R) = $\frac{V}{I}$ ohm.

33. Ohm is unit of which physical quantity?
(a) Resistance (b) Charge
(c) Voltage (d) Current

RRB JE (28-06-2019, Shift -IV)

Ans : (a) See the explanation of above question.

34. S.I. unit of stress is –
(a) kg/cm^2 (b) N
(c) N/m^2 (d) Watt

RRB SSE (21-12-2014,Set-8, Green Paper)

Ans : (c) SI unit of stress is N/m^2 or Pa(Pascal). It is represented by (σ)
$$1Pa = \frac{1N}{m^2}$$

35. S.I. unit of electric current is –
(a) Ampere (b) Coulomb
(c) Joule (d) Watt

RRB Group-D, 04-12-2018 (Shift –II)
RRB Group-D, 24-10-2018 (Shift –II)
RRB ALP & Tec.(30-08-2018, Shift-II)

Ans : (a) The SI unit of electric current is ampere, which is the flow of electric charge across a wire at the rate of one coulomb per second. Ampere is represented by symbol 'A'. Electric current is measured by using a device called an ammeter.
Electrical charge (Q) = I.t

$$I = \frac{Q}{t} \text{ amp.}$$

36. Match the following –
(1) Magnetic flux density - (a) Tesla
(2) Self inductance - (b) Weber
(3) Magnetic flux - (c) Henry
Match –
(a) 1-b, 2-c, 3-a (b) 1-c, 2-a, 3-b
(c) 1-a, 2-b, 3-c (d) 1-a, 2-c,3-b

RRB SSE (21-12-2014, Set-8, Green Paper

Ans : (d) SI unit of magnetic flux density (b) is Tesla (T).
CGS unit of magnetic flux density (b) is Gauss (G).
SI unit of self inductance is Henry (H).
S.I unit of magnetic flux is weber (Wb), magnetic flux is commonly denoted by (ϕ_s). The CGS unit is Maxwell.

37. Which unit is equal to unit of energy –
(a) Power (b) Density
(c) Work (d) Force

RRB ALP & Tec.(21-08-2018, Shift-II)

Ans : (c) The SI unit of energy and work is same i.e. Joule (J), named after English physicist James Prescott Joule (1818 - 1889). Joule discovered the relationship between heat and mechanical work, which led to the development of the laws of thermodynamics.

38. Which of the following has no unit –
(a) Density (b) Relative density
(c) Displacement (d) Pressure

RRB ALP & Tec.(29-08-2018, Shift-I)
RRB Group-D, 03-12-2018 (Shift –III)

Ans : (b) Relative density of a substance is defined as the ratio of density of the substance to the density of water at 4°c.

$$\text{Thus, Relative Density} = \frac{\text{Density of the substance}}{\text{Density of water}}$$

It has no unit.

39. Ampere second is the unit of –
(a) Charge (b) Power
(c) Voltage (d) Energy

RRB JE (14-12-2014, Red Paper)

Ans : (a) Ampere second is the unit of charge.
Electric Charge (Q) = Ampere (I) × Second (t)

40. Gallon is generally used for –
(a) For velocity
(b) For a container
(c) For measuring the volume
(d) None of these

RRB NTPC Stage-Ist, 31-03-2016, Shift -II

Ans : (c) The gallon is a unit of measurement of volume. Gallon is represented by symbol (gal).
One gallon is equal to 3.7854 liters and 1 Imperial gallon is equal to 4.54609 liters .

41. Which unit is used for measuring Astronomical distance?
(a) Pedometer (b) Parsec
(c) Light year (d) Length of Hubble

RRB NTPC Stage-Ist, 04-04-2016, Shift -II

Ans : (c) A light year is a unit of length used to express astronomical distances. Its equivalent to about 9.4607×10^{12} km.

42. S.I. unit of pressure is –
(a) Newton/cm^2 (b) Newton-m^2
(c) Newton/m^2 (d) Newton-cm^2

RRB Group-D, 04-10-2018 (Shift –I)
RRB Group-D, 01-10-2018 (Shift –III)
RRB Group-D, 25-09-2018 (Shift –II)
RRB Group-D, 25-09-2018 (Shift –III)
RRB NTPC Stage-Ist, 09-04-2016, (Shift -II)
RRB JE, 25-05-2014, (Shift -III)

Ans : (c) The unit of pressure in the SI system is the Pascal (Pa), defined as a force of one Newton per square meter. Hence one pascal is equal to the one newton per square metre.
(1 Pa = 1N/m^2) or (1Pa = 1N.m^{-2})
The conversion between atm, Pa and torr is follows.
1 atm = 101325 Pa = 760 Torr.
1 atm = 1.01325 Bar

43. What is the SI unit of pressure?
(a) Pascal (b) Radian
(c) Ampere (d) Steradian

RRB NTPC 15.03.2021 (Shift-II) Stage Ist

Ans : (a) See the explanation of above question.

44. Nm^{-2} is S.I. unit of –
(a) Force (b) Repulsion
(c) Momentum (d) Pressure

RRB Group-D, 05-11-2018 (Shift –I)

Ans : (d) See the explanation of above question.

45. The unit of approximate distance from the earth to the sun is –
(a) Light year (b) Astronomical Unit
(c) Kelvin (d) Joule

RRB NTPC Stage-Ist, 16-04-2016, Shift -I

Ans : (b) The unit of approximate distance from the earth to the sun is Astronomical unit (symbol : au or AU).
$\Rightarrow$ 1AU =1.5 $\times 10^{11}$m

46. S.I. unit of force is -
(a) Kelvin (b) Newton
(c) Pascal (d) Volt

RRB NTPC Stage-Ist, 16-04-2016, Shift -II

Ans : (b) The SI unit of force is Newton or kg m/s^2.
1 Newton = 10^5 dyne
Force is product of mass and acceleration
$\therefore$ Force = mass × acceleration

47. What is the SI unit of force?
(a) Newton (b) Dyne
(c) Pascal (d) Kip

RRB NTPC 30.12.2020 (Shift-II) Stage Ist

Ans : (a) See the explanation of above question.

48. Which of the following is not correctly matched-
(a) Frequency - Hertz
(b) Magnetic flux - Tesla
(c) Pressure - Pascal
(d) Electric conductance - Siemens

RRB NTPC Stage-Ist, 30-04-2016, Shift -II

Ans : (b)

Physical Quantities		Unit
Frequency	-	Hertz
Pressure	-	Pascal
Electric Conductance	-	Siemens or ohm^{-1} (Ω^{-1})
Magnetic flux	-	Weber

Note : SI unit of Magnetic Flux Density (b) is Tesla (T).

49. S.I. unit of displacement is –
(a) Meter (b) Kilometer
(c) Centimeter (d) Meter per second

RRB Group-D, 02-11-2018 (Shift –II)

Ans : (a) The shortest distance between the starting and ending point is referred as displacement. Displacement always takes place in a straight line between the initial and ending or final position of the body.
Displacement is a vector quantity. 'Meter ' is the SI unit of displacement and in CGS system, unit of displacement is centimeter.

50. The S.I. unit of 'g' is same as –
(a) Pressure (b) Momentum
(c) Velocity (d) Acceleration

RRB Group-D, 13-12-2018 (Shift –II)

Ans : (d) The S.I. unit of gravitational acceleration 'g' is same as the S.I. unit of linear acceleration. The SI unit of acceleration is meter per second square (m s^{-2}).
Dimensional formula of acceleration is (LT^{-2}).
CGS unit of acceleration = cm/s^2.

51. Which of the following has same unit ?
(a) Work & Energy (b) Force & Pressure
(c) Force & Momentum (d) Force & Work

RRB Group-D, 12-12-2018 (Shift –III)
RRB Group-D, 03-10-2018 (Shift –II)

Ans : (a) Work and energy has the same unit. The SI unit of work and energy is the Joule (J), which is defined as the work done by a force of one Newton for the displacement of one meter.
Energy/Workdone (W) = Force (F) × Displacement (d)
W = 1 N × 1 m
W = 1 N-m = 1 Joule

52. Nm^2kg^{-2} is S.I. unit of –
(a) Pressure
(b) Momentum
(c) Acceleration
(d) Universal constant of gravitation.

RRB Group-D, 01-10-2018 (Shift –I)

Ans : (d) Nm^2kg^{-2} is S.I. unit of Universal constant of Gravitation (G).
The value of G = 6.67×10^{-11} Nm^2kg^{-2}

53. Weight has equal S.I. unit of-
(a) Impulse (b) Acceleration
(c) Force (d) Mass

RRB Group-D, 12-11-2018 (Shift –II)
RRB Group-D, 07-12-2018 (Shift –III)

Ans : (c) The SI unit of measurement of weight is 'Newton'. Since weight is the force on an object due to gravity. The dyne is a derived unit of force specified in the Centimeter–Gram–Second (CGS) system of units.
Force or Weight (W) = m × g
where, W = weight or force
m= mass of the object in (kg)
g = acceleration due to gravity in (m/s^2).
Dimensional formula of the weight is [MLT^{-2}]

54. Which of the following two physical quantities have the same unit?
(a) Pressure and Force
(b) Force and Dyne
(c) Force and Speed
(d) Force and Weight

RRB Group-D, 09-10-2018 (Shift–II)

Ans : (d) See the explanation of above question.

55. Newton is S.I. unit of …… ?
(a) Weight and Velocity
(b) Weight and Force
(c) Weight and Mass
(d) Weight and Acceleration

RRB Group-D, 01-10-2018 (Shift –I)

Ans : (b) See the explanation of above question.

56. Which of the following pairs does not have the same S.I. units?
(a) Speed and Velocity
(b) Work and Energy
(c) Force and Pressure
(d) Displacement and distance

RRB Group-D, 01-10-2018 (Shift –III)
RRB Group-D, 05-10-2018 (Shift –II)

Ans : (c) The Newton is the SI unit of force defined as the force is the external factor that produces an acceleration of one meter per second square in an object of one kilogram.
F = mass × acceleration
F = m × a
= 1 kg × 1 m/s^2 = 1N
Whereas the unit of Pressure in the SI system is the Pascal (Pa), defined as a force of one Newton per square meter.
1 Pascal (Pa) = 1 N/m^2

57. In the following which pair has not same unit?
(a) Speed and Velocity
(b) Work and Energy
(c) Distance and Displacement
(d) Force and Pressure

RRB Group-D, 05-10-2018 (Shift –II)

Ans : (d) See the explanation of above question.

58. The international unit of Speed is-
(a) m/s (b) km/h
(c) m/minute (d) km/s

RRB Group-D, 01-10-2018 (Shift –III)

Ans : (a) Speed is defined as the distance covered in unit time $\Rightarrow$ Speed$=\frac{\text{Distance}}{\text{Time}}$
Its SI unit is metre/sec.

59. ms^{-2} is S.I. unit of which of the following?
(a) Velocity (b) Speed
(c) Force (d) Acceleration

RRB Group-D, 15-10-2018 (Shift –III)
RRB Group-D, 24-09-2018 (Shift –I)
RRB Group-D, 11-10-2018 (Shift –II)
RRB Group-D, 19-09-2018 (Shift –III)

Ans : (d) Acceleration is defined as the rate of change of velocity with respect to time.
i.e. Acceleration $=\frac{\Delta v}{\Delta t}$
It is a vector quantity and its SI unit is m/s^2.

60. Which of the following has S.I. unit Joule / second?
(a) Work (b) Force
(c) Thrust (d) Power
RRB Group-D, 02-11-2018 (Shift –II)

Ans : (d) Power is defined as the rate of work done by a body.
$\Rightarrow$ Power = $\frac{\text{Work}}{\text{Time}}$
It is a scalar quantity and its SI unit is Joule/sec or watt (w).

61. Volt is S.I. unit of……?
(a) Resistance (b) Electric charge
(c) Electric current (d) Electric potential
RRB Group-D, 05-10-2018(shift -I)

Ans : (d) The SI unit for voltage is Volt and is represented by the letter 'V'. Volt is a derived SI unit of electric potential.
Voltage (V) = I × R
where, V = Voltage in (volt)
I = Current in (ampere)
R = Resistance in (ohm Ω)

62. What is the unit of electric potential?
(a) Volt (V) (b) Coulomb (c)
(c) Joule (J) (d) Ampere (a)
RRB JE CBT-II 31.08.2019 IInd Shift

Ans : (a) See the explanation of above question.

63. S.I. unit of voltage is –
(a) Coulomb (b) Joule
(c) Volt (d) Watt
RRB Group-D, 11-12-2018 (Shift –II)
RRB Group-D, 25-10-2018 (Shift –III)

Ans : (c) See the explanation of above question.

64. Which of the following is unit of temperature -
(a) Degree (b) Celsius
(c) Fahrenheit (d) Kelvin
RRB Group-D, 15-11-2018 (Shift –II)

Ans : (d) The SI unit of temperature according to the International System of unit is Kelvin, which is represented by the symbol K.
Celsius to Kelvin,
K = ^{0}C + 273.15

65. Ohm-m is unit of…….?
(a) Resistivity (b) Electric current
(c) Charge (d) Resistance
RRB Group-D, 05-10-2018 (shift–II)

Ans : (a) The S.I. unit of electrical resistivity is Ohm-meter.
Resistivity is the resistance offered by an object per unit length and per unit cross-sectional area at a specified temperature.
The Ohm (symbol : Ω) is the S.I. unit of electrical resistance, named in honor of German physicist Georg Simon Ohm.

66. ..…… has S.I. unit ampere?
(a) Voltage (b) Electric charge
(c) Electric current (d) Resistance
RRB Group-D, 03-10-2018 (Shift –III)

Ans : (c) The SI unit of electric current is ampere, which is the flow of electric charge across a wire at the rate of one coulomb per second.
Electric current (I) = $\frac{\text{Electric Charge}(Q)}{\text{Time}(t)}$
Electric current is measured using a device called ammeter.

67. What is the S.I. unit of retardation ?
(a) ms^2 (b) ms
(c) ms^{-1} (d) ms^{-2}
RRB Group-D, 03-10-2018 (Shift –III)

Ans : (d) The SI unit of retardation is m/s^2 (meter per second square). Retardation is nothing but it is a negative acceleration that acts in the opposite direction to that of motion.

68. 1Pascal=?
(a) $1Nm^{-2}$ (b) 100 atmosphere
(c) 1 dyne cm^{-2} (d) $1Nm^2$
RRB Group-D, 11-12-2018 (Shift –II)

Ans : (a) 1 Pascal = 1 N/m² = 1 (kg m/sec²)/m².

69. Match the following with the correct response-
(1) Watt - (a) N-m/sec
(2) 1 Kilowatt - (b) 3.6×10^6J
(3) 1 Kilowatt hour - (c) 1000W
(4) 1 Horsepower - (d) 746W
(a) 1-A, 2-C, 3-B, 4-D
(b) 1-A, 2-C, 3-D, 4-B
(c) 1-D, 2-B, 3-C, 4-A
(d) 1-A, 2-B, 3-C, 4-D
RRB ALP & Tec.(31-08-2018, Shift-I)

Ans : (a) Watt - Nm/sec
1kilowatt - 1000W
1 kilowatt hour - 3.6×10^6J
1 Horsepower - 746W

70. What is the S.I. unit of wavelength?
(a) Hertz (b) Kilogram
(c) Second (d) Meter
RRB JE (26-06-2019,Shift-IV)

Ans : (d) Wavelength is the distance between two successive crests or troughs of a wave. It is always measured in the direction of the propagation of wave. The SI unit of wavelength is meter (m).

71. Which one of these is a symbol of mole in S.I. unit ?
(a) g (b) mol
(c) kg (d) mg
RRB JE (28-06-2019,Shift-IV)

Ans : (b) 'Mol' is the symbol of mole in S.I. unit. One mole is equal to 6.023×10^{23} atom.
Number of moles (m) = $\frac{\text{Total mass}}{\text{Molecular mass}}$

72. What is the unit of electric power expenditure ?
(a) kWh (b) Joule
(c) Watt (d) Volt
RRB JE (02-06-2019,Shift-I)

Ans : (a) A unit (as mentioned on the electricity bills) is represented in kWh or Kilowatt Hour. If you use 1000 Watts or 1 Kilowatt of power for 1 hour then you consume 1 unit or 1 Kilowatt-Hour (kWh) of electricity.

73. What is another name for coulomb / second ?
(a) Joule (b) Ampere
(c) Volt (d) Second
RRB JE (28-05-2019, Shift-III)

Ans : (b) A coulomb per second is the definition of one ampere. Ampere is the SI unit of electric current. 1 Q/s = 1 A.

$$\text{Electric Current (I)} = \frac{\text{Electric Charge}(Q)}{\text{Time}(t)}$$

$$= \frac{1Q}{1s} = 1 \text{ ampere}$$

74. Lux is the SI unit of
(a) Intensity of illumination
(b) Luminous efficiency
(c) Luminous flux
(d) Luminous intensity

RRB JE (14-12-2019,Green Paper)

Ans : (a) The SI unit of intensity of illumination (illuminance) is lux. An illuminance of 1.0 lux is produced by 1.0 lumen of light shining in an area of 1.0 m^2.

75. What is the S.I. unit of wave speed ?
(a) Meter (b) Meter/second
(c) Second (d) Hertz

RRB JE (28-05-2019, Shift-III)

Ans : (b) Speed = Wavelength × Wave Frequency
$v = \lambda \times n$
In this equation, wavelength is measured in meters and frequency is measured in hertz (Hz), or number of vibration per second. Therefore, wave speed is given in metre per second, which is the SI unit of wave speed.

(ii) Measurement

76. A 'light year' is a unit that is use to measure:
(a) Time (b) Distance
(c) Motion (d) Speed

RRB NTPC 14.03.2021 (Shift-II) Stage Ist

Ans : (b) Light year is a unit that used to measure distance. A light-year is the distance that light travels in vacuum in one year (365.25 days). The distance that light travels in one year is about 9.4607×10^{12} kilometers.

77. 1 atmosphere = ?
(a) 1.01×10^5Pa (b) 10.1×10^5Pa
(c) 1.01×10^6Pa (d) 10.1×10^6Pa

RRB Group-D, 28-11-2018 (Shift –I)
RRB Group-D, 24-11-2018 (Shift –III)

Ans : (a) 1 Atmosphere = 101325 Pa
$= 1.01325 \times 10^5$ Pa
$\because$ 1 Bar = 1×10^5 Pa
1 Atmosphere = 1.01325 bar
= 1 atmosphere = 101.325 kPa
1 atmosphere = 760 Torr
1 Atmosphere = 760 mm Hg column.

78. 1 horse power is equal to -
(a) 764 watt (b) 768 watt
(c) 746 watt (d) 786 watt

RRB ALP & Tec.(20-08-2018, Shift-II)

Ans : (c) The electrical equivalent of one horsepower is 746 watts in the International System of Unit (SI) or one horse power is equal to the 746 Joule per sec.

79. What is 746 watt called?
(a) 1 horsepower (b) 1 kW
(c) 1 Pascal (d) 1 Joule

RRB Group D 05-11-2018(Shift-III)

Ans : (a) See the explanation of above question.

80. 1 Diopter is equal to –
(a) 1 mm^{-1} (b) 1 m^{-1}
(c) 1 dm^{-1} (d) 1 cm^{-1}

RRB JE (02-06-2019,Shift-III)

Ans : (b) • 1 diopter of power of a lens is described as the unit of measurement of the optical power of a lens which is equal to reciprocal of the focal length (f), measured in meter.
• The SI unit of power of lens is diopter whose focal length is one meter, which is denoted by the letter 'D'.

$$1 \text{ diopter (d)} = \frac{1}{f(\text{meter})} = \frac{1}{(\text{meter})}$$
$$= 1m^{-1}$$

where, (f) = focal length

81. What does a meter equal ?
(a) 10^{-6} micron (b) 10^6 micron
(c) 10^{-3} micron (d) 10^3 micron

RRB JE (14-12-2019,Yellow Paper)

Ans : (b)
1 micron = 1×10^{-6} meter
1 meter = 10^6 micron
Micrometer is represented by 'μm'

82. Sound pollution is measured in-
(a) Decibel (b) Joule
(c) Ampere (d) Ohm

RRB JE (22-05-2019, Shift-IV)
R.R.B. JE. Stage - II 30-08-2019 (Shift - III)

Ans : (a) Sound pollution is measured in 'Decibel'.

83. Loudness of sound is measured in ?
(a) Resonance (b) Frequency
(c) Decibel (d) Hertz

RRB Group-D, 12-11-2018 (Shift –II)

Ans : (c) The loudness of sound is measured in units called decibels (dB). A decibel unit expresses the relative intensity of sounds on a scale from zero for the average least perceptible sound to about 100 dB, which is near the level most people find uncomfortably loud.

84. 1 kWh = ?
(a) 3.6×10^5J (b) 3.6×10^{-6J}
(c) 3.6×10^6J (d) 3.6×10^{-5}J

RRB Group-D, 20-09-2018 (Shift –III)
RRB Group-D, 18-09-2018 (Shift –II)
RRB Group-D, 27-09-2018 (Shift –I)
RRB Group-D, 09-08-2018 (Shift –II)
RRB ALP & Tec.(09-08-2018, Shift-I)

Ans : (c) 1 kWh = 3.6×10^6J

85. 1 kilowatt is equal to?
(a) 100 watt (b) 10000watt
(c) 10watt (d) 1000watt

RRB Group-D, 26-05-2019 (Shift –III)

Ans : (d) A kilowatt, is a globally recognized standard for measuring electricity. One kilowatt is equal to 1,000 watt or 1 KW = 1000 Joule per second. Companies charge an electric bill by how much electricity we use per kilowatt hour (kWh).

86. 1 KW= ?
(a) $1000Js^{-1}$ (b) $100Js^{-1}$
(c) $10Js^{-1}$ (d) $10000Js^{-1}$
RRB Group-D, 12-11-2018 (Shift –I)

Ans : (a) See the explanation of above question.

87. 5.5 kWh = ?
(a) 14.4×10^8J (b) 14.4×10^5J
(c) 14.0×10^6J (d) 19.80×10^6J
RRB Group-D, 04-12-2018 (Shift –II)

Ans : (d) We know that,
1kWh = 3.6×10^6J
5.5 kWh = $5.5 \times 3.6 \times 10^6$J = 19.80×10^6J

88. 5.6 kWh = ?
(a) 20.16×10^8J (b) 14.4×10^6J
(c) 14.4×10^5J (d) 19.8×10^6J
RRB Group-D, 22-09-2018 (Shift –II)

Ans : (a) We know that,
1kWh = 3.6×10^6J
5.6 kWh = $5.6 \times 3.6 \times 10^6$J = 20.16×10^6J

89. Atomic radius is measured in-
(a) Millimeter (b) Centimeter
(c) Kilogram (d) Nanometer
RRB-JE 30.08.2019, Ist Shift

Ans : (d) Atomic Radius is measured in Nanometres (10^{-19}m). Atomic Radius is defined as the Shortest distance Nucleus to its Outermost Orbit.

90. 1 Newton = ?
(a) 1 kg × 1 ms^1 (b) 1 kg × 1 ms^{-2}
(c) 1 kg × 1 ms^{-1} (d) 1 kg × 1 ms^2
RRB Group-D, 10-12-2018 (Shift –III)
RRB Group-D, 22-10-2018 (Shift –III)

Ans : (b) A Newton (N) is the international unit of force. One Newton is equal to 1 kilogram meter per second square.
$1\ N = 1\ kg \times \frac{1m}{sec^2} = 1\ kg \times 1\ ms^{-2}$

91. 4.6 kWh = ?
(a) 14.0×10^6J (b) 16.56×10^6J
(c) 14.1×10^8J (d) 14.4×10^5J
RRB Group-D, 05-12-2018 (Shift –II)

Ans : (b) 4.6kWh = $4.6 \times 3.6 \times 10^6$J = 16.56×10^6J

92. 2 kWh = ?
(a) 7.2×10^8J (b) 7.2×10^6J
(c) 7.2×10^5J (d) 72×10^5J
RRB Group-D, 03-12-2018 (Shift –II)

Ans : (b) We know that,
1kWh = 3.6×10^6J
2 kWh = $2 \times 3.6 \times 10^6$J = 7.2×10^6J

93. 4.2 kWh = ?
(a) 14.4×10^5J (b) 15.12×10^6J
(c) 14.0×10^6J (d) 14.4×10^6J
RRB Group-D, 05-12-2018 (Shift –I)

Ans : (b) We know that,
1kWh = 3.6×10^6J
4.2 kWh = $4.2 \times 3.6 \times 10^6$J
= 15.12×10^6J

94. 1 Nano meter = ?
(a) $1/10^{-8}$m (b) $1/10^{-9}$m
(c) $1/10^8$m (d) $1/10^9$m
RRB Group-D, 16-11-2018 (Shift –I)

Ans : (d) 1 Nano meter = 1×10^{-9} m = $1/10^9$m

95. 1 coulomb/1s = ?
(a) 1 volt (b) 1 ampere
(c) 1 ohm (d) 1 watt
RRB Group-D, 12-10-2018 (Shift –III)

Ans : (b) In terms of SI unit, 1 Coulomb is equivalent to one Ampere/second.
$1\ ampere = \frac{1\ coulomb}{1\ sec}$

96. 1 Pico meter = ?
(a) 10^{-11}m (b) 10^{12}m
(c) 10^{-12}m (d) 10^{11}m
RRB Group-D, 20-09-2018 (Shift –III)

Ans : (c) 1 Pico meter = 10^{-12}m

97. 1 Joule = ?
(a) 1N ×1m (b) 1W ×1h
(c) 1N ×1cm (d) 1Pa ×1m
RRB Group-D, 15-10-2018 (Shift –II)

Ans : (a) One joule is defined as the amount of energy exerted, when a force of one Newton is applied over an object and the displacement of object is one meter . (1 Joule = 1 N × 1 m). One joule (1 Joule = 1 watt × 1 second) is the equivalent to one watt of power radiated or dissipated for one second.

98. The strength of winds is measured with the help of
(a) Tintometer (b) Wind indicator
(c) Barometers (d) Beaufort scale
RRB JE CBT-II 28–08–2019 (evening)

Ans : (d) The strength of winds is measured with the help of Beaufort scale which starts with Zero (0) and goes to a force of 12. It was developed by British Admiral Sir Francis Beaufort in 1805 to help sailors.

99. Korotkoff sounds are observed during measuring the-
(a) Electrical insulation
(b) Almospheric pressure
(c) Blood pressure
(d) Speed of wind flow
R.R.B. JE. Stage - II 01-09-2019 (Shift - III)

Ans : (c) Korotkoff sounds are usually observed when one measures blood pressure.

100. A particular household has consumed 100 unit of energy during 5 days. How much energy is this converted to Joule.
(a) 360×10^8J (b) 360×10^{-8}J
(c) 3.6×10^{-8}J (d) 3.6×10^8J
RRB Group-D, 03-10-2018 (Shift –III)

Ans : (d) 1 unit = 1 kWh
1 kWh = 3.6×10^6J
Therefore, 100 units = $100 \times 3.6 \times 10^6 = 3.6 \times 10^8$J

(iii) Measuring Instrument

101. Which instrument aids in the detection of the heartbeat?
(a) Stethoscope
(b) Thermometer
(c) Spirometer
(d) Sphygmomanometer
RRB Group-D– 02/09/2022 (Shift-III)

Ans. (a) : The doctor feels your heartbeats with the help of an instrument called a stethoscope. A doctor uses the stethoscope as a device to amplify the sound of the Heart. It consist of a chest piece that carries a sensitive diaphragm, two ear pieces and a tube joining the parts.

102. Name the instrument used by the physicians to measure blood pressure.
(a) Echocardiogram
(b) Sphygmomanometer
(c) Stethoscope
(d) Spirometer

RRB Group-D– 09/09/2022 (Shift-III)

Ans.(b) : Sphygmomanometer is used by the physician to measure blood pressure. Stethoscope is used to measure heart rate ..... of human body. Spiro meter is used to measure air inspired and expired. ECG or Electrocardiogram is used to measure electrical signal from the heart.

103. Which of the following does NOT match?
(a) Compass – used for navigation and indicates north-south directions
(b) Cyclotron – measures small magnitude Cyclones
(c) Actinometer – measures the intensity of radiation
(d) Electroscope – detects the presence of electric charge

RRB NTPC 23.02.2021 (Shift-I) Stage Ist

Ans : (b) A cyclotron is a type of compact particle accelerator which produces radioactive isotopes that can be used for imaging procedure. Rests are correctly matched.

104. Which instrument is used to detect the presence of electric charge on an object?
(a) Multimeter (b) Electroscope
(c) Amperemeter (d) Ohmmeter

RRB NTPC 19.03.2021 (Shift-I) Stage Ist

Ans : (b) The electroscope is an early scientific instrument used to detect the presence of electric charge on a body. It detects charge by the movement of a test object due to the Coulomb electrostatic force on it. An electroscope can only give a rough indication of the quantity of charge. An instrument that measures electric charge quantitatively is called an electrometer.

105. What does a hygrometer measure?
(a) Heat (b) Humidity
(c) Force (d) Radiation

RRB NTPC 27.01.2021 (Shift-II) Stage Ist

Ans : (b) A hygrometer is an instrument used to measure the amount of water vapour or humidity in atmosphere.

Measuring Quantity	**Instruments**
Temperature	Thermometer
Force	Force gauge
Amount of heat	Calorimeter

106. A lie detector apparatus is also known as a :
(a) Seismograph (b) Barograph
(c) Polarimeter (d) Polygraph

RRB NTPC 01.02.2021 (Shift-II) Stage Ist

Ans : (d)
(i) Polygraph:– used as lie detector apparatus/machine
(ii) Seismograph – used to measure seismic waves.
(iii) Barograph – used to measure change in atmospheric pressure.
(iv) Polarimeter – used to measure the angle of rotation caused by passing polarized light.

107. Which of the following is a lie detector machine?
(a) Telescope (b) Photometer
(c) Polygraph (d) Tachometer

RRB NTPC 03.03.2021 (Shift-I) Stage Ist

Ans : (c) See the explanation of above question.

108. Which instrument is used to show the direction of flow of current in a circuit?
(a) Galvanometer (b) Ammeter
(c) Rheostat (d) Voltmeter

RRB NTPC 19.01.2021 (Shift-I) Stage Ist

Ans : (a)

	Instruments	**Uses**
♦	Galvanometer	to measure small electrical current & direction.
♦	Ammeter	to meausre wide range of current value.
♦	Rheostat	to adjust resistance.
♦	Voltmeter	to measure voltage.

109. Which of the following devices is used to measure relatively high temperature, such as are encountered in furnaces?
(a) Bolometer (b) Pyrometer
(c) Ammeter (d) Fluxmeter

RRB NTPC 07.01.2021 (Shift-II) Stage Ist

Ans : (b) Pyrometer is an instrument used to measure high temperature, such as are encountered in furnances. When the temperature of an object is very high its temperature cannot be measured with a normal thermometer.

110. Which device is used in submarines to see things above the level of the sea ?
(a) Pyrometer (b) Epidiascope
(c) Periscope (d) Odometer

RRB NTPC 10.04.2016 (SHIFT-III) Stage-I

Ans : (c) Submarines have a special device called a periscope that allows people inside the submarine to see what's going on above the level of sea. The main part of a periscope is a long tube that has a mirror at each end. The mirrors are attached so that they are parallel to each other at a 45-degree angle. Arranged in this way, the mirrors bounce reflection of light between them.

111. Which instrument is used to measure atmospheric pressure?
(a) Lactometer (b) Barometer
(c) Thermometer (d) Multimeter

RRB NTPC (12.04.2016) SHIFT) Stage- Ist

Ans : (b) Barometer is a device used to measure atmospheric pressure.
- A barometer can also be used to measure altitude. There are two main types of barometers: mercury and aneroid.

- A lactometer is used to find out the amount of water in the milk.
- A thermometer is an instrument that measures temperature.
- Multimeter is a testing tool used to measure two or more electrical values.

112. Which among the following devices is used to measure the atmospheric pressure?
(a) Tetrameter (b) Odometer
(c) Thermometer (d) Barometer

RRB NTPC 10.01.2021 (Shift-I) Stage Ist

Ans : (d) See the explanation of above question.

113. Which device is used to see the Sun?
(a) Stroboscope (b) Telescope
(c) Helioscope (d) Sun meter

RRB NTPC 10.04.2016 (SHIFT-I) Stage-Ist

Ans : (c) The helioscope is an instrument that is used to see the Sun and Sun's surface area etc.

114. Potentiometer basically –
(a) Is a measuring instrument
(b) Is a connective device
(c) Is a calibration equipment
(d) Is a notation tool

RRB J.E. (14.12.2014), Green paper

Ans : (a) Potentiometer is a measuring instrument used for measuring an electromotive force by balancing it against the potential difference produced by passing a known current through a known variable resistance.
Potentiometers are commonly used to control electrical devices such as volume controls on audio equipment.

115. From which device is the electric current measured?
(a) Voltmeter (b) Ammeter
(c) Ohmmeter (d) Wavemeter

RRB J.E. (14.12.2014), Red paper

Ans : (b) An ammeter is a measuring instrument used to measure the current in a circuit. Electric currents are measured in amperes (a), hence the named Instruments are used to measure smaller currents, in the milliampere or microampere range, are designated as milliammeters or microammeters.
Hence-
(i) Ammeter is connected in series to the circuit.
(ii) It must have the following legitimate resistance.
(iii) Ammeter Draws less power.

116. Ammeter is –
(a) Is connected in a series to the circuit
(b) Must have the following legitimate resistance
(c) Draws less power
(d) All of the above

RRB J.E. (14.12.2014, Set-2), Red paper

Ans : (d) See the explanation of above question.

117. What does stalagmometer used to measure?
(a) Dynamic viscosity (b) Surface tension
(c) Refractive index (d) Lighted activity

RRB SSE 21.12.2014

Ans : (b) A stalagmometer is a device used for measuring surface tension using the stalagmometric method. It is also called a stactometer or stalagmometer. The device is a capillary glass tube whose middle section is widened. The volume of a drop can be predetermined by the design of the stalagmometer.

118. Odometer is an instrument which is used in motor vehicle for measuring-
(a) Direction (b) Distance
(c) Smell (d) Speed

RRB Group –D, 10-10-2018 (Shift-III)
RRB ALP & TECH (14.08.2018) Shift – I

Ans : (b) An odometer is an instrument used for measuring the distance travelled by a vehicle. The device may be electronic, mechanical, or a combination of both.
It is sometimes called a milometer.

119. Odometer in vehicle measures –
(a) Fuel (b) Distance
(c) Smell (d) Speed

RRB Group –D, 25-10-2018 (Shift-II)

Ans : (b) See the explanation of above question.

120. Which instrument is used for measuring distance travelled by vehicle?
(a) Accelerometer (b) Odometer
(c) Speedometer (d) Tachometer

RRB Group- D,05-11-2018(Shift-II)

Ans : (b) See the explanation of above question.

121. Which of the following speed of flow measuring instrument is area meter?
(a) Venturimeter (b) Rotameter
(c) Pitot tube (d) None of these

RRB SSE 21.12.2014

Ans : (b) Rotameter measuring instrument is an area meter. A rotameter is a device that measure the volumetric flow rate of liquids in a closed pipe or tube. It belongs to a class of meters called variable-area flow meters, which measure flow rate by allowing the cross sectional area the liquid travells through the pipe or tube.

122. Tachometer is used for-
(a) R.P.M.
(b) Torque
(c) Rotational kinetic energy
(d) Distance

RRB J.E. 2014(14-12-2014 ,Green Paper)
RRB NTPC Stage-Ist 31.03.2016 (SHIFT-II)
RRB S.S.E. 2014(21-12-2014 ,Set-08,Green Paper)

Ans : (a) Tachometer is an instrument used for measuring the rotation or revolution speed of objects, such as an engine or a shaft. The tachometer measures rotations per minute (RPM) of engines shafts and is widely used in automobiles, airplanes, marine engineering field and many others.

123. Multimeter consist of-
(a) Current and Ohm meter
(b) Voltmeter & Ohm meter
(c) Voltmeter & Current
(d) Voltmeter, Currentmeter & Ohm meter

RRB J.E. 2014(14-12-2014, Green Paper)

Ans : (d) A multimeter is the combination of a DC voltmeter, AC voltmeter, Ammeter, and Ohmmeter. An un-amplified analog multimeter combines a meter movement, range resistors and switches; VTVMs are amplified analog meters and contain active circuitry.

124. What is false about richter scale?
(a) It was developed by Charles Richter and Gutenberg in 1935.
(b) It is a logarithmic scale
(c) It can be measured using seismometer
(d) A magnitude of 8-9 on the Richter scale means a light earthquake.

RRB NTPC Stage-Ist 03.04.2016 (SHIFT-I)

Ans : (d) A magnitude of 8-9 on the Richter scale means a destructive earthquake. The Richter magnitude scale is a scale of numbers used to tell the power (or magnitude) of earthquake. Charles Richter And Gutenberg developed the Richter Scale in 1935.

125. Instrument used for measuring density of liquid is-
(a) Hygrometer (b) Hydrometer
(c) Hypsometer (d) Fathometer

RRB NTPC Stage-Ist 05.04.2016 (SHIFT-I)

Ans : (b) A hydrometer is an instrument used for measuring the relative density of liquids based on the concept of buoyancy. They are typically calibrated and graduated with one or more scales such as specific gravity.
Fathometer is a depth finder that uses sound waves to determine the depth of water. A hygrometer is a meteorological instrument that is used to measure the humidity of the air. The common way these devices work by using a material that attracts moisture.
A hypsometer is an instrument for measuring height or elevation.

126. Which instrument is used for discovering the things in water?
(a) Laser (b) Radar
(c) Sonar (d) Scuba

RRB NTPC Stage-Ist 28.03.2016 (SHIFT-II)

Ans : (c) SONAR (Sound Navigation and Ranging) is a technique that uses sound propagation (usually underwater, as in submarine navigation) to navigate, communicate with or detect objects under the surface of the water, such as other vessels.

127. Echolocation in ships is used for measuring-
(a) Depth of light
(b) Density of fish
(c) Depth of water
(d) Density of oceanic vegetation

RRB Group- D, 12-11-2018(Shift-I)

Ans : (c) Echolocation in ships is used for measuring depth of water. The principle of echolocation is same as SONAR system. Hence, SONAR is the type of Echolocation.

128. .....is type of Echolocation –
(a) Vibration (b) Frequency
(c) Radar (d) Sonar

RRB Group –D, 01-11-2018 (Shift-II)

Ans : (d) See the explanation of above question.

129. Which instrument is used for measuring density of milk?
(a) Hydrometer (b) Lactometer
(c) Barometer (d) Thermometer

RRB Group- D,12-11-2018(Shift-III)

Ans : (b) A lactometer is an instrument that is used to check the purity of milk by measuring its density. The lactometer works on the principle of specific gravity of milk.

130. Voltmeter is used for measuring-
(a) Air resistance (b) Voltage
(c) Magnetic flux (d) Electric current

RRB J.E., 29-05-2019(Shift-III)
RRB Group –D, 27-09-2018 (Shift-III)

Ans : (b) A voltmeter is an instrument used for measuring electrical potential difference between two points in an electric circuit. Analog voltmeters move a pointer across a scale in voltmeter for the voltage of the circuit; digital voltmeters give a numerical display of voltage by the use of an analog-to-digital converter.

131. Which instrument is used for measuring voltage?
(a) Ammeter (b) Potentiometer
(c) Galvanometer (d) Voltmeter

RRB Group- D, 08.10.2018 (Shift-I)
RRB Group –D, 08-10-2018 (Shift-II)

Ans : (d) See the explanation of above question.

132. Galvanometer is used for measuring-
(a) Direction of speed
(b) Direction of magnetic flux
(c) Direction of sound
(d) Direction of current

RRB Group- D, 24-09-2018(Shift-I)
RRB Group –D, 22-09-2018 (Shift-I)

Ans : (d) A galvanometer is an electromechanical instrument used for detecting and indicating an electric current on a circuit. A galvanometer works as an actuator, by producing a rotary deflection, in response to electric current flowing through a coil in a constant magnetic field.

133. Which of the following is used to detect current in a circuit?
(a) Galvanometer (b) Anemometer
(c) Barometer (d) Lactometer

RRB NTPC Stage-Ist 26.04.2016 (SHIFT-II)

Ans : (a) See the explanation of above question.

134. Which is used for measuring speed of motor-
(a) Speedometer (b) Voltmeter
(c) Velometer (d) Lactometer

RRB Group- D,05-11-2018(Shift-I)

Ans : (a) A speedometer is a device used to measure the travelling speed of a vehicle, usually for the purpose of maintaining a sensible speed.

135. Ammeter : Electric current :: Ohmmeter : ?
(a) Voltage (b) Pressure
(c) Resistance (d) Speed

RRB Group –D, 03-10-2018 (Shift-II)

Ans : (c) Ohmmeter is related to measure resistance in a circuit. It measures the resistance in ohms.

136. Which instrument is used for measuring power and speed of wind?
(a) Lactometer (b) Speedometer
(c) Thermometer (d) Anemometer

RRB Group –D, 12-10-2018 (Shift-I)
RRB NTPC 25.01.2021 (Shift-I) Stage Ist
RRB NTPC 23.07.2021 (Shift-II) Stage Ist

Ans : (d) An anemometer is an instrument that measures wind speed and wind pressure and power. Anemometers are important tools for meteorologists, who study weather patterns. The anemometer counts the number of rotations, or turns, which is used to calculate wind speed. It is also a common weather station instruments.

137. Which of the following can be measured temperature without touching to object?
(a) Infrared thermometer
(b) Filled system thermometer
(c) Mercury glass thermometer
(d) Electric thermometer

RRB J.E. (14.12.2014, Green paper)

Ans : (a) Infrared thermometer enables to measure temperature quickly, at a distance and without touching the object. They are so useful, easy to use even fun to use that they have become as common in kitchens as they have on factory floors. Infrared thermometer are often used to find over heated equipment and electrical circuits temperature but they have hundreds of other uses.

(iv) Physical Quantities

138. Which of the following is a scalar quantity?
(a) Pressure (b) Displacement
(c) Force (d) Momentum

RRB Group-D 26-10-2018 (Shift-II)

Ans : (a) Pressure is a scalar quantity, because it has magnitude but does not have direction, whereas force, displacement and momentum all are vector quantities because they have both direction and magnitude.

139. Which of the following is not a vector quantity-
(a) Speed / Impulse (b) Force of gravity
(c) Electric current (d) Displacement

RRB NTPC 12.04.2016 (Shift-I) Stage Ist

Ans : (c) Electric current is not a vector quantity because it does not follow the vector law of addition.

140. A vector quantity has both magnitude and direction, whereas a scalar quantity has only magnitude and no direction. Which of the following is a vector quantity?
(a) Work (b) Speed
(c) Displacement (d) Energy

RRB Group-D 12-11-2018 (Shift-I)

Ans : (c) Vector Quantity– The physical quantities which need both magnitude and direction for their complete description are called 'vectors' or 'vector quantities'. Displacement, velocity, force, etc. are all vector quantities.

141. What is an example of vector quantity?
(a) Weight (b) Temperature
(c) Velocity (d) Length

RRB NTPC Stage Ist 28.04.2016 (Shift-I)

Ans : (c) See the explanation of above question.

142. Which of the following is a vector quantity?
(a) Time (b) Temperature
(c) Distance (d) Velocity

RRB NTPC 09.04.2016 (Shift-III) Stage Ist

Ans : (d) See the explanation of above question.

143. Which of the following has both direction and magnitude?
(a) Mass (b) Distance
(c) Momentum (d) Speed

RRB Group-D 05-11-2018 (Shift-II)

Ans : (c) Momentum is a vector quantity, as it has both direction and magnitude. Mass, distance and speed are scalar quantities because they contain only magnitude.

144. In the given physical quantities which is not a relative quantity?
(a) Time (b) Acceleration
(c) Velocity (d) Distance

RRB Group-D, 03-12-2018 (Shift –III)

Ans : (a) Time is not a relative quantity.
Velocity is defined as the rate of displacement of an object

$$\text{Velocity (V)} = \frac{\text{Displacement}}{\text{Time}}$$

- Acceleration is defined as the rate of change of velocity.
- Velocity and acceleration is a vector quantity.

Note : Negative acceleration is called as retardation.

145. Which of the following is vector quantity ?
(a) Volume (b) Mass
(c) Force (d) Length

RRB JE (14-12-2014, Red Paper)

Ans : (c) Vector quantities refers to that physical quantities characterized by the presence of both magnitude as well as direction. For example, displacement, force, torque, momentum, acceleration, velocity, etc.

146. Which of the given below is NOT a vector quantity?
(a) Power (b) Torque
(c) Displacement (d) Acceleration

RRB NTPC 09.03.2021 (Shift-I) Stage Ist

Ans : (a) The physical quantities which require magnitude as well as direction to be fully represented are called vector quantities. Example- Momentum, impulse, acceleration, force, displacement, velocity, electric field, torque etc. Whereas energy, distance, time, power etc, are scalar quantities.

147. Which of the following is a scalar quantity?
(a) Momentum (b) Force
(c) Mass (d) Velocity

RRB NTPC 28.12.2020 (Shift-II) Stage Ist

Ans : (c) A quantity that has magnitude but no particular direction is described as scalar quantity. A quantity that has magnitude and acts in a particular direction is described as vector quantity. Scalar quantities include: mass, distance, speed, time, power, energy etc. Vector quantities include: displacement, velocity, acceleration, force, weight, momentum etc.

148. Which of the following only gives magnitude and not direction?
(a) Momentum (b) Displacement
(c) Work (d) Force

RRB Group –D, 25-09-2018 (Shift-III)

Ans : (c) Work is a scalar quantity because it is the dot product of two vectors (Force and Displacement).
Work (W) = F.d

$$\underset{\downarrow}{\text{Work}} = \underset{\downarrow}{\text{Force}} \cdot \underset{\downarrow}{\text{Displacement}}$$

Scalar quantity Vector Vector

Thus, dot product of two vectors becomes scalar quantity. So, work done has only magnitude but not direction.

149. In work –
(a) There is no direction , only have magnitude
(b) There are no direction & magnitude
(c) Both magnitude and direction is present
(d) Only direction, no magnitude

RRB Group –D, 27-11-2018 (Shift-II)

Ans : (a) See the explanation of above question.

150. Which of the following has magnitude and no direction?
(a) Work (b) Impulse
(c) Displacement (d) Force

RRB Group –D, 12-11-2018 (Shift-II)

Ans : (a) Work is a scalar quantity which has only magnitude, no direction.

2. Mechanics
(i) Work

151. Which of the following can do more work?
(a) A raised hammer
(b) A bullet fired by the gun
(c) A moving stone
(d) A rotating wheel

RRB ALP & Tec.(31-08-2018)Shift-III
RRB Group –D, 12-10-2018 (Shift-II)

Ans : (b) A bullet fired by gun has the maximum work.

152. A force of 20 N displaces an object through 2 m and does a work of 20 J. The angle between the force and displacement is:
(a) 60^0 (b) 30^0
(c) 90^0 (d) 0^0

RRB ALP & Tec.(20-08-2018)Shift-II

Ans : (a) Given that,
F = 20N
d = 2m
W = 20J
$\Rightarrow$ Work (W) = F. d cosθ
$20 = 20 \times 2 \times \cos\theta$
$1 = 2\cos\theta$
$\cos\theta = 1/2$
$\cos\theta = \cos 60^0$
$\theta = 60^0$

153. A porter raise 12 kg object from surface of earth and put object 1.5 meter above from surface on his head. Calculate the work done on object ($g = 10\ ms^{-2}$).
(a) 140 J (b) 150 J
(c) 180 J (d) 150 J

RRB Group-D, 04.10.2018 (shift-I)

Ans : (c) m = 12kg
$g = 10\ m/s^2$
h = 1.5m
So, if an object of mass (m) is raised through a height h, the work done on the object is equal to potential energy (mgh) of an object.
Therefore,
W = mgh
= 12×10×1.5
= 180J.

154. If an aeroplane travelled 4000m distance and work done is 20000J. Then force applied on it is
(a) 5 N (b) 50 N
(c) 0.20 N (d) 10 N

RRB Group –D, 10-12-2018 (Shift-I)

Ans : (a) Work = Force × Displacement
20000 = Force × 4000
F = 20000/4000
= 5 N

155. The gravitational potential energy of an object at a point above the ground. Is defined as the work done in. . . . . .
(a) Lifting it from the ground to the point opposite gravity
(b) Applying gravitational force on it
(c) Keep it at the center
(d) Placing it on the ground of against gravity

RRB Group –D, 22-10-2018 (Shift-II)

Ans : (a) The gravitational potential energy of an object at a point above the ground is defined as the work done to lift it from the ground to the point opposite to gravity.

156. The work done, to increase speed 5 m/s to 10 m/s by a car of 800kg is.....
(a) 30kJ (b) 40kJ
(c) 20kJ (d) 10kJ

RRB Group-D 22-09-2018(Shift-II)

Ans : (a) Work done = change in kinetic energy
$= 1/2m(v_2^2 - v_1^2)$
$= 1/2 \times 800(10^2 - 5^2)$
$= ½ \times 800 \times 75$
$= 30000\ J = 30kJ$

157. An object of 1kg is dropped to the ground from a height of 30m. What is the work done by the force of gravity ? ($g = 10\ m/s^2$)
(a) 10J (b) 300J
(c) 0.33J (d) 30J

RRB Group-D 19-09-2018(Shift-I)

Ans : (b) m = 1 kg
$g = 10\ m/s^2$
h = 30 m
P.E. = mgh
Or work done by the force of gravity
$= 1 \times 10 \times 30 = 300$ Joule

158. A person picks up 20kg of goods at 2m above the ground and keeps it on his head, work done by the person is?
(a) 200J (b) 400J
(c) 40J (d) 20J

RRB Group-D 17-09-2018(Shift-II)

Ans : (b) Given that, m = 20 kg
height (h) = 2 m
$g = 10\ m/s^2$
$W = mgh = 20 \times 10 \times 2 = 400$ J

159. An object of 1 kg, raised 10m above the surface of earth then work done by gravitational force will- ($g = 9.8\ m/s^2$)
(a) 98J (b) -9.8J
(c) 9.8J (d) -98J

RRB Group –D, 20-09-2018 (Shift-II)

Ans : (d) m = 1kg
g = 9.8m/s^2 (object raise from surface against gravitational force)
h = 10m
As work done by an object is equal to the potential energy stored in an object.
Therefore,
W = mgh
= 1×9.8×10
= 98J.
When the displacement is opposite to the direction of force, work is automatically -98J

160. A man raised 20kg object from the surface of earth and put the object 2m above on his head. Calculate the work done by the man is- (g = 10 m/s^2)
(a) 350J (b) 200J
(c) 400J (d) 150

RRB Group –D, 24-09-2018 (Shift-II)

Ans : (c) m = 20kg
g = 10m/s^2
h = 2.0m
So, if an object of mass (m) is raised through a height h, the work done on the object is equal to potential energy (mgh).
Therefore,
W = mgh
= 20×10×2
= 400J.

161. When an object move 1m distance by 1N force on the direction of force then work done will-
(a) 10J (b) 100J
(c) 0.01J (d) 1J

RRB ALP & Tec.(20-08-2018)Shift-II

Ans : (d) Given, Force = 1 N, Distance = 1 m
Work done = F.d cosθ
=1×1×cos0^0 (because force and displacement are in same direction)
Hence work done = 1J

162. Work done by a man standing on a platform holding 10kg suitcase is-
(a) 100J (b) 0J
(c) 98J (d) 980J

RRB ALP & Tec.(21-08-2018)Shift-I

Ans : (b) W = F × d
Here, F = force
d = displacement
But there is no displacement of the man,
Hence, d = 0
Work done = F×0
W = 0

163. A 4.0 kg object is moving horizontally with a speed of 5.0 m/s. To increase its speed to 10 m/s, the amount of net work required to be done on this object is:
(a) 150J (b) 100J
(c) 75J (d) 50J

RRB ALP & Tec.(09-08-2018)Shift-I

Ans : (a)
Given that, m = 4kg, V_1 = 5 m/s and V_2 = 10 m/s
For raising speed of the object, the work done is equal to kinetic energy,
Work done (W) = K.E

$$= \frac{1}{2}m\left(v_2^2 - v_1^2\right)$$
$$= \frac{1}{2}\times 4\left(10^2 - 5^2\right)$$
Work done = {4×(10^2-5^2)}/2=150 J

164. A ball weighing 0.1 kilogram is dropped from a stationary position when it falls from a distance of 2 meters, then what will be the work done by the force of gravity.
(a) 1.96 J (b) - 1.96 J
(c) - 0.98 J (d) 0.98 J

RRB ALP & Tec.(10-08-2018)Shift-III

Ans : (a) Given, Mass of ball (m) = 0.1 kg
Total height (h) = 2m
Acceleration due to gravity (g) = 9.8 m/s^2
Here, work done by the gravitational force = potential energy of ball at 2 m height.
W = 0.1×9.8×2=1.96 J

165. When the force exerted on an object, then the work done will be zero if it has displacement.
(a) Negative (b) Positive
(c) Neutral (d) Zero

RRB ALP & Tec.(21-08-2018)Shift-III

Ans : (d) If displacement of the object is zero then work done also will be zero.
$\because$ W = F × d
Where, F = force
d = displacement
W = F × 0
W = 0

166. A boy raises a box with a weight of 120 N through a height of 2 m. The work done by the boy is-
(a) 60 J (b) 120 J
(c) 240 J (d) 180 J

RRB ALP & Tec.(30-08-2018)Shift-I

Ans : (c) Given, Weight = mg = 120N, Height (h)= 2 m
Work done = mgh
= 120×2
= 240J.

167. Capacity of doing work is known as-
(a) Power (b) Pressure
(c) Energy (d) Force

RRB ALP & Tec.(31-08-2018)Shift-III

Ans : (c) Energy is defined as the capacity to do work. Work and energy has same S.I. unit i.e. 'Joule (J)'. Work and energy both are scalar quantity.

168. If the value of work is positive then the kinetic energy of the body -
(a) Decrease his energy
(b) Its value will be zero
(c) It will stay
(d) Increase his energy

RRB Group –D, 20-09-2018 (Shift-I)

Ans : (d) If work done by conservative forces is positive, then $\vec{F}.\vec{s} > 0$. Thus, the one component of force is along the direction of displacement. Thus, speed of the object tends to increase as the force continues to be applied on the object. Since, the total energy is increased.

169. Which of the following position is no work done?
(a) Kapil stands with a weight of 10 kg on his shoulder
(b) Sachin walks 4 km.
(c) A porter carries weight from a bus to a car.
(d) Arun plays cricket on the field.

RRB Group –D, 19-09-2018 (Shift-III)

Ans : (a) Kapil is standing with a weight of 10 kg on his shoulder. It is clear that displacement is zero, so the work done by Kapil will be zero.

170. The work done by the force is positive when-
(a) Displacement occurs in the direction of force
(b) Displacement is perpendicular to the force
(c) There is no displacement due to the force
(d) Displacement occurs in opposite direction of force

RRB Group –D, 19-09-2018 (Shift-III)

Ans : (a) Positive Work–When force and displacement are in the same direction, the work performed on an object is said to be positive work.
Negative Work–Negative work is performed if the displacement is opposite to the direction of the force applied.
Zero Work–When force and displacement are perpendicular to each other, or when force or displacement is zero then there will be no work done.

171. Which of the following activities can be said to have work done ?
(a) Harsh is reading the book
(b) Pinky is walking on a flat road with a book on her head
(c) Shruti is sitting on the chair
(d) Khusi is pushing the wall of the house, but fails to do it.

RRB Group –D, 18-09-2018 (Shift-II)

Ans. (*) Pinky is walking on a flat road with a book on her head, it can be said their will be no work done. Because here, the force due to the gravity is perpendicular to the displacement of object. In other options their are no any displacement of object.
So here remaining option also work done will be zero.

172. A porter lifts 500 N up to a distance of 100 meters work done by the porter is-
(a) 50N (b) 0.20N
(c) 0N (d) 5N

RRB Group –D, 06-12-2018 (Shift-I)

Ans : (c) A porter lifts 500N up to a distance of 100 meters then the work done by porter is zero because the displacement of the object is perpendicular to the direction of the force applied. So, the angle between the force and displacement is 90 degrees ($\theta = 90°$).
Work done = $F.d\cos\theta$
$= F.d\cos 90^0 = 0$

173. In which of the following work is not done –
(a) A wind mill raising the water from well
(b) A donkey put a weight on his back
(c) Suman is swimming in a pool
(d) A engine is pulling a train

RRB Group –D, 02-11-2018 (Shift-II)

Ans : (b) A donkey is carrying weight on its back, in this case no work is being done because the displacement of the object is perpendicular to the direction of the force applied.
$W = f.d\cos\theta$
$= f.d\cos 90^0 = 0$
$W = 0$

174. Efficiency of work is known as-
(a) Energy (b) Velocity
(c) Force (d) Speed

RRB Group –D, 16-11-2018 (Shift-II)

Ans : (a) Energy is called the ability to do work. Efficiency can be determined quantitatively by the ratio of energy transferred to useful form compared to the total energy supplied initially is called the efficiency.

175. If the work done is zero, then the angle between force and displacement is –
(a) 0º (b) 90º
(c) 45º (d) 30º

RRB Group –D, 08-10-2018 (Shift-II)
RRB Group –D, 17-09-2018 (Shift-II)

Ans : (b) We know that,
$W = F.d\cos\theta$
when, $W = 0$
$0 = F.d\cos\theta$
$\therefore \cos\theta = 0 = \cos 90^0$
$0 = 90^0$
In the case of zero work the angle between the displacement and the applied force is 90 degree.

176. 20 N force is acting on a body. Body moves 4 meter in direction of applied force, then work done is-
(a) 80W (b) 80Pa
(c) 80N (d) 80J

RRB Group –D, 05-10-2018 (Shift-II)

Ans : (d) Given, Force (F)=20 N, Displacement (d) = 4 m
Work done (W) = $F.d\cos\theta$
[$\theta = 0º$ Displacement occurs in the direction of the force]
Work = 20 N × 4 m × cos 0º
Work = 20 N × 4 m × 1
Work = 80 Nm = 80 J

177. A worker takes 15kg object and put the object 1 meter above on his head from the surface of earth. Then work done by the worker is – (g = 10 ms^{-2}).
(a) 155J (b) 150J
(c) 140J (d) 100J

RRB Group –D, 05-10-2018 (Shift-II)

Ans : (b) Given, m = 15kg
g = 10m/s^2
h = 1.0m
As work done by an object is equal to the potential energy stored in an object.
Therefore, W = mgh = 15×10×1 = 150J.

178. Work present if there is –
(a) Force (b) Energy
(c) Friction (d) Power

RRB Group –D, 26-09-2018 (Shift-I)

Ans : (a) Work is said to be done when body or object moves with the application of external force. We can define work as an activity involving a movement and force.
Work = force × displacement

179. If displacement is horizontal to the applied force, then work done is –
(a) Zero (b) Negative
(c) Positive (d) Neutral
RRB Group –D, 26-10-2018 (Shift-II)

Ans : (c) When a body moves on the horizontal surface, force and displacement act in the same direction. The work done in this case is known as positive work.

180. Which of the following work done does not depend -
(a) Applied force
(b) Mass of object
(c) Displacement
(d) The angle between force and displacement
RRB Group –D, 09-10-2018 (Shift-II)
RRB Group –D, 03-10-2018 (Shift-III)
RRB Group –D, 09-10-2018 (Shift-II)

Ans : (b) Work done (W) = F.d cosθ
where, F = External/applied force
d = Displacement of the body/object
θ = Angle between force and displacement
From the above equation, the work done depends upon applied force, displacement and angle between the force and displacement but does not depend upon mass or initial velocity of object/body.

181. Which of the following the work done by a body does not depend on ?
(a) Initial velocity of object
(b) Displacement
(c) Angle between force and displacement
(d) Applied force
RRB Group –D, 15-11-2018 (Shift-II)
RRB Group –D, 12-12-2018 (Shift-I)
RRB Group –D, 13-12-2018 (Shift-II)
RRB Group –D, 02-11-2018 (Shift-I)
RRB Group –D, 08-10-2018 (Shift-III)

Ans : (a) See the explanation of above question.

182. A worker raise 10kg object from the ground and put 1.2m above on his head then work done is- ($g = 10\ ms^{-2}$)
(a) 120J (b) 155J
(c) 150J (d) 140J
RRB Group –D, 08-10-2018 (Shift-II)

Ans : (a) Given, m= 10kg
h = 1.2m
acceleration due to gravity (g) = 10 ms^{-2}
As work done by an object is equal to the potential energy stored in an object. Therefore,
Work done = m ×g× h =10×1.2× 10= 120J

183. Work known as-
(a) Force × displacement
(b) Mass × acceleration
(c) Length × width
(d) Mass × volume
RRB Group –D, 08-10-2018 (Shift-I)

Ans : (a) Work = Force × displacement

184. The work done by an object is 56 J and applied force on object is 7 N. Find the displacement.
(a) $80ms^{-1}$ (b) 80m
(c) 8 m (d) $80ms^{1}$
RRB Group –D, 08-10-2018 (Shift-III)

Ans : (c) Given, Work (W) = 56J, displacement (d) =?
F = 7N
Work = Force × Displacement
Displacement = W/F = 56/7 = 8m

185. 10 N force is working on an object. Object displaced 5m in the direction of applied force, then work done is -
(a) 50N (b) -50N
(c) 50J (d) -50J
RRB Group –D, 04-10-2018 (Shift-I)
RRB Group –D, 01-11-2018 (Shift-II)

Ans : (c) Given, Force (F) = 10 N, Displacement (d) = 5 m
Work = force × displacement in the direction of force
= 10×5= 50J

186. If force F=0, then work done W = ?
(a) 20 (b) 0
(c) 1 (d) 100
RRB Group –D, 31-10-2018 (Shift-III)

Ans : (b) Given, Force = 0, Work done = ?
W = F.d
= 0.d
= 0

187. A porter picks up 12 kg of goods from the ground and places it on his head 1.5 meters above the ground then work on the goods to be done by him is: ($g = 10\ ms^{-2}$)
(a) 140J (b) 150J
(c) 180J (d) 155J
RRB Group –D, 04-10-2018 (Shift-II)

Ans : (c) Given,
m = 12 kg, g = 10 ms^{-2}, h = 1.5m
As work done by the porter is equal to the potential energy stored in an object.
Therefore, W = mgh
= 12×10×1.5 = 180J

188. The force of 25 N is working on an object, that object is moved in the direction of force by 5 m, the work done by the force is:
(a) 125W (b) 125N
(c) 125J (d) 125Pa
RRB Group –D, 26-10-2018 (Shift-II)

Ans : (c) Force (F) = 25N
Displacement (d) = 5m
Work = force × displacement
W = F.d
= 25×5 = 125J

189. When a man pushes a wall but fails to displace it, it does ?
(a) Positive work (b) Negative work
(c) Most positive work (d) No any work
RRB Group –D, 12-12-2018 (Shift-II)

Ans : (d) When a man pushes the wall but fails to displace it, he does absolutely zero work.
Work done (W) = Force × displacement
Here, displacement = 0
W = 0

190. When a person walks 4 meters with a constant force of 12N, the work done by him is –
(a) 6J (b) 2J
(c) 48J (d) 3J
RRB Group –D, 12-12-2018 (Shift-I)

Ans : (c) Given, Force (F) = 12N
Displacement (d) = 4m
Work (W) = ?
Work (W) = F.d
W = 12×4 = 48J

191. To say that the work has been done, two conditions must be completed, one of them is-
(a) Force is not required
(b) Object must be displaced
(c) There should be no absorption and emission of energy
(d) There should be no change in the condition of the object

RRB Group –D, 24-10-2018 (Shift-III)

Ans : (b) To say that the work has been done, there are two conditions must be completed–
1- Force is required
2- Object must be displaced

192. The product of force and displacement is called-
(a) Momentum (b) Acceleration
(c) Work (d) Burden

RRB Group –D, 19-09-2018 (Shift-I)

Ans : (c) Work done(W)=Force(F)×Displacement(d)

193. The work is product of –
(a) Energy and volume
(b) Power and displacement
(c) Force and Displacement of object towards the direction of force
(d) Displacement of the object in the direction of the force

RRB Group –D, 08-08-2018 (Shift-I)

Ans : (c) The work is the product of force and displacement of object towards the direction of force.
Work done (W)=Force (F)×Displacement (d)

194. If a stationary force applied to an object, the object moved in the direction of force, is expressed as a result of force and displacement, it is called –
(a) Retardment (b) Work done
(c) Impulse (d) Acceleration

RRB Group –D, 27-09-2018 (Shift-III)

Ans : (b) If a force applied to an object, the object moved in the direction of force, is expressed as a result of force and displacement, it is called work done. Work is a dot product of force and displacement. The dot product of vector quantities (force and displacement) is always scalar which means it has only magnitude not direction.
Work done (W) = Force (F). Displacement (d)

195. Work is done on a body only when –
(a) It experiences energy gain through a mechanical effect
(b) Forces work on it
(c) There is displacement
(d) It moves through a certain distance

RRB Group –D, 11-12-2018 (Shift-III)

Ans : (a) Work is done on a body only when it experiences energy gain through a mechanical effect.

196. What is the work done if the angle between applied force and the direction of the displacement is 90^0?
(a) Disintegrated (b) Negative
(c) Positive (d) Zero

RRB Group –D, 10-12-2018 (Shift-III)
RRB Group –D, 05-11-2018 (Shift-III)

Ans : (d) If the angle between the applied force and the direction of displacement is 90 degrees ($\theta = 90^o$), the work done will be zero.
Work done = F.d $\cos\theta$
= F.d $\cos 90^0$ =0

197. The ability of an object to do the work energy contained in an object is depend on the-
(a) Mass and volume of object
(b) Motion of object in a certain direction
(c) State and condition of object
(d) The magnitude and the direction of the object

RRB Group –D, 16-10-2018 (Shift-I)

Ans : (c) The ability of an object to do the work or the energy contained in an object depends on the condition and state of the object.

198. A worker takes 10 kg of goods from the ground and puts it on 1.1m above the land on his head. What will be the work done by the worker.
(a) 140J (b) 155J
(c) 165J (d) 110J

RRB Group –D, 05-10-2018 (Shift-III)

Ans : (d) Given that,
$m = 10$ kg, $g = 10$ m/s^2, $h = 1.1$ m
As workdone by an object is equal to the potential energy stored in an object.
Therefore, $W = mgh$
$= 10 \times 10 \times 1.1$
$= 10 \times 10 \times 11/10 = 110$J

199. A moving car faces the wind in the opposite direction. What will be the work done by the wind on the car?
(a) Negative (b) Zero
(c) Infinite (d) Positive

RRB Group –D, 01-10-2018 (Shift-III)

Ans : (a) When a car in motion faces the wind in the opposite direction, then the force exerted on the car by the wind acts opposite to the displacement of the car. Therefore, the angle between the direction of the applied force and the displacement of the car is 180 °.
Work done (W) = F.d $\cos 180^0$ [$\because \cos 180^o = -1$]
W = -F.d
So, the work done by air on the car will be negative

200. A girl whose weight is 200 N, climbs on a tree which height is 2-meter. What was the work done by the girl after climbing the tree? (g = 10 m /sec^2)
(a) 800J (b) 400J
(c) 200J (d) 2000J

RRB Group –D, 12-12-2018 (Shift-III)

Ans : (b) Given, Weight = mg = 200N
h = 2m
Work done by the girl = Potential energy
= mgh = 200×2 = 400J

201. If someone travels 15 km distance with a fixed force of 500N, then calculate the work done.
(a) 750000J (b) 75000J
(c) 7500000J (d) 7500J

RRB Group –D, 13-12-2018 (Shift-II)

Ans : (c) Force = 500N , Work = ?
Displacement = 15km = 15000m
Work = force×displacement
W = 500×15000
= 7500000J

202. A horizontal force of 10 N displaces an object of 5 kg to a distance of 2 m in the direction of the force. What will be the work done by the object?
(a) 20J (b) 5J
(c) 50J (d) 10J

RRB Group –D, 20-09-2018 (Shift-III)

Ans : (a) Work = force ×displacement in the direction of force
$W = F \times d$
[∴ Given, F = 10N, d = 2m]
$W = 10 \times 2$
$= 20J$

203. What is the amount of work done when an object moves under a force of 10 N at a distance of 10 m in the direction of force?
(a) 1J (b) 10J
(c) 100J (d) 0.01J

RRB Group –D, 31-10-2018 (Shift-II)

Ans : (c) Given,
d = 10m
F = 10N
Work = F.d
$= 10 \times 10$
$= 100J$

204. A force of 50 N displaces an object 10 m. What will be the work done by the force?
(a) 500J (b) 5J
(c) 10J (d) 50J

RRB Group –D, 03-12-2018 (Shift-III)

Ans : (a) Given,
F = 50N, displacement = 10m, work =?
Work = force × displacement
$W = 50 \times 10 = 500J$

205. If an object not moving after applying a force, then we can say that –
(a) Maximum power has used
(b) Work has done
(c) Minimum power has used
(d) Any work has not done

RRB Group –D, 16-11-2018 (Shift-I)

Ans : (d) If an object is not moving after applying a force, then we can say that work done on an object will be zero.
∴ Displacement (d) = 0
Work done (W) = Force × Displacement
$= F.d$
Work done (W) = F × 0
$\boxed{\text{Work done}(W) = 0}$

206. If the displacement of an object is zero. Then work done by the applied force is –
(a) Neutral (b) Negative
(c) Positive (d) Zero

RRB Group –D, 16-11-2018 (Shift-I)

Ans : (d) If the displacement of an object is zero, then the work done will be zero. If a applied force on a object is zero, then the work done on an object will be zero, such as - if a person pushes a wall and that wall remains stationary.
Work done (W) = Force × Displacement (d)
$= F \times d$ (Where d = 0)
$\boxed{\text{Work done}(W) = 0}$

207. The work done is zero with zero-
(a) Velocity (b) Displacement
(c) Power (d) Momentum

RRB Group –D, 11-10-2018 (Shift-I)

Ans : (b) See the explanation of above question.

208. Which of the following is not a characteristic of work?
(a) Work has a direction
(b) For doing work it is necessary to apply a force on an object
(c) Work has only magnitude
(d) For work done their should be a displacement of an object

RRB Group –D, 16-11-2018 (Shift-III)

Ans : (a) Work is a scalar quantity, because it has only magnitude, not direction.

209. A bus runs with a force of 4000 N. The work done by the bus is 2000 J. What is the distance covered by the bus?
(a) 1 meter (b) 2 meter
(c) 1.5 meter (d) 0.5 meter

RRB Group –D, 06-12-2018 (Shift-III)

Ans : (d) Given,
Force (F) = 4000 N
Work done (W) = 2000 J
Work = force × displacement
Displacement = Work/force
$= 2000/4000$
$= 0.5$ meter

210. If a man pulls a trolly by applying force of 50N and trolly is displaced 30m. What is work done?
(a) 1500J (b) 80J
(c) 1500J (d) 20J

RRB Group –D, 15-11-2018 (Shift-II)

Ans : (a) Given, Force = 50N
Displacement = 30m
Work = force × displacement
$W = 50 \times 30 = 1500J$

211. A man puts 20kg object on his head by raising the object 2m above from the surface of earth. Then work done will be –
(a) 400W (b) 400J
(c) 200W (d) 200J

RRB Group –D, 30-10-2018 (Shift-II)

Ans : (b) Given,
$m = 20$ kg, $g = 10$ m/s^2, $h = 2$ m
Work done = Potential energy of object
$W = mgh$
$= 20 \times 10 \times 2 = 400J$

212. A man puts 13kg object on his head by raising the object 1.5m above from the surface of earth. Then work done will be: ($g=10ms^{-2}$)
(a) 195J (b) 100N
(c) 150J (d) 140J

RRB Group –D, 05-10-2018 (Shift-I)

Ans : (a) The work done by the man is equal to the potential energy stored in an object.
Work done by the man = Potential energy of object
$W = mgh$
[Given, $m = 13kg$, $g = 10ms^{-2}$, $h = 1.5m$]
$W = 13 \times 10 \times 1.5$
$= 195J$

213. A boy hold 4 kg school bag for 30 seconds, the work done by him will be in joule.
(a) 4 (b) 4
(c) Zero (d) 39.20

RRB Group –D, 24-09-2018 (Shift-II)

Ans : (c) If the boy holds a school bag of 4 kg for 30 seconds, the force exerted by bag will be mg = 4 ×10 = 40 N.
The boy holds this force for 30 seconds, the work done is zero because displacement is zero
Work done = force × displacement = 40 × 0
Work done (W) = 0

214. Work can only be done when ___is present.
(a) Energy (b) Force
(c) Momentum (d) Power

RRB Group –D, 05-11-2018 (Shift-III)

Ans : (a) Work can only be done when energy is present. Energy is the ability to do work. Energy is a conserved quantity and the law of conservation of energy states that energy can neither be created nor be destroyed but can only be converted from one form to another.
Work and energy both has same S.I unit 'Joule (J)'.
Both are a scalar quantities.

215. Which of the following is not an example of work done ?
(a) A man pushing against the wall
(b) Trolley moves when the boy pushes the trolley
(c) Applied force on an object in that direction the object is moving
(d) Raise the book to some height and walking

RRB Group –D, 26-10-2018 (Shift-III)

Ans : (a) Work is said to be done when the body displaces form its initial position when the force is applied because.
Work done (W) = Force × Displacement
Here, in this case the wall does not displace from its initial position even though the force is applied and since here displacement is zero, so the work done is said to be zero.

216. When the direction of the force applied and the direction of movement of the object is perpendicular to each other.
(a) Power exercised
(b) No work done
(c) Power not exercised
(d) Work done

RRB Group –D, 24-10-2018 (Shift-I)

Ans : (b) If the direction of the force is perpendicular to the displacement in the direction of motion of the object then,
$\theta = 90^0$
Work done = F.d cos 90^0
W = 0

217. If the work done is negative, then what will be the angle between the force and displacement?
(a) 45^0 (b) 0^0
(c) 90^0 (d) 180^0

RRB Group –D, 09-10-2018 (Shift-I)

Ans : (d) If the angle between the force and the displacement is 90 degrees ($\theta = 90°$), then the work done
$W = F.d\cos\theta$
$= F.d.\cos 90^0$
$= 0$ J
If the angle between the force and displacement is 180 degrees ($\theta = 180°$) then the work done will be negative because the value $\cos 180^0 = -1$.
$W = F.d\cos 180^0$
$= - F\times d$

218. A force of 125 N is acting on an object, that object is moved up to 5 m in the direction of the force, what will be the work done by the force.
(a) 625W (b) 625Pa
(c) 625N (d) 625J

RRB Group –D, 09-10-2018 (Shift-I)

Ans : (d) Given,
Force (F) = 125N, displacement (d) = 5m
Work done (W) = Force × displacement
W = 125×5 = 625J

219. If a person pulls the trolley up to the distance of 10 m with the force of 50 N, what will be the work done by him ?
(a) 5J (b) 500J
(c) 20J (d) 0.2J

RRB Group –D, 27-09-2018 (Shift-I)

Ans : (b) Given,
Force (F) = 50N, Displacement (d) = 10m
W = F.d
W = 50×10
= 500 N-m or 500J

220. If an object is rotated in a circular path, what will be the work done on it in one rotation?
(a) Is zero
(b) Cannot be determined
(c) Is positive
(d) Is negative

RRB ALP & Tec. (17-08-018, Shift-III)

Ans : (a) If an object is rotated in a circular path, the work done on it is zero because the displacement in the circular path is zero.

221. A person picks up 25 kg of weight from the ground and puts it 2.5 meters above from the ground on his head if g = 10 m/s^2 then work done by the person is-
(a) 225 Joule (b) 22.5 Joule
(c) 625 Joule (d) 220 Joule

RRB ALP. & Tec. 20-08-2018(Shift-III)

Ans : (c) Work done is given by the equation,
W = mgh
where m = mass = 25 kg
g = acceleration due to gravity = 10 m/sec^2
h = height = 2.5 m
Hence, work done = 25 × 10 × 2.5= 625 Joule

222. An object of 5.0 kg is raised to a height of 2 m, in this process, how much work was done – (g=9.8m/s^2)
(a) 49 joule (b) 10 joule
(c) 19.6 joule (d) 98 joule

RRB ALP. & Tec. 20-08-2018(Shift-III)

Ans : (d) Work done is given by the equation
W = mgh
where m = mass
g = acceleration due to gravity
h = height
Hence work done = 5 × 9.8 × 2= 98 Joule

223. An object of 5 kg is raised to a height of 4 m. What will be the value of the work done due to the force of gravity on that object? ($g = 10m/s^2$)
(a) 200J (b) 20J
(c) -20J (d) -200J

RRB ALP. & Tec. 21-08-2018(Shift-III)

Ans : (d) Work done is given by the equation,
W = – mgh
where m = mass = 5 kg
g = acceleration due to gravity = 10 m/s^2
h = height = 4 m
Hence, work done = –5 × 10 × 4= – 200 Joule

224. An object of 20 kg is raised through a height of 2m, what will be the work done by the force of gravity on the object?
(a) 400J (b) 50J
(c) 40J (d) 100J

RRB ALP. & Tec. 14-08-2018(Shift-II)

Ans : (a) Work done, W = mgh
Here, m is 20 kg, h is 2m and g=10 m/sec^2
W = 20×10×2=400 J

225. When displacement occurs, the work done by the force is considered to be negative.
(a) Is perpendicular to the direction of force
(b) Is in the direction of momentum
(c) Is in the direction of force
(d) Is in the opposite direction of the force

RRB Group –D, 03-12-2018 (Shift-II)

Ans : (d) • When the displacement of a body or object is in the opposite direction of the force, the work done by the force is considered to be 'negative'.
• When the displacement of the object is in the same direction of the force, the work done by the force is considered to be positive.
• When the displacement of the object is in perpendicular to the force, the work done by the force is considered to be zero.

(ii) Power

226. 1 horsepower equals:
(a) 746 J (b) 74.6 J/s
(c) 746 W (d) 746 kW

RRB Group-D 18-08-2022 (Shift-I)

Ans. (c) : S.I. unit of power is watt which is equivalent to Joules/Second. In some cases (for motor vehicles etc.) power is given in terms of Horsepower (hp) and one Horsepower is equal to 746 watts (W).

227. Which of the following is NOT a unit of power?
(a) Kilowatt hour (b) Watt
(c) Joule/second (d) Horsepower

RRB Group-D 24-08-2022 (Shift-I)

Ans. (a) : The kilowatt hour is a unit of energy equivalent to one kilowatt of power expended for 1 hour of time.
The kilowatt hour is not a standard unit in any formal system, but is commonly used in electrical applications. While 'watt', Joule/second and 'horsepower' is a unit of power

228. How is power interpreted?
(a) Work done in energy transfer
(b) Force charged to increase load
(c) Working rate or energy transfer rate
(d) Work done in a minute

RRB Group-D 19-09-2018(Shift-I)

Ans : (c) Power is defined as the rate of doing work or the rate of transfer of energy.

229. What is working rate or energy transfer rate ?
(a) Power (b) Work done
(c) Impulse (d) Force

RRB Group-D 15-10-2018(Shift-II)

Ans : (a) Power is defined as rate of doing work in other words the work done per second or energy transfer rate is called as power. It turns out that: Power = Force × Velocity.The SI unit of power is Joule per second or watt.

230. Rate of doing work is called?
(a) Energy (b) Velocity
(c) Power (d) Force

RRB Group-D 17-09-2018(Shift-III)

Ans : (c) See the explanation of above question.

231. Rate of doing work is called?
(a) Energy (b) Power
(c) Pressure (d) Force

RRB Group-D 05-10-2018 (Shift-I)
RRB Group-D 22-10-2018 (Shift-III)

Ans : (b) See the explanation of above question.

232. If a man do 'W' work in 't' time, then his power 'P' will be-
(a) t-W (b) t×W
(c) W/t (d) t/W

RRB Group-D 01-10-2018(Shift-II)

Ans : (c) The rate of doing work is called power.

$$\text{Power} = \frac{\text{work}}{\text{time}}$$

$$P = \frac{W}{t}$$

Work, power and energy all are scalar quantities.
SI unit of Power is Watt (W)

$$1 \text{ watt} = \frac{1 \text{ Joule}}{1 \text{ Second}}$$

233. What is the formula for power–
(a) Work/Time (b) Time/Area
(c) Work × Time (d) Time/Work

RPF SI 24.12.2018 (Shift - I)

Ans : (a) See the explanation of above question.

234. If an agent doing 'W' works in time 't', then his power will be –
(a) W×t (b) W+t
(c) t/W (d) W/t

RRB Group-D 24-09-2018(Shift-I)

Ans : (d) See the explanation of above question.

235. Formula of power is -
(a) Momentum/time (b) Work/time
(c) Speed/time (d) Displacement/time

RRB ALP & Tec(29-08-018, Shift-I)

Ans : (b) See the explanation of above question.

236. Which of the following physical quantity measures the rate of work done?
(a) Power (b) momentum
(c) Force (d) Energy

RRB ALP & Tec.(14-08-018, Shift-II)

Ans : (a) See the explanation of above question.

237. Power= W/T, what is the meaning of W ?
(a) Power (b) Weight
(c) Watt (d) Work done

RRB Group-D 12-10-2018 (Shift-I)

Ans : (d) Here W indicate work done.
Power is defined as rate of doing work (measured in watts (W)), in other words the work done per second. i.e. P = W/T.

238. Which of the following physical quantity measure the rate of work ?
(a) Force (b) Velocity
(c) Energy (d) Power

RRB Group-D 01-10-2018(Shift-I)

Ans : (d) Power is defined as the rate of doing work or the rate of transfer of energy.
1 H.P. = 746 Watt.

239. Mohan having a mass of 40 kg. He climbs 50 steps of a staircase in 10s. If the height of each step is 15cm then what is his power? ($g = 10\ m/s^2$)
(a) 200W (b) 400W
(c) 300W (d) 100W

RRB ALP & Tec. (14-08-2018, Shift-III)

Ans : (c) m = mass of Mohan = 40 kg
n = number of steps = 50
h = height of each step = 15 cm = 0.15 m
H = Total height at which Mohan climbs
H = 50 x 0.15 = 7.5 m
We know that, potential energy gained is given as
PE = mgh
hence W = work done = PE = mgh
t = time taken to travel at that height = 10 sec
P = W/t
P = mgh/t
$\frac{40\times10\times15\times50}{10\times100}$ [$\because$ $g = 10 m/s^2$]
= 300 watt [15cm $\frac{15}{100}$ m]

240. If a boy covers a distance of 20 meters with 600 Newton force in 4 minutes, then the amount of power consumed by the boy is?
(a) 50watt (b) 100watt
(c) 80watt (d) 25watt

RRB ALP & Tec.(29-08-2018, Shift-III)

Ans : (a) Time taken by the boy = 4×60=240sec
Here, F=600N, and d=20m
Now, work done = 600×20=12000J
Total power consumed by the boy =12000/240=50 watt

241. A boy of 50 kg mass climbs 40 stairs in 9 seconds. If the height of each stair is 15cm, then find his power.($g = 10 ms^{-2}$)
(a) 333.33W (b) 333.34J
(c) 333.34ms (d) 387.5W

RRB Group-D 23-10-2018(Shift-III)

Ans : (a) Height of 40 stairs = 40 x15=600cm=6m
m = 50 kg, h = 6 m, g = 10 m/s^2
Work done = mgh
= 50 × 10 × 6 = 3000J
Power = work done/time=3000/9=333.33Watt

242. Name the physical quantity that is equal to the product of force and velocity.
(a) Work (b) Energy
(c) Power (d) Acceleration

RRB Group-D 10-12-2018 (Shift-I)

Ans : (c) Power = work done/time
Work done = Force × displacement
Velocity = displacement/time
Power = Force × displacement/time
Power = Force × velocity
Power = F ×V

243. A 40 kg girl quickly climbs up the stairs to 5m height in 4 sec, what will be the power developed by her?
(a) 500W (b) 200W
(c) 2000W (d) 100W

RRB Group-D 18-09-2018(Shift-I)

Ans : (a) W = mgh
(here m= 40kg, g =10m/sec^2 and h=5m)
W = 40 × 10 × 5 = 400 × 5 = 2000
W = 2000 Joule
t = 4 s
$P = \frac{W}{t}$
Hence, $P = \frac{2000}{4} = 500$ watt

244. A boy of 50 kg mass climbs 45 stairs in 10 seconds. If the height of each stair is 16cm then find his power ?
(a) 337.5ms (b) 387.5W
(c) 360W (d) 360J

RRB Group-D 23-10-2018(Shift-II)

Ans : (c) Given, mass of boy, m = 50 kg
h = 45 x16 = 720 cm = 7.20 m
t = 10 s, g = 10 m/s^2
PE = mgh = 50 x 10 x 7.20 = 3600 J
Power = PE / time = 3600 / 10
= 360 J/s = 360W

245. The average power is equal to which of the following?
(a) Total time taken/ total used energy
(b) Total free energy/total used energy
(c) Total time taken/distance travelled
(d) Total used energy/total time

RRB Group-D 25-10-2018(Shift-II)

Ans : (d) Average Power (P_{avg}) = Total used energy/ total time
$P = E/t$

246. A boy of 50 kg mass climbs 40 stairs in 10 seconds. If the height of each stair is 15cm, then calculate his power.($g = 10 ms^{-2}$)
(a) 337.5W (b) 300J
(c) 300W (d) 300ms

RRB Group-D 23-10-2018(Shift-I)

Ans : (c) Given, mass of boy, m = 50 kg
h = 40 x15 = 600 cm = 6.0 m
t = 10 s, g = 10 m/s^2
PE = mgh = 50 x 10 x 6 = 3000 J
Power = PE / time
= 3000/ 10 = 300 W

247. A boy of 50 kg mass climbs 45 stairs in 9 seconds. If the height of each stair is 15cm, then calculate his power.(g= 10ms^{-2})
(a) 325W (b) 275W
(c) 475W (d) 375W

RRB Group-D 22-09-2018(Shift-I)

Ans : (d) Given,
mass of boy = 50 kg
h = 45 x15 = 675 cm = 6.75 m
t = 9 s, g = 10 m/s^2
PE = mgh = 50 x 10 x 6.75 = 3375 J
Power = PE / time = Energy / time
$= \frac{3375}{9} = 375$ J/s=375 W

248. If a girl with a weight of 40 N, climbs on the rope for 20 seconds with the power of 160 watts, then at which height will she reach?
(a) 80 meter (b) 4 meter
(c) 8 meter (d) 0.8 meter

RRB Group-D 18-09-2018(Shift-III)

Ans : (a) Let assume that girl climbs to the h meter.
Then, power = potential energy (work)/time
P = (mgh)/t
Here,
weight (mg) = 40N,t = 20 sec., Power (P) = 160W
160 = (40×h)/20
h = 80 meter

249. A boy of 50 kg mass climbs 44 stairs in 10 seconds. If the height of each stair is 15cm then find his power?
(a) 337.5ms (b) 387.5W
(c) 330J (d) 330W

RRB Group-D 24-09-2018(Shift-I)

Ans : (d) Given, mass of body, m = 50 kg
h = 44 x15 = 660 cm = 6.60 m
t = 10 s, g = 10 m/s^2
PE = mgh = 50 x 10 x 6.60 = 3300 J
Power consumed by the boy=PE/time=3300/10=330 W

250. A boy of 50 kg mass climbs 43 stairs in 10 seconds. If the height of each stair is 15cm then find its power ?
(a) 337.5W (b) 325.5J
(c) 322.5W (d) 322.5ms

RRB Group-D 24-10-2018(Shift-III)

Ans : (c) Given, mass of boy, m = 50 kg
h = 43 x15 = 645 cm = 6.45 m
t = 10 s, g = 10 m/s^2
PE = mgh = 50 x 10 x 6.45 = 3225 J
Power of the boy = PE / time = 3225 / 10 = 322.5 W

251. A more powerful engine can do more work in less time like an aeroplane travel more distance as compare to a car in less time. So aeroplane is more powerful than a car. It is an example of which of the following ?
(a) Work performed (b) Power
(c) Energy (d) The wave

RRB Group-D 29-10-2018(Shift-III)

Ans : (b) A more powerful engine can do more work in less time like an aeroplane travel more distance as compare to a car in less time. So aeroplane is more powerful than a car. It is the basic example of explaining power.

252. What will be the average power required to lift an object of 80 kg to a height of 40 m in 50s ? (g=10m/s^2)
(a) 3200J/s (b) 640J/s
(c) 800J/s (d) 600 J/s

RRB Group-D 18-09-2018(Shift-III)

Ans : (b) Power required to lift this weight = mgh/t
p = (80 x 10 x 40) / 50
p = 640 J/s

253. A person does 1000J of work in 2s. What was the energy he spent ?
(a) 50W (b) 1000W
(c) 500W (d) 25W

RRB Group-D 17-09-2018(Shift-II)

Ans : (c) The working rate is called power. The unit of power is watt (W).
Power (P) =Work/time = $\frac{1,000}{2}$ = 500W

254. Which of the following is the electric power's formula?
(a) P=V^2/R (b) P=V×I
(c) P=I^2×R (d) All of these

RRB J.E. 27.06.2019(Shift-I)

Ans : (d) All are the formula for the electric power.
Power = V^2/R = V × I = I^2 × R

(iii) Energy

255. Which energy of the wind does a windmill use?
(a) Thermal energy (b) Kinetic energy
(c) Heat energy (d) Hydro energy

RRB NTPC 09.02.2021 (Shift-II) Stage Ist

Ans : (b) Wind turbines convert the kinetic energy in the wind into mechanical power. Wind energy describes the process by which wind is used to generate electricity. In India 40,034 MW (10.2%) energy produced by wind turbines.

256. If the air resistance is negligible, then what will be sum of the potential energy and kinetic energy of the freely falling object.
(a) Endless
(b) Double the sum of the potential energy
(c) Zero
(d) Constant

RRB Group-D 28-11-2018(Shift-I)

Ans : (d) An object can have both kinetic and potential energy at the same time. For example, an object which is falling freely, but it not yet reached the ground has kinetic energy because it is moving downwards, and potential energy because it is able to move downwards even further than it already has. The sum of an object's potential and kinetic energy is called the object's mechanical energy.
As an object falls its potential energy decreases, while its kinetic energy increases. The decrease in potential energy is exactly equal to the increase in kinetic energy. So if the air resistance is negligible then the sum of the potential energy and kinetic energy of an object will remain constant.

257. A uniform chain of length 2m is kept on a table such that a length of 60cm hangs freely from the edge of the table. The total mass of the chain is 4kg .What is the work done in pulling the entire chain on the table ?
(a) 12J (b) 7.2J
(c) 3.6J (d) 1.2J
RRB Group-D 07-12-2018(Shift-I)

Ans : (c) Definition of work done by variable force -
$W = \int \vec{F}.\vec{ds}$
$\vec{F}$ is variable force and $\vec{ds}$ is small displacement
Consider a small part dx at a depth x from table.
Work done in lifting this small portion is
$dw = dm\, gx$

$$\text{Total work done} = \int dw = \int_0^h \left(\frac{m}{\ell}dx\right)gx$$

$$= \frac{mg}{\ell}\int_0^h xdx = \frac{4\times 10}{2}\times\frac{(0.6)^2}{2} = 3.6J$$

258. …….. particles have a greater kinetic energy-
(a) Liquid (b) Plasma
(c) Solid (d) Gas
RRB Group-D 26-10-2018(Shift-III)

Ans : (d) Molecules in the solid phase have the least amount of kinetic energy, while in the gaseous phase particles or molecules have the greatest amount of kinetic energy.

259. The kinetic energy of which particle is maximum –
(a) Liquid and Solid (b) Solid
(c) Liquid (d) Gases
RRB Group-D 12-11-2018(Shift-III)

Ans : (d) Gas particles have the greatest or maximum amount of energy.

260. 900×10^6 J of energy is consumed in a month in a house. How much this energy is in the unit?
(a) 25 (b) 2.5
(c) 2500 (d) 250
RRB Group-D 26-11-2018(Shift-III)

Ans : (d) 1 unit of energy is equal to 1 kilowatt hour (kWh).
1 unit = 1 kWh
1 kWh = 3.6×10^6 J
Then, 900×10^6 J energy in unit will be-
900×10^6 J/3.6×10^6 J = 250 unit

261. When a compressed spring is released, it converts its potential energy into-
(a) Mechanical energy
(b) Wind power
(c) Elastic potential energy
(d) Kinetic energy
RRB Group-D 31-10-2018(Shift-III)

Ans : (d) When the compressed spring is released the stored potential energy is converted kinetic energy and a transfer of momentum takes place between the spring and the object.

262. The potential energy of an object increases with its-
(a) Velocity (b) Height
(c) Displacement (d) Distance
RRB Group-D 10-10-2018(Shift-I)

Ans : (b) Potential energy of an object increases when it raised through a height. This is because work is done on it against gravity while it is being raised. The energy present in such an object is the gravitational-potential energy. This gravitational-potential energy of an object at a point above the ground is defined as the work done in raising it from the ground to that point against gravity. An object of mass 'm', when raised through a height 'h' from the ground, then work done on the object will be W = force x displacement = mg x h = mgh

263. Which of the following energy varies with the height of an object ?
(a) Kinetic energy
(b) Nuclear Energy
(c) Chemical energy
(d) Potential energy
RRB Group-D 11-10-2018(Shift-I)

Ans : (d) Potential energy varies with the height of an object.

264. What is the energy exerted due to the position and shape taken by an object ?
(a) latent energy
(b) Potential energy
(c) Kinetic energy
(d) Electrical energy
RRB Group-D 23-10-2018(Shift-I)

Ans : (b) Potential energy is the energy which is stored in an object due to its position or shape position. An object possesses gravitational potential energy if it is positioned at a height above (or below) to the ground.

265. Which energy is in the water stored in the dam ?
(a) Potential energy
(b) Electric energy
(c) Kinetic energy
(d) Gravitational energy
RRB Group-D 26-09-2018(Shift-I)

Ans : (a) Water stored in a dam possesses potential energy and when the water is flowing or falling on turbine blade from the dam that energy is known as kinetic energy.

266. A moving object essentially receives -
(a) Kinetic energy
(b) Potential energy
(c) Mechanical energy
(d) Thermal energy
RRB NTPC 29.03-2016(Shift-III) Stage- Ist

Ans : (a) Kinetic energy is the energy of an object in motion. If an object is moving faster then it has more kinetic energy. Any object (car) that is moving or running it has kinetic energy – the moving object has kinetic energy because of its motion.

267. A car running at high speed, which energy does it contains ?
(a) Gravitational force (b) Friction force
(c) Potential energy (d) Kinetic energy
RRB Group-D 19-09-2018(Shift-II)

Ans : (d) See the explanation of above question.

268. Which of the following energy is always positive ?
(a) Static energy
(b) Kinetic energy
(c) Potential energy
(d) Gravitational energy

RRB Group-D 26-10-2018(Shift-III)

Ans : (b) Kinetic energy is always positive.

269. The commercial unit of energy is ?
(a) Kilowatt –hour (b) Kilowatt
(c) Joule (d) Watt –hour

RRB Group-D 18-09-2018(Shift-II)

Ans : (a) The commercial unit of energy is kWh (Kilowatt hour). One kilowatt hour is equal to 3.6×10^6J.

270. An 8 kg iron ball and an 3 kg aluminium ball are dropped from a height of 20 meters. Which of the following quantity amount will be same in them above 10 m height from the ground?
(a) Kinetic energy (b) Acceleration
(c) Potential energy (d) Momentum

RRB Group-D 31-10-2018(Shift-I)

Ans : (b) According to question,
$\because m_1 = 8\text{ kg} > m_2 = 3\text{ kg}$
So, $\rightarrow m_1gh > m_2gh$
$800\text{ J} > 300\text{ J}$
Velocity at 10m height,
$v^2 = u^2 + 2gh$
$= 0 + 2 \times 10 \times 10$
$v^2 = 200 \Rightarrow v = 10\sqrt{2}$
Kinetic Energy-$\rightarrow$
$\frac{1}{2}m_1v^2 > \frac{1}{2}m_2v^2$ ($\because$ here,$v_1=v_2$)
So, momentum, $\rightarrow m_1v > m_2v$
So at the 10 m height the acceleration of both balls will be same.

271. When a compressed slinky (spring) is released, it changes the potential energy into?
(a) Mechanical energy (b) Kinetic energy
(c) Heat energy (d) Chemical energy

RRB ALP. & Tec. 10-08-2018(Shift-I)

Ans : (b) A compressed slinky (spring) contains potential energy.
When it is released it expands.
As it expands it moves.
When the spring is in motion, there is a type of energy is related to it.
This energy is known as kinetic energy.
Therefore:
Potential energy is converted in to Kinetic energy.

272. What is the energy in a compressed spring?
(a) Potential (b) Chemical
(c) Kinetic (d) Electric

RRB Group-D 22-09-2018(Shift-II)

Ans : (a) The energy stored in a compressed spring is elastic potential energy.

273. By which the kinetic energy of an object increases –
(a) Friction (b) Time
(c) Mass (d) Speed

RRB Group-D 13-08-2018(Shift-I)

Ans : (d) It turns out that an object's kinetic energy increases as the square of its speed. When something is in motion, then a type of energy stored in it. This energy is known as kinetic energy.

274. The kinetic energy of a moving object depends on-
(a) Weight and its location
(b) Mass and its location
(c) Mass and momentum
(d) Mass and velocity

RRB ALP. & Tec. 14-08-2018(Shift-III)

Ans : (d) Kinetic energy depends on the velocity of the object. This means that when the velocity of an object doubles, its kinetic energy becomes four times. The kinetic energy of the object also depends upon its mass.
$K = \frac{1}{2}mv^2$

275. In a hydro power, what is the energy that is converted into electrical energy ?
(a) Mechanical energy (b) Potential energy
(c) Heat energy (d) Kinetic energy

RRB ALP. & Tec. 29-08-2018(Shift-I)

Ans : (d) When the water flows down through the dam its kinetic energy is used to turn a turbine. The generator converts the turbine's mechanical energy into electricity.

276. Which of the following notable activities, potential energy has been converted into kinetic energy.
(a) A firecracker explosion
(b) Switch on a torch
(c) Switch of a torch
(d) Swinging of a pendulum

RRB ALP. & Tec. 31-08-2018(Shift-III)

Ans : (d) In swinging of a pendulum, potential energy has been converted into kinetic energy.

277. If the momentum of an object is tripled, its kinetic energy-
(a) Will be become tripled of original value
(b) Will remain unchanged
(c) Will be nine times the original value
(d) Will be six times the original value

RRB ALP. & Tec. 31-08-2018(Shift-II)

Ans : (c) $KE = \frac{1}{2}mv^2 = \frac{1}{2}\frac{(mv)^2}{m}$
$KE = \frac{1}{2}\left(\frac{p^2}{m}\right)$
$(KE)_1 \propto p^2$
Given
$\frac{(KE)_2}{(KE)_1} = \left(\frac{p_2}{p_1}\right)^2 = \left(\frac{3p}{p}\right)^2$
$KE_2 = 9\,KE_1$

278. What does the raised hammer have?
(a) Kinetic energy
(b) Mechanical energy
(c) Muscular energy
(d) Potential energy

RRB ALP. & Tec. 09-08-2018(Shift-III)

Ans : (d) A raised hammer have potential energy. A raised hammer possesses gravitational potential energy by virtue of its height above ground level.

279. If the velocity of an object becomes twice that of its initial velocity, then its kinetic energy become n times of its initial kinetic energy. Then what would be the value of n?

(a) 3 (b) 4
(c) 1/2 (d) 6

RRB ALP. & Tec. 13-08-2018(Shift-II)

Ans : (b) When velocity of an object becomes twice that of its initial velocity.

$$n.(K.E) = \frac{1}{2}m.(2v)^2$$

$$n.(K.E) = 4 \times \frac{1}{2}mv^2$$

$$n.(K.E) = 4 \times K.E.$$

$$n = 4$$

280. Which type of energy is there in a stretched rubber band?

(a) Chemical energy (b) Potential energy
(c) Kinetic energy (d) Heat energy

RRB ALP. & Tec. 14-08-2018(Shift-III)

Ans : (b) A stretched rubber band has potential energy stored in it, when it is releases the potential energy gets converted into kinetic energy. Because it is an elastic material, the kind of its potential energy is called as elastic potential energy.

281. What type of energy does a stretched rubber band have?

(a) Potential energy (b) Heat energy
(c) Kinetic energy (d) Chemical energy

RRB Group-D 12-11-2018(Shift-III)

Ans : (a) See the explanation of above question.

282. When you stretched a rubber band, the energy stored in it?

(a) Potential energy
(b) Muscular energy
(c) Mechanical energy
(d) Kinetic energy

RRB Group-D 10-10-2018(Shift-I)

Ans : (a) See the explanation of above question.

283. Which of these can neither be created nor destroyed?

(a) Energy (b) Power
(c) Velocity (d) Speed

RRB ALP. & Tec. 14-08-2018(Shift-III)

Ans : (a) The first law of thermodynamics, also known as Law of Conservation of Energy states that energy can neither be created nor destroyed, it can only be transferred or changed from one form to another. For example, conversion of electrical energy into heat energy and light energy.

284. Which of the following can not be created nor be destroyed ?

(a) Power (b) Velocity
(c) Energy (d) Force

RRB Group-D 16-10-2018(Shift-III)

Ans : (c) See the explanation of above question.

285. If the kinetic energy of an object becomes 256 times that of its initial value, then the new linear momentum will be ?

(a) 8 times its initial value
(b) 16 times its initial value
(c) Same as its initial value
(d) 32 times its initial value

RRB ALP. & Tec. 14-08-2018(Shift-I)

Ans : (b) Relation between kinetic energy and linear momentum is given by ,

$K.E = \frac{P^2}{2m}$

where K.E is kinetic energy , m is mass of body and P is linear momentum.

if m remains constant.

then,

$K.E \propto P^2$

$\frac{K.E_1}{K.E_2} = \frac{P_1^2}{P_2^2}$

According to question,

Kinetic energy of body becomes 256 times of its initial value.

Let initial kinetic energy is K

then, final kinetic energy is 256K.

now,

$\frac{1}{256} = \frac{P_1^2}{P_2^2}$

$\frac{P_1}{P_2} = \sqrt{\frac{1}{16^2}} = \frac{1}{16}$

$P_2 = 16\ P_1$

Hence, final linear momentum will be 16 times of its initial value

286. The energy received by an object by its position and configuration is called ?

(a) Kinetic energy (b) Nuclear energy
(c) Potential energy (d) Electric energy

RRB ALP. & Tec. 1-08-2018(Shift-I)

Ans : (c) The potential energy possessed by the object is the energy present in it by virtue of its position or configuration that means potential energy is a stored energy in the object when work is done on the object but there is no change in the velocity or speed of the object.

287. An object with mass 'M' moves with speed 'V' and has kinetic energy 'A'. If its velocity is doubled, So what will be its kinetic energy –

(a) K/2 (b) 2K
(c) 4K (d) K/4

RRB ALP. & Tec. 20-08-2018(Shift-I)

Ans : (c) If velocity is doubled, kinetic energy increases by 4 times. Kinetic energy of a body is the energy possessed by virtue of its motion if the body is moving with any velocity it will always have kinetic energy i.e. become 4K.

288. A compressed spring possesses more energy than a spring of normal length because the compressed spring has–

(a) Chemical energy (b) Potential energy
(c) Kinetic energy (d) Heat energy

RRB ALP. & Tec. 20-08-2018(Shift-I)

Ans : (b) A compressed spring possesses more energy than a spring of normal length because the compressed spring has potential energy.

289. When a bullet is fired from a gun, its potential energy is converted into?
(a) Kinetic energy
(b) Mechanical energy
(c) Heat energy
(d) Chemical energy

RRB ALP. & Tec. 29-08-2018(Shift-III)

Ans : (a) A bullet stores chemical potential energy in its gunpowder. When the bullet is fired, this chemical potential energy is converted into kinetic energy and heat.

290. Two steel balls of mass 5 kg and 10 kg have same kinetic energy, which ball is moving fast.
(a) Kinetic energy does not depend on the speed of the system.
(b) 5 kg ball is moving fast
(c) Both balls are moving at the same speed
(d) 10kg ball is moving fast

RRB ALP. & Tec. 30-08-2018(Shift-I)

Ans : (b) Let, velocity of 5kg ball $=v_1$

And, velocity of 10 kg ball $=v_2$, $\left[\because K.E = \frac{1}{2}mv^2\right]$

$$\frac{1}{2}m_1v_1^2 = \frac{1}{2}m_2v_2^2$$

$$\frac{1}{2}\times 5v_1^2 = \frac{1}{2}\times 10v_2^2$$

$$v_1^2 = 2v_2^2$$

$$\Rightarrow v_1 > v_2$$

$\therefore$ 5 kg ball is moving fast.

291. The energy contained in an object due to the change in position and shape is called.
(a) Kinetic energy (b) Chemical energy
(c) Nuclear energy (d) Potential energy

RRB ALP. & Tec. 29-08-2018(Shift-I)

Ans : (d) Potential energy is the energy in a body due to change in its position and shape.
The formula for potential energy depends on the force acting on that objects. For the gravitational force the formula is P.E. = mgh, where m is the mass in kilograms, g is the acceleration due to gravity (9.8 m / s^2 at the surface of the earth) and h is the height in meters.

292. The energy possessed by a body due to its change in position or shape is called -
(a) Nuclear energy (b) Potential energy
(c) Kinetic energy (d) Chemical energy

RRB Group-D 30-10-2018 (Shift-I)

Ans : (b) See the explanation of above question.

293. At the time of releasing an arrow in a drawn bow, the potential energy of the bow change
(a) Chemical energy (b) Kinetic energy
(c) Sound energy (d) Thermal energy

RRB ALP. & Tec. 30-08-2018(Shift-I)

Ans : (b) At the time of releasing an arrow from a drawn bow, the potential energy of the bow change in to the kinetic energy.

294. Which of the following is not an example of potential energy?
(a) A compressed spring
(b) Flowing water
(c) A raised hammer
(d) Water stored in a dam

RRB ALP. & Tec. 30-08-2018(Shift-II)

Ans : (b) The energy stored in a compressed spring is elastic potential energy. The flowing water is not an example of potential energy because the flowing water has kinetic energy.

295. There is a body falling from a mountain has?
(a) Both Kinetic energy and Potential energy
(b) Only Kinetic energy
(c) Only Friction energy
(d) Only Potential energy

RRB Group-D 17-09-2018(Shift-III)

Ans : (a) Body falling from a mountain has both kinetic energy and potential energy.

296. What will be the value of the kinetic energy of an object moving along the mass of 'm' if its speed is changed from 'v' to 2v '?
(a) $E_k/2$
(b) $4E_k$
(c) there will be no change in E_k
(d) $2E_k$

RRB ALP. & Tec. 09-08-2018(Shift-III)

Ans : (b) If, $E_k = \frac{1}{2}mv^2$

and $KE = \frac{1}{2}m\,(2v)^2$, $KE = \frac{1}{2}m\,4v^2$

$KE = 4\times\frac{1}{2}m\,v^2$, Or $KE = 4E_k$

So kinetic energy become 4 times.

297. An object with the mass of 2 kg is thrown upward with the initial velocity 20 m/s after 2 seconds its kinetic energy will be -
(a) 100J (b) 0J
(c) 400J (d) 200J

RRB ALP. & Tec. 09-08-2018(Shift-II)

Ans : (b) According to Newton's first law
$v = u - gt$
Given,
$u = 20$ m/s , $t = 2$ sec $g = 10$ m/s^2
$v = 20 - 10 \times 2$, $v = 0$
So, after 2 second kinetic energy also be zero.

298. What will be the kinetic energy of an object weighing 22 kg moving at a speed of 5 m / s?
(a) 275J (b) 110J
(c) 1100J (d) 2750J

RRB ALP. & Tec. 09-08-2018 (Shift-II)

Ans : (a)

$K.E. = \frac{1}{2}mv^2$, $m = 22$ Kg, $v = 5$ m/s

$E_k = \frac{1}{2}\times 22\times 5\times 5 = \frac{1}{2}\times 550 = \boxed{275J}$

299. Falling coconut has –
(a) Nuclear energy (b) Sound energy
(c) Kinetic energy (d) Chemical energy

RRB Group-D 24-09-2018(Shift-II)

Ans : (c) Falling coconut has kinetic energy.

300. When an object of 11 kg is at a height of 5 m from the ground, then find the energy contained in it ?($g=9.8ms^{-2}$)
(a) 539J (b) 528J
(c) 588J (d) 520J

RRB Group-D 11-10-2018(Shift-III)

Ans : (a) Given,
$m = 11\ kg,\ h = 5\ m,\ g = 9.8\ m/s^2$
$P.E. = mgh = 11 \times 9.8 \times 5 = 55 \times 9.8 = 539J$

301. When an object of 14 kg is at a height of 5 m from the ground, then find the energy contained in it ? ($g=9.8ms^{-2}$)
(a) 528J (b) 686m
(c) 686J (d) 668J

RRB Group-D 15-10-2018(Shift-II)

Ans : (c) Given,
$m = 14\ kg,\ h = 5\ m,\ g = 9.8\ m/s^2$
$P.E = mgh = 14 \times 9.8 \times 5 = 686\ J$

302. When an object of 15 kg is at a height of 10 m from the ground, then find the energy contained in it ? ($g=10ms^{-2}$)
(a) 1500Pa (b) 1500N
(c) $1500ms^{-2}$ (d) 1500J

RRB Group-D 31-10-2018(Shift-III)

Ans : (d) Given,
$m = 15\ kg,\ h = 10\ m,\ g = 10\ m/s^2$
$P = mgh = 15 \times 10 \times 10 = 1500\ J$

303. The kinetic energy of an object is 120J and its mass is 15 kg Find the velocity of the object-
(a) 4 ms (b) $4\ ms^{-1}$
(c) $4\ ms^{-2}$ (d) $4\ ms^2$

RRB Group-D 09-10-2018(Shift-II)

Ans : (b)
$K.E. = \frac{1}{2}mv^2$
$120 = \frac{1}{2} \times 15 \times v^2 \Rightarrow \quad v^2 = \frac{120 \times 2}{15}$
$\Rightarrow \quad v^2 = 16 \Rightarrow \quad v = 4\,ms^{-1}$

304. What is the kinetic energy of an object of mass 15 kg moving at the velocity of $8ms^{-1}$?
(a) 480J (b) 180.5J
(c) 480ms (d) 187.5J

RRB Group-D 09-10-2018(Shift-II)

Ans : (a)
$(K.E) = \frac{1}{2}m.v^2$
$m = 15\ kg,\ V = 8\ m/s$
$\therefore\ K.E. = \frac{1}{2} \times 15 \times 8 \times 8 = 480\ J$

305. When an object of 11 kg is at a height of 6 m from the ground, then find the energy contained in it? ($g=9.8ms^{-2}$)
(a) 539J (b) 646.8J
(c) 528J (d) 520J

RRB Group-D 15-10-2018(Shift-III)

Ans : (b) Given,
$m = 11\ kg,\ h = 6\ m,\ g = 9.8\ m/s^2$
$P.E. = mgh$
$= 11 \times 9.8 \times 6 = 646.8\ J$

306. The bullet fired from the gun goes deep inside the target because it has –
(a) Heat energy (b) Potential energy
(c) Chemical energy (d) Kinetic energy

RRB Group-D 10-10-2018(Shift-III)

Ans : (d) The bullet fired from the gun goes deep inside the target because it contains kinetic energy. The velocity of the bullet fired from the gun is very high and when it hits the target its velocity becomes zero in a very short time. Therefore, the rate of change in momentum of the bullet is very high, so the bullet moves deep within the target.

307. By the turbines flowing water and air are used for change in.....?
(a) Potential energy into electric energy
(b) Nuclear energy into electric energy
(c) Kinetic energy into electric energy
(d) Chemical energy into electric energy

RRB Group-D 16-11-2018(Shift-III)

Ans : (c) The water flowing through the turbine are used to convert kinetic energy into electrical energy. The turbine operates on the basis of Newton's third law (the law of action-reaction).

308. What is the kinetic energy of a bullet when a bullet is fired from a gun?
(a) Less than gun (b) Infinite
(c) More than gun (d) equivalent to gun

RRB Group-D 22-09-2018(Shift-I)

Ans : (c) Gun mass = m_1, velocity = v_1
Bullet mass = m_2, velocity = v_2
$\because\ m_1 > m_2$ .....(i)
By the rule of principle of conservation of momentum-
$m_1 v_1 = m_2 v_2$
Multiplying by 1/2 and squaring on both sides -
$\Rightarrow \frac{1}{2}(m_1 v_1)^2 = \frac{1}{2}(m_2 v_2)^2$
$\Rightarrow E_1 . m_1 = E_2 m_2$
$\Rightarrow \frac{E_2}{E_1} = \frac{m_1}{m_2}$
$\Rightarrow \frac{E_2}{E_1} > 1$ from (i) equation
$\Rightarrow E_2 > E_1$
When a bullet is fired from a gun, the kinetic energy of the bullet is higher than that of the gun.

309. Mechanical energy – kinetic energy = ?
(a) Chemical energy (b) Potential energy
(c) Electric energy (d) Nuclear energy

RRB Group-D 19-09-2018(Shift-III)
RRB Group-D 12-10-2018(Shift-II)
RRB Group-D 16-11-2018(Shift-III)

Ans : (b) Mechanical energy is due to the position or movement of an object. The formula for mechanical energy is,
Mechanical energy = kinetic energy + potential energy
Mechanical energy - kinetic energy = potential energy

310. What does mechanical energy equal ?
(a) Kinetic energy+ chemical energy
(b) Kinetic energy+ potential energy
(c) Kinetic energy+ heat energy
(d) Kinetic energy + electric energy

RRB ALP. & Tec. 30-08-2018(Shift-I)

Ans : (b) See the explanation of the above question.

311. Mechanical energy is a combination of kinetic energy and –
(a) Heat energy (b) Chemical energy
(c) Potential energy (d) Nuclear energy

RRB ALP. & Tec. 10-08-2018(Shift-II)
RRB ALP. & Tec. 13-08-2018(Shift-III)

Ans : (c) See the explanation of the above question.

312. What is the sum of the kinetic energy and potential energy of an object is called ?
(a) Gravitational energy
(b) Mechanical energy
(c) Electric energy
(d) Kinetic energy

RRB Group-D 16-11-2018(Shift-I)

Ans : (b) See the explanation of the above question.

313. What is the sum of the kinetic energy and potential energy of an object is called ?
(a) Mechanical energy
(b) Latent energy
(c) Chemical energy
(d) Muscular energy

RRB Group-D 15-10-2018(Shift-I)

Ans : (a) See the explanation of the above question.

314. Mechanical energy is ?
(a) Energy released by a moving object
(b) Energy emitted during mechanical work
(c) The sum of the kinetic energy and potential energy of an object
(d) Equal to the rate of work done.

RRB Group-D 19-09-2018(Shift-I)

Ans : (c) See the explanation of the above question.

315. . . . . has two types of energy ?
(a) Mechanical (b) Electric
(c) Chemical (d) Sound

RRB Group-D 01-10-2018(Shift-I)

Ans : (a) See the explanation of the above question.

316. Potential energy and kinetic energy are the type of... ?
(a) Mechanical energy (b) Nuclear energy
(c) Electric energy (d) Chemical energy

RRB Group-D 12-11-2018(Shift-II)

Ans : (a) See the explanation of the above question.

317. An object of mass 15 kg is moving with uniform velocity that of 7 ms^{-1}. What is the kinetic energy of that object ?
(a) 367.5ms (b) 17.5J
(c) 367.5J (d) 180.5J

RRB Group-D 08-10-2018(Shift-III)

Ans : (c) According to question,
Mass (m) = 15 kg
Velocity (v) = 7 ms^{-1}
Thus, the kinetic energy of the object

$$K.E. = \frac{1}{2}mv^2$$

$$= \frac{1}{2} \times 15 \times 7 \times 7$$

$$= \frac{1}{2} \times 735 = 367.5 \text{ J}$$

318. An object of 12 kg is placed at a certain height from the ground. If the potential energy of the object is 600 J, find the height of the object with respect to ground. ($g = 10\ ms^{-2}$)
(a) 5 ms^2 (b) -5 m
(c) 5 ms^{-2} (d) 5 m

RRB Group-D 04-10-2018(Shift-I)

Ans : (d) Given,
Mass (m) = 12 kg
Potential Energy (P.E.) = 600 J
Acceleration due to gravity (g) = 10 m/s^2
Potential energy (P.E) = mgh
$600 = 12 \times 10 \times h$

$$\therefore h = \frac{600}{120} = 5 \text{ m}$$

319. In which of the following energy is kinetic energy ?
(A) A bullet fired by a gun
(B) A fast moving railway engine
(C) Speed of a simple pendulum
(a) A and C (b) B and C
(c) A and B (d) A , B and C

RRB Group-D 25-10-2018(Shift-II)

Ans : (d) Examples of kinetic energy–
- A bullet fired by a gun
- A fast moving railway engine
- Speed of a simple pendulum

320. The kinetic energy of an object of mass 10kg moving at a speed of 6ms^{-1} is –
(a) 18J (b) 180J
(c) 1.80J (d) 360J

RRB Group-D 28-09-2018(Shift-III)

Ans : (b) Kinetic energy is directly proportional to the mass of the object and to the square of its velocity.

$$K.E. = \frac{1}{2}mv^2$$

Here, m = 10 kg and v = 6ms^{-1}
Then, K.E. = 10×6×6/2 = 180 J

321. Which of the following statement regarding energy is not true ?
(a) Energy is not a physical substance
(b) Energy is the measure of the ability to perform a task
(c) Energy can be stored and measured in many ways
(d) The energy released during conversion goes into vacuum

RRB Group-D 23-10-2018(Shift-II)

Ans : (d) The energy released during conversion goes into vacuum. It is not true about energy.

322. An object of 20kg mass is moving at speed of 10m/s. What is the kinetic energy obtained by the object?
(a) 1000Pa (b) 1000J
(c) 1000Nm^{-2} (d) 1000N

RRB Group-D 05-10-2018(Shift-III)

Ans : (b) Kinetic energy is directly proportional to the mass of the object and to the square of its velocity.

$$K.E. = \frac{1}{2}mv^2$$

Here, m = 20 kg and v = 10ms^{-1}
K.E. = 20×10×10/2 = 1000J

323. Calculate the potential energy obtained by a 20kg hammer, when it is raised to a height of 10m?
(a) 3000Pa (b) 2000J
(c) 3000W (d) 3000N

RRB Group-D 05-10-2018(Shift-III)

Ans : (b) Potential energy = m×g×h
Here, P.E. =?, m =20 kg, h = 10 m and g = 10 m/s^2
P.E. = 20 ×10 × 10
= 2000J

324. An object of 13kg mass is moving with constant speed of 5m/s ,what will be kinetic energy contained in the object ?
(a) 187.5J (b) 17.5J
(c) 162.5J (d) 162.5ms

RRB Group-D 11-10-2018(Shift-I)

Ans : (c) Kinetic energy is directly proportional to the mass of the object and to the square of its velocity:

$$K.E. = \frac{1}{2}mv^2$$

Here, m = 13 kg and v = $5ms^{-1}$
Then, K.E. = 13×5×5/2 = 162.5 J

325. What will be the kinetic energy of an object of mass 20kg moving at a speed of $5ms^{-1}$?
(a) 250kg (b) 250J
(c) 250N (d) 250Pa

RRB Group-D 11-12-2018(Shift-II)

Ans : (b) Kinetic energy is directly proportional to the mass of the object and to the square of its velocity:

$$KE = \frac{1}{2}mv^2$$

Here, m = 20 kg and v = $5ms^{-1}$
Then, K.E. = 20×5×5/2 = 250 J

326. Formula for gravitational potential energy is -
(a) $U=mgh_1h_2$ (b) U=mgh
(c) U=mhG (d) $U=1/2\ mv^2$

RRB Group-D 23-10-2018(Shift-III)

Ans : (b) The equation for gravitational potential energy is U = mgh, where m is the mass in kilograms, g is the acceleration due to gravity (9.8 m/s^2 on Earth), and h is the height above the ground in meters

327. What is wrong statement about kinetic energy?
(a) During static state the energy contained in the object is called kinetic energy
(b) The energy received by an object based on its speed is known as kinetic energy
(c) $K.E.=1/2(mv^2)$
(d) Moving objects have kinetic energy

RRB Group-D 12-11-2018(Shift-II)

Ans : (a) The energy contained in the static state is called potential energy. So, option (a) is incorrect. The kinetic energy is the additional energy of a body due to its linear velocity or angular velocity, or both. The kinetic energy is a scalar quantity, it has no direction. The kinetic energy of the body is expressed by K.E.

$$KE = \frac{1}{2}mv^2$$

328. An object moving with the uniform velocity of 4m/s has a kinetic energy of 120J. Find the mass of the object?
(a) 15N (b) 15kg
(c) 19Pa (d) 15W

RRB Group-D 01-10-2018(Shift-I)
RRB Group-D 01-10-2018(Shift-III)

Ans : (b) Kinetic energy is directly proportional to the mass of the object and to the square of its velocity:

$$K.E. = 1/2\ m\ v^2$$

Here, m = ? and v = 4 ms^{-1} and K.E. = 120J
Then, 120 = m×4×4/2
m = 15 kg

329. The kinetic energy of an object of mass m moving at a speed of 5 ms^{-1} is 25J. What will be its kinetic energy when its speed will be double?
(a) 100J (b) 50J
(c) 100N (d) 50N

RRB Group-D 01-10-2018(Shift-II)

Ans : (a) Mass of object = m kg
Velocity of object = 5 m/s
Kinetic energy = 25 J

$$\therefore \quad \text{Kinetic energy} = \frac{1}{2}\times m.v^2$$

$$25 = \frac{1}{2}\times m\times 5^2$$

$\therefore$ m = 2 kg
New velocity = 2 × Initial velocity =2 × 5 = 10 m/s

$$\therefore \text{ New kinetic energy} = \frac{1}{2}\times 2\times 10\times 10 = 100 \text{ J}$$

330. When an object of 12kg is at a height of 5m from the ground, then the energy contained in it will be ? ($g=9.8ms^{-2}$)
(a) 539J (b) 520J
(c) 528J (d) 588J

RRB Group-D 12-10-2018(Shift-I)

Ans : (d) According to question,
mass (m) = 12 kg
height (h) = 5 m
acceleration due to gravity (g) = 9.8 m/s^2
Energy stored in the object is potential energy = mgh
= 12×5×9.8 = 588 J

331. What is the change in the total energy of a body falling freely towards the earth ?
(a) Does not change
(b) Initially there will be decrease and after there will be increase
(c) It will increase
(d) It will decrease

RRB Group-D 13-12-2018(Shift-II)

Ans : (a) There is no change in the total energy of the body that is falling freely towards the Earth.

332. An object of 10kg is moving at a speed of 5m/s. what will be the kinetic energy of object?
(a) 125J (b) 2J
(c) 25J (d) 50J

RRB Group-D 10-10-2018(Shift-I)
RRB Group-D 19-09-2018(Shift-I)

Ans : (a) Kinetic energy is directly proportional to the mass of the object and to the square of its velocity.

$$K.E. = \frac{1}{2}mv^2$$

here, m = 10 kg, v = 5 m/s

$$\text{Kinetic energy} = \frac{1}{2}\times 10\times (5)^2 = 5\times 25 = 125 \text{ Joule}$$

333. Just before hitting the earth, the kinetic energy of an object of mass 2 kg is 400 J. At which height it was dropped?
(a) 10m (b) 25m
(c) 20m (d) 15m

RRB Group-D 04-12-2018(Shift-II)

Ans : (c) From conservation of energy,
Kinetic energy of body before striking (hitting) the ground = potential energy of body at height h from the ground, P.E. = mgh
here, m = 2 kg, P.E = 400 J & g = 10 m/s^2
400 = mgh
400 = 2 × 10 × h
$\Rightarrow$ h = 20 m.

334. Which of the following contains potential energy?
(a) Dam water (b) Flying Aeroplane
(c) A falling Aeroplane (d) Running runner

RRB Group-D 30-10-2018(Shift-II)

Ans : (a) Potential energy is the energy in a body due to its position or shape.
Dam water has potential energy.

335. Which of the following objects will have potential energy?
(a) Moving bullet (b) Flowing air
(c) A rolling stone (d) Raised hammer

RRB Group-D 03-10-2018(Shift-II)

Ans : (d) The raised hammer has potential energy.

336. What is the kinetic energy of the bicycle having 10kg weight moving at a speed of 20m/s ?
(a) 4000J (b) 400J
(c) 200J (d) 2000J

RRB Group-D 28-09-2018(Shift-II)

Ans : (d)
$$KE = \frac{1}{2}mv^2$$
(here, $m = 10kg, v = 20m/s$)
$$= \frac{1}{2} \times 10 \times (20)^2 \quad = \frac{1}{2} \times 10 \times 400 = \frac{4000}{2} = 2000 \text{ J}$$

337. An object of mass 14kg is moving at the velocity of 5m/s. Find the kinetic energy contained in an object?
(a) 180.5J (b) 17.5J
(c) 175m (d) 175J

RRB Group-D 11-10-2018(Shift-II)

Ans : (d)
$$KE = \frac{1}{2}m \times v^2$$
$$= \frac{1}{2} \times 14 \times 5^2$$
$$= \frac{1}{2} \times 14 \times 25$$
$$= 175 \text{ J}$$

338. Which of the following does not have kinetic energy?
(a) A rolling stone (b) Falling coconut
(c) Raised hammer (d) Moving car

RRB Group-D 08-10-2018(Shift-II)

Ans : (c) Kinetic energy is the energy that is caused by the motion of an object, such as the energy of a rolling stone, the energy of a falling coconut and, the energy of a moving body, etc. The raised hammer has potential energy. Potential energy is due to the specific position or the shape of an object.
Mechanical energy = Kinetic energy + Potential energy

339. Which of these objects does not have kinetic energy?
(a) Flowing wind (b) Raised hammer
(c) Falling stone (d) Moving bullet

RRB Group-D 05-10-2018(Shift-II)

Ans : (b) See the explanation of the above question.

340. The energy of 9800J was used to lift the 70kg weight at which height the weight was lifted ?
(a) 14m (b) 140m
(c) -140m (d) -14m

RRB Group-D 17-09-2018(Shift-III)

Ans : (a) PE = mgh
here, PE = 9800 J, m = 70 kg & g = 10 m/s^2)
9800 = 70 × 10 × h
9800 = 700 × h
$$h = \frac{9800}{700} = 14m$$

341. What is the potential energy of an object of mass 40 kg when it is lifted at a height of 5m above the ground?
(a) 200W (b) 2000J
(c) 2000W (d) 200J

RRB Group-D 15-11-2018(Shift-I)

Ans : (b) (U) = mgh
here, m = 40 kg, h = 5 m & g = 10 m/s^2
Potential energy , (U) = 40 × 10 × 5 = 2000 J

342. During the free falling of an object –
(a) The kinetic energy increase
(b) The potential energy increase
(c) The kinetic energy decrease
(d) There is no change in kinetic energy

RRB Group-D 15-11-2018(Shift-I)

Ans : (a) When an object is in a static state, it has potential energy but when it is dropped down freely, the energy generated due to its motion is called kinetic energy. But as the body moves downwards, the force of gravity acts on it, which increases the kinetic energy as its speed increases.

343. If the velocity of an object moving at a certain height is increase 4 times, then what will be the change in the potential energy of the object?
(a) Potential energy will be constant
(b) Potential energy will be half of its original value
(c) Potential energy will be doubled
(d) Potential energy will be 4 times of its original value

RRB Group-D 15-11-2018(Shift-II)

Ans : (a) The energy that exists in each object due to its position or shape is called potential energy. According to the question, increasing the velocity of an object moving at a certain height four times will change its kinetic energy and not the potential energy. Therefore, potential energy of that object will remain constant.

344. How would energy be converted while cycling ?
(a) Potential energy is converted into muscular energy
(b) The chemical energy is converted into muscular energy then kinetic energy
(c) Chemical energy is converted into mechanical energy
(d) Mechanical energy is converted into kinetic energy

RRB Group-D 05-11-2018(Shift-II)

Ans : (b) While cycling, chemical energy is converted into muscular energy and then kinetic energy.

345. A compressed spring has ..... energy compared to a normal spring.
(a) Less (b) Zero
(c) Equal (d) Greater
RRB Group-D 12-11-2018(Shift-III)

Ans : (d) A compressed spring has more energy than a normal spring. A spring is made up of an elastic materials and in which (mechanical) energy is stored. Compressed springs have more energy than normal springs due to the greater mechanical energy accumulated.

346. An object is dropped from a certain height to the ground. When it touches the ground it will contain-
(a) Thermal energy (b) Chemical energy
(c) Kinetic energy (d) Potential energy
RRB Group-D 18-09-2018(Shift-II)

Ans : (c) The energy that is generated due to the motion of an object is called kinetic energy. If an object of mass m is moving at a velocity v, then the kinetic energy of that object will be K.E. = 1/2 m v^2 such as - when an object is dropped to the ground from a certain height, it has kinetic energy when it touches the ground.

347. .....is known as the strength of an object.
(a) Energy (b) Pressure
(c) Inertia (d) Force
RRB Group-D 27-09-2018(Shift-I)

Ans : (a) Energy is known as the strength of an object. The ability of an object to do the work is called energy. The unit of energy is 'joule'.

348. What would be the energy contained at a height of 6m by a body of mass 50kg?
(a) 3000J (b) 30J
(c) 300J (d) 3×10^4J
RRB Group-D 22-09-2018(Shift-III)

Ans : (a) Here, m = 50 kg, h = 6 m
(P.E.) = mgh
= 50 × 10 × 6 = 3000 J

349. Find the potential energy of an object mass m raised from the ground level at a height of 4h-
(a) 4 mgh (b) 8 mgh
(c) 0.4 mgh (d) ¼ mgh
RRB Group-D 16-10-2018(Shift-II)

Ans : (a) From, (P.E.) = mgh'
= mg(4h) ($\because$ h' = 4h)
= 4 mgh

350. When an object of 11kg is placed at a height of 7m from the ground, how much energy it will contained?
(a) 528J (b) 520J
(c) 588J (d) 754.6J
RRB Group-D 22-10-2018(Shift-II)

Ans : (d) Here, m = 11 kg, h = 7 m & g = 9.8 m/s^2
P.E = m × g × h
= 11 × 7 × 9.8
= 77 × 9.8 = 754.6 J

351. When an object of 10kg is placed at a height of 7m from the ground, how much energy it will contained -
(a) 528J (b) 686J
(c) 520J (d) 588J
RRB Group-D 22-10-2018(Shift-I)

Ans : (b) Here, m = 10 kg, h = 7 m & g = 9.8 m/s^2
PE = mgh
E = 10 × 9.8 × 7 = 686 J

352. What type of energy changes during the rain ?
(a) Mechanical energy is converted into kinetic energy
(b) Muscular energy is converted into mechanical energy
(c) Chemical energy is converted into kinetic energy
(d) Potential energy is converted into kinetic energy
RRB Group-D 24-10-2018(Shift-II)

Ans : (d) During the rain potential energy is converted into kinetic energy.

353. Which of the following increase or decrease with height ?
(a) Nuclear energy (b) Chemical energy
(c) Potential energy (d) Mechanical energy
RRB Group-D 03-10-2018(Shift-III)

Ans : (c) Potential energy (P.E) = mgh
Potential energy $\propto$ h
Therefore, it is clear from the above equation that the potential energy will increase as the height increases and the energy will decrease as the height decreases.

354. The energy contained in an object is 1500J and its mass is 15kg. Find the height of the object above the ground.
(a) 10m (b) 10N
(c) 10Pa (d) 10 cm
RRB Group-D 02-11-2018(Shift-I)

Ans : (a) here, PE = 1500 J, m = 15 kg
(PE) = mgh
15 × 10 × h = 1500
h = 10 m

355. Potential energy is equal to-
(a) m(-g)h (b) mgh
(c) Fs (d) 1/2mv^2
RRB Group-D 18-09-2018(Shift-III)

Ans : (b) The energy that is accumulated due to the position or distorted state in an object is called potential energy. If a mass of m kg is raised to h height above the earth, the gravitational potential energy contained in the object is- U = mgh

356. Potential energy=?
(a) Fs (b) mgh
(c) $mv^2/2$ (d) $mu^2/2$
RRB Group-D 20-09-2018(Shift-I)

Ans : (b) - See the explanation of above question.

357. If an object of 10kg mass is moving at a speed of 2m/s, then kinetic energy of the object is-
(a) 5J (b) 40J
(c) 10J (d) 20J
RRB Group-D 27-09-2018(Shift-I)

Ans : (d) Kinetic energy is directly proportional to the mass of the object and to the square of its velocity:
K.E. = 1/2 m v^2
$= \frac{1}{2}\times10\times2\times2 = 20$ Joule

358. What is the formula for finding the kinetic energy of an object ?
(a) ma (b) 1/2mv^2
(c) mgh (d) 1/2mv^{-2}
RRB Group-D 10-10-2018(Shift-II)

Ans : (b) Kinetic energy of an object is directly proportional to the mass of the object and to the square of its velocity:

$$K.E. = 1/2\ m\ v^2$$

Where m is mass and v is velocity.

359. What does the kinetic energy equal ?

(a) $1/2mv^2$ (b) mgh
(c) mv (d) Ma

RRB ALP. & Tec. 17-08-2018(Shift-II)

Ans : (a) See the explanation of above question.

360. An object of mass 11kg is moving at a velocity of 5m/s. How much the energy is contained in that object ?

(a) 137.5 ms (b) 137.5J
(c) 180.5J (d) 17.5J

RRB Group-D 10-10-2018(Shift-II)

Ans : (b) Kinetic energy is directly proportional to the mass of the object and to the square of its velocity:

$$K.E = \frac{1}{2}mv^2$$

$$= \frac{1}{2}\times 11\times 5^2 = \frac{1}{2}\times 11\times 25 = \frac{1}{2}\times 275 = 137.5\ J$$

361. An object of mass 15kg is moving at the uniform velocity as 5m/s. Find the kinetic energy contained in an object ?

(a) 187.5J (b) 17.5J
(c) 180.5J (d) 187.5ms

RRB Group-D 08-10-2018(Shift-II)

Ans : (a) Kinetic energy is directly proportional to the mass of the object and to the square of its velocity:

$$K.E. = 1/2\ m\ v^2$$

here, m = 15 kg, v = 5 m/s

$$KE = \frac{1}{2}\times 15\times 5^2$$

$$= \frac{375}{2} = 187.53$$

362. An object of mass 12kg is placed at a certain height from the ground. If the potential energy of the object is 480J, find the height from the ground of an object ?

(a) 6m (b) 5m
(c) 4m (d) 8m

RRB Group-D 03-10-2018(Shift-II)

Ans : (c) Here, m = 12 kg, PE = 480 J, g = 10 m/s^2

P = mgh

480 = mgh

480 = 12 × 10 × h

h = 4 m

363. Which of the following is an example of potential energy?

A. Bricks placed on the roof of the house
B. Spring of a clock when it rotates
C. Compressed spring
D. Stored water in an elevated reservoir under the water supply system

(a) A, D (b) C, D
(c) A, B and C (d) A, B, C, D

RRB Group-D 31-10-2018(Shift-II)

Ans : (d) The energy that is genrated due to a particular state or position of an object is called potential energy. Examples of potential energy are, a brick placed on the roof of the house, a clock spring when it rotates, compressed spring or spring energy and the energy stored in the elevated reservoir under the water supply system.

364. An object capable of performing a work has.....

(a) Force (b) Energy
(c) Momentum (d) Power

RRB Group-D 15-11-2018(Shift-III)

Ans : (b) An object capable of performing a work has energy. The ability of any worker to do the work is called energy. There are different forms of energy. It can be converted from one form to another.

365. The water flowing in a hydroelectric power station can run the turbine because it containes.

(a) Electric energy (b) Chemical energy
(c) Kinetic energy (d) Potential energy

RRB Group-D 02-11-2018(Shift-II)

Ans : (c) The water flowing in a hydroelectric power station can run the turbine because it containes kinetic energy. The kinetic energy is the excess energy of a body due to its linear velocity or angular velocity, or both. Its value is equal to the work done in accelerating that body from rest to motion.

$$K.E = \frac{1}{2}mv^2$$

366. Which of the following statements is false?

(a) Compressed spring has potential energy
(b) The raising hammer has potential energy
(c) Dam water has kinetic energy
(d) A moving car has kinetic energy

RRB Group-D 01-12-2018(Shift-II)

Ans : (c) Dam water has potential energy.

367. An object of mass 20kg is moving at a velocity of 6m/s. What is the kinetic energy of the object?

(a) 3600J (b) 360J
(c) 36J (d) 3.6J

RRB Group-D 05-12-2018(Shift-III)

Ans : (b) Kinetic energy is directly proportional to the mass of the object and to the square of its velocity:

$$K.E. = 1/2\ m\ v^2$$

here, m = 20 kg, v = 6 m/s

$$K.E = \frac{1}{2}\times 20\times (6)^2$$

$$= \frac{1}{2}\times 20\times 36 = 10\times 36 = 360\ J$$

368. What can be predicted with respect to the energy in the given figure?

(a) Both vehicles have gravitational potential energy
(b) Both vehicles are moving in forward direction using maximum energy.
(c) Both vehicles are converting mechanical energy into musculer energy
(d) Both vehicles have kinetic energy

RRB Group-D 05-11-2018(Shift-I)

Ans : (d) According to the given figure, both vehicles are in the state of motion, so both vehicles will have kinetic energy. Thus, the ability to do the work due to the motion of the object is called kinetic energy.

369. The water raised at a certain height has..... energy.
(a) Kinetic (b) Potential
(c) Electric (d) Chemical

RRB Group-D 15-11-2018(Shift-II)

Ans : (b) The water raised at a certain height has potential energy. In potential energy, if an object is placed at a height above the earth surface the gravitational force of the Earth is applied in raising it, that is, it has to work against the gravitational force of the Earth in raising an object from the Earth.

370. If a boy leaves a gas-filled balloon that goes upward direction, its potential energy will be?
(a) Decrease (b) Remains constant
(c) It is infinite (d) Increase

RRB Group-D 07-12-2018(Shift-I)

Ans : (d) The potential energy in an object increases with increasing height. When a boy leaves a balloon filled with gas that goes upward direction the value of 'h' increases, thereby increasing the potential energy.
Potential energy = mass × gravitational acceleration × height

Potential energy $\propto$ h.

Therefore, it is clear from the above equation that the potential energy will increases as the height increases and the potential energy will decrease as the height decreases.

371. If the speed of the cycle is doubled then the kinetic energy will be?
(a) 16 time (b) 8 time
(c) 4 time (d) 2 time

RRB Group-D 22-09-2018(Shift-III)

Ans : (c) $(E_k) = \frac{1}{2}mv^2$

$E_k \propto V^2$

$$\frac{E_{k_2}}{E_{k_1}} = \frac{V_2^2}{V_1^2} = \frac{(2V_1)^2}{V_1^2} = 4$$

$$\frac{E_{k_2}}{E_{k_1}} = 4$$

$$E_{k_2} = 4E_{k_1}$$

372. An object of mass 30 kg is being transferred by 10 m/s uniform velocity. What is the kinetic energy of an object?
(a) -150J (b) 1500J
(c) -1500J (d) 150J

RRB Group-D 26-09-2018(Shift-III)

Ans : (b) Kinetic energy is directly proportional to the mass of the object and to the square of its velocity:

K.E. = 1/2 m v^2

here, m = 30 kg, v = 10 m/s

$$= \frac{1}{2} \times 30 \times 10 \times 10 = 1500 \text{ J}$$

373. An object of mass 30 kg is moving at a uniform velocity of 5 m/s. What is the kinetic energy of the object?
(a) 375 N (b) 375 Joule
(c) 375 kg m/s (d) 375 Pascal

RRB Group-D 25-09-2018(Shift-I)

Ans : (b) Kinetic energy is directly proportional to the mass of the object and to the square of its velocity.
here, m = 30 kg, v = 5 m/s

K.E. = 1/2 m v^2

$$\text{K.E.} = \frac{1}{2} \times 30 \times 5 \times 5$$

K.E. = 15 × 5 × 5=375 Joule

374. An object has a potential energy of 400J with a mass of 20kg and a gravity of 10 m/s^2, what is the height of that object?
(a) 0.5m (b) 4m
(c) 1m (d) 2m

RRB Group-D 28-09-2018(Shift-I)

Ans : (d) Here, PE = 400 J, m = 20 kg, g = 10 m/s^2
PE = mgh
400 = 20 × 10 × h
400 = 200 × h

$$h = \frac{400}{200} = 2 \text{ m}$$

375. When the hammer of 15kg is raised to a height of 10m, find the potential energy obtained by it?
(a) 1500J (b) -150J
(c) -1500J (d) 150J

RRB Group-D 05-10-2018(Shift-I)

Ans : (a) Potential energy = m×g×h
Here, m =15 kg, h = 10m and g = 10 m/s^2
= 15×10×10 = 1500J

376. What is the kinetic energy of a ball of mass 2kg moving at a speed of 30ms^{-1}?
(a) 900N (b) 900J
(c) 900W (d) 900Pa

RRB Group-D 04-10-2018(Shift-II)

Ans : (b) Kinetic energy is directly proportional to the mass of the object and to the square of its velocity.

K.E. = 1/2 m v^2

here, m = 2 kg, v = 30 m/s

= 2 ×30 ×30/2 = 900 J

377. If the velocity of an object is twice that of its initial velocity, how many times will its kinetic energy increase?
(a) 4 (b) 5
(c) 3 (d) 2

RRB Group-D 24-09-2018(Shift-II)

Ans : (a) The energy possessed by a body because of its motion, equal to one half the mass of the body and the product of square of its speed is called its kinetic energy. Hence, when velocity is doubled, kinetic energy becomes 4 times.

If $E_k = \frac{1}{2}mv^2$

Then, $E = \frac{1}{2}m(2v)^2 \Rightarrow E = \frac{1}{2}m4v^2$

$E = 4\frac{1}{2}mv^2 \Rightarrow \boxed{E = 4E_K}$

So, kinetic energy becomes 4 times.

378. An object of mass 12kg is placed at a certain height from the ground. If the potential energy of the object is 600J, find the height from the ground of the object?
(a) -5m (b) $5ms^{-2}$
(c) 5m (d) $5ms^2$

RRB Group-D 22-10-2018(Shift-I)

Ans : (c) Potential energy = m×g×h
Here, P =600 J, m =12kg, h = ? and g = 10 m/s^2
600 = 12 ×10 × h
h = 600/120 = 5 m

379. Which of the following energy increases with speed ?
(a) Chemical energy (b) Potential energy
(c) Kinetic energy (d) Electrical energy

RRB Group-D 24-10-2018(Shift-I)

Ans : (c) Kinetic energy is related to an object's momentum. For a rigid body travelling in a linear path, kinetic energy increases with the square of velocity. So, if the velocity becomes doubles, the kinetic energy becomes 4 times of the object that of its initial velocity.

380. Following given example represent-
1. A high speed pebble can hurt a person or break a window glass.
2. Energy of a moving vehicle
3. Fast moving air can damage many homes
4. Wind can drive the wind mill
(a) Kinetic energy
(b) Very fast speed
(c) Gravitational stretch
(d) Frictional force

RRB Group-D 24-10-2018(Shift-I)

Ans : (a) All the given example represents kinetic energy.

381. Find the potential energy of an object 3m mass raised from the ground at a height of h-
(a) 6 mgh (b) 9 mgh
(c) 3 mgh (d) 1/3 mgh

RRB Group-D 27-11-2018(Shift-I)

Ans : (c) Potential energy = m×g×h
Here, mass = 3m
Then, P = 3m×h×g = 3 mgh

382. If a bullet is fired from the gun, comes backwards, what will be the kinetic energy of the gun?
(a) Equivalent to bullet
(b) Zero
(c) More than the bullet
(d) Less than the bullet

RRB Group-D 16-10-2018(Shift-I)

Ans : (d) When a bullet is fired from a shotgun and the gun strikes backwards, the gun's kinetic energy is less than the bullet.

383. A mobile was dropped from a balcony if the mass of the mobile phone is 0.5kg and the mobile phone was dropped from a height of 100m, g=10m/s^2. So what is the potential energy of mobile phone?
(a) 5000J (b) 5 J
(c) 50 J (d) 500 J

RRB Group-D 24-09-2018(Shift-II)

Ans : (d) Potential energy = m×g×h
Here, m = 0.5kg, h = 100m and g = 10 m/s^2
= 0.5 × 100 × 10 = 500 J

384. When an object of 11kg is placed at a height of 8m from the ground, then how much energy it will contains?
(a) 520 J (b) 539 J
(c) 588 J (d) 862.4 J

RRB Group-D 16-10-2018(Shift-I)

Ans : (d) Potential energy = m×g×h
Here, m =11kg, h = 8m and g = 9.8m/s^2
= 11×9.8×8 = 862.4 J

385. When an object of 15kg is at a height of 5m from the ground, then how much energy it will contains?
(a) 520 J (b) 528 J
(c) 725 J (d) 735 J

RRB Group-D 15-10-2018(Shift-I)

Ans : (d) Potential energy = m×g×h
Here, m =15kg, h = 5m and g = 9.8m/s^2
= 15×9.8×5
=735 J

386. An object of mass 10kg is placed at the height of 6 meter from the ground. Calculate the potential energy stored in it. (g=9.8 m/sec^2)
(a) 578 J (b) 588 J
(c) 578 W (d) 588W

RRB Group-D 31-10-2018(Shift-II)

Ans : (b) Potential energy = m×g×h
here, m = 10 kg, h = 6 m, g = 9.8 m/s^2
= 10×9.8×6
=98×6 = 588J

387. An object was thrown vertically upwards and it reached a maximum height 'h' from the ground. While going over it, the object at 1/4 of height 'h' will have ……
(a) Less potential energy and more kinetic energy
(b) Only potential energy
(c) Equal potential and kinetic energy
(d) More potential energy and less kinetic energy

RRB Group-D 28-11-2018 (Shift-I)

Ans : (a) An object was thrown vertically upwards and it reached a maximum height 'h' from the ground. While going over it, the object at 1/4 of the height 'h' will have less potential energy and more kinetic energy.

388. Fill in the blank with the correct option.
An object is thrown vertically upward during their rise up potential energy and kinetic energy is –
(a) Increases ,decreases
(b) Decreases , increases
(c) Increases, increases
(d) Remains the same, remains the same

RRB Group-D 20-09-2018(Shift-II)

Ans : (a) The ability of an object to work due to its motion is called kinetic energy while potential energy is the ability to the work due to a particular state or condition of an object.
When an object is thrown vertically upward, then its potential energy increases gradually and the kinetic energy decreases and at time when the object reaches the last point, then its kinetic energy becomes zero, i.e. decreases.

389. During the free fall of an object, which of following energy increases at one point in its path?
(a) Mechanical energy
(b) Kinetic energy
(c) Potential energy
(d) Chemical energy

RRB Group-D 19-09-2018(Shift-II)

Ans : (b) Kinetic energy increases at any point in its path during the free fall of an object.

390. What is the kinetic energy of a bullet when a bullet is fired from a gun ?
(a) Less than that of a gun
(b) Infinite
(c) More than that of a gun
(d) Equivalent to a gun

RRB Group-D 22-09-2018(Shift-I)

Ans : (c) Law of conservation of momentum, states that a free recoiling gun and bullet will have equal momentum in opposite direction. Since the gun is always heavier, it will have lower velocity, but the bullet has higher velocity because the mass of bullet is less than as compare to the gun. When calculating kinetic energy, the kinetic energy of the bullet will be always higher.

391. A block of 2 kg slides on a parallel surface at a speed of 4 m/s. It falls on an uncompress spring and presses it until the block becomes completely motionless. The value of kinetic friction is 15N and the spring constant is 10000N/m. spring presses –
(a) 8.5m (b) 8.5cm
(c) 5.5m (d) 5.5cm

RRB Group-D 10-12-2018(Shift-I)

Ans : (d) Let, spring's x part is pressed
m = 2 kg, k = 10000 N/m and v= 4m/sec.
According to question,
$Mv^2/2=kx^2/2$
$0.5\times2\times4^2 = 10000\times x^2\times0.5$
$x^2=32/10000$, x = 0.056 m
x = 5.5 cm (approx)

392. What is the form of energy that is not generated when riding a bicycle?
(a) Chemical energy (b) Heat energy
(c) Mechanical energy (d) Kinetic energy

RRB ALP & Tec. (10-08-18, Shift-I)

Ans : (a) Chemical energy is the energy stored in the chemical compounds. This energy is released when a chemical reaction takes place. Usually, once chemical energy has been released from a substance, that substance is transformed into a completely new substance, so it is not generated by riding a bicycle.

(iv) Mass

393. Which of the following quantity does not change even after changing place?
(a) Mass
(b) Force due to friction
(c) Weight
(d) Gravity

RRB ALP & Tec. (30-08-18 Shift-I)

Ans : (a) Mass is the amount of matter in the body which does not depend on the value of g. Weight of a body is the gravitational force on it. Thus, weight is dependent on gravitational acceleration (g).
Hence, weight of a body will change from one place to another place because the value of g is different in different places. As mass is independent of g, so it will not change from place to place.

394. Which one of the following is not related to this group?
(a) Speed (b) Time
(c) Mass (d) Acceleration

RRB NTPC 31.03.2016 (Shift-I) Stage I[st]

Ans : (c) Time, acceleration, and speed are variables of linear motion while mass is not included in this group.

395. Which of the following quantity measures the inertia of a body?
(a) Mass
(b) Density
(c) Temperature
(d) Volume

RRB Group-D 26-10-2018 (Shift-III)

Ans : (a) Inertia is that quality of things, due to which objects try to maintain their state of rest or state of motion. Due to inertia, the object opposes its state of change. Mass quantity of measures the inertia of an object.

396. Inertia of an object is measured in which of the following?
(a) Velocity (b) Colour
(c) Weight (d) Mass

RRB Group-D 31-10-2018 (Shift-III)

Ans : (d) See the explanation of above question.

397. Measurement of mass of an object is called measurement of
(a) Acceleration (b) Inertia
(c) Momentum (d) Speed

RRB Group-D 11-10-2018 (Shift-II)

Ans : (b) Expressing the magnitude of a physical amount in quantity is called 'measurement'. The property that opposes any change in the state of motion of an object is called inertia. Inertia is the property that causes an object to move at the same velocity in a straight line without changing direction. Measurement of mass of an object called measurement of inertia.

398. What is the definition of mass?
(a) The mass of an object is directionless. Therefore it is a scalar quantity.
(d) Mass can be determined based on chemical equilibrium.
(c) The mass of an object remains constant at any place and is not affected by the change in height.
(d) The amount of matter contain in an object is called the mass of that object.

RRB Group-D 24-10-2018 (Shift-III)

Ans : (d) Mass is defined as the amount of the matter inside a body. All the objects have a matter inside them and the measurement of the matter is the mass.

399. Mass / Volume =?
(a) Density (b) Momentum
(c) Inertia (d) Force

RRB Group-D 01-10-2018 (Shift-II)

Ans : (a) The density of a substance is the measure of how much matter that an object has in a unit volume. The symbol ρ represents it or it can also be represented by letter D.
Mathematically, the density of an object is expressed as follows

$$\text{Density} = \frac{\text{Mass}\,(m)}{\text{Volume}\,(V)}$$

* S.I. unit of density is kg/m^3

400. The mass density of an object is defined as its _____.

(a) Mass per unit length
(b) Mass per cubic area
(c) Mass per unit volume
(d) Mass per unit ampere.

ALP Stage -II 22.01.2019 (shift - I)

Ans : (c) The mass density or density of a substance is defined as, its mass per unit volume.

401. What is the mass per unit volume of a substance called?

(a) Energy (b) Mass
(c) Density (d) Matter

RRB Group-D 05-10-2018 (Shift-I)

Ans : (c) Mass per unit volume of substance is called density. Density is denoted by ρ or d. Its unit is kg per cubic meter.

$$\text{Density} = \frac{\text{mass}}{\text{volume}}$$

$$\boxed{\rho = \frac{m}{v}}$$

402. What is the mass of a unit volume of substance called?

(a) Density (b) Pressure
(c) Buoyancy (d) Force

RRB-JE 30.08.2019, Ist Shift

Ans : (a) See the explanation of above question.

403. If the weight of an object is 200 N, find its mass. ($g = 10\ ms^{-2}$)

(a) 20 N (b) 20W
(c) 20 Pa (d) 20 kg

RRB Group-D 22-10-2018 (Shift-III)

Ans : (d) According to the question -

$W = 200\ N$
$g = 10\ ms^{-2}$
$m = ?$

According to formula -

$W = m.g$
$200 = m \times 10$

$$m = \frac{200}{10} = 20kg$$

404. Force/acceleration ?

(a) Momentum (b) Speed
(c) Mass (d) Pressure

Ans : (c) From Newton's Second Law,

$F = ma$

$$\Rightarrow m = \frac{F}{a}$$

Mass = force/acceleration

405. Which of the following does not affect the value of acceleration due to gravity?

(a) Mass (b) Vertically
(c) Size of earth (d) Depth

RRB Group-D 24-09-2018 (Shift-I)

Ans : (a) The value of acceleration due to gravity 'g' is affected by
(i) Altitude above the earth's surface.
(ii) Depth below the earth's surface.
(iii) The shape of the earth.
(iv) Rotational motion of the earth.
If a body is located on the surface of earth then acceleration due to gravity is given by –

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

Where,
G = Universal gravitational constant
M = Mass of earth
R = Radius of earth
The above equation gives acceleration due to gravity at the surface of earth. Clearly 'g' is independent of mass 'm' of the body.

406. Density of pure water is __ that of saline water.

(a) Less than
(b) Equal to
(c) More than
(d) Negligible compared to

ALP Stage -II 22.01.2019 (shift - I)

Ans : (a) Density of pure water is less than that of saline water.

407. What will be the mass of the girl weighing 450 N?

(a) 450 kg (b) 45 kg
(c) 459 kg (d) 45.9 kg

RRB Group-D 20-09-2018 (Shift-II)

Ans : (d) Girl's weight (W) = 450 N

$\because$ $W = m \times g$

{m = mass, W = weight, g = acceleration due to gravity}

$450 = m \times 9.8$ $(g = 9.8\ m/s^2)$

$$m = \frac{450}{9.8} = 45.9\ kg$$

408. The weight of an object is 980 N. If the gravitational acceleration is $9.8\ ms^{-2}$, find the mass of the object -

(a) 100 kg (b) 8.8 kg
(c) 10 kg (d) 1 kg

RRB Group-D 28-11-2018 (Shift-I)

Ans : (a) Weight of object (W) = 980 N
Acceleration due to gravity (g) = $9.8\ ms^{-2}$
Mass of object (m) = ?
from , W = mg

$$m = \frac{980}{9.8} = 100\ kg$$

409. The ..... of an object is fixed and does not change when it is moved -

(a) Velocity (b) Mass
(c) Speed (d) Weight

RRB Group-D 20-09-2018 (Shift-III)

Ans : (b) The amount of matter in a body or object is called the mass of the object whereas the force with which the earth pulls the object towards itself is called the weight of that object. The mass is always fixed and unchanging while the weight is variable depending on the gravitational acceleration. The mass remains unchanged when the object is moved to any place.

410. The momentum of a body is 50 Kg.ms $^{-1}$ and the velocity is 5ms^{-1}. What is the mass of that body?
(a) 250 N (b) 250 Kg
(c) 10 N (d) 10 Kg

RRB Group-D 29-10-2018 (Shift-III)

Ans : (d) Momentum (p) = 50 kg m/s
Velocity (v) = 5 m/s
We know that,
Momentum (p) = mv

$$m = \frac{p}{v} = \frac{50}{5} = 10 \text{ Kg.}$$

411. If force (F) and acceleration (a) are given, then the formula for finding the mass (m) of an object is ……
(a) F – a (b) F/a
(c) F×a (d) a/F

RRB Group-D 02-11-2018 (Shift-III)

Ans : (b) The force (F) exerted on an object is equal to the product of mass (m) of the object and the acceleration (a) produced in the direction of the force on it. i.e, F = m.a
Similarly, if the force (F) and acceleration (a) are given, then the formula shown in the mass (m) of the object is-
From, F = m.a.

$$m = \frac{F}{a}$$

(v) Newton's Laws of Motion

412. The rate of change of momentum of an object is proportional to the applied unbalanced force in the direction of the force. This rule is known as :
(a) Newton's First Law of Motion
(b) Newton's Fourth Law of Motion
(c) Newton's Second Law of Motion
(d) Newton's Third Law of Motion

RRB NTPC 15.02.2021 (Shift-II) Stage Ist

Ans : (c) Newton's second law is a quantitative description of the changes that a force can produce on the motion of a body. It states that the rate of change of the momentum of a body is equal to both magnitude and direction of the force imposed on it. The momentum of a body is equal to the product of its mass and its velocity. Momentum, like velocity, is a vector quantity, having both magnitude and direction. Example: Pulling the hands gradually in the direction of the ball while catching helps in reducing the impact of force applied by the ball on the hands of the cricketer as the relative velocity of the ball with respect to hands of the player is decreased and hence reduces the momentum of the ball gradually.

413. If we move the tree branch fast then some of the leaves get detached from the tree due to –
(a) Acceleration (b) Velocity
(c) Inertia (d) Impulse

RRB Group-D 04-12-2018 (Shift-II)

Ans : (c) When the tree's branch is moved fast the branch attain motion but the leaves stay at rest.
Due to inertia of rest, the leaves tend to remain in its position and hence detaches from the tree to fall down.

414. Which of the following examples illustrates Newton's first law of motion?
(a) When we stop pedaling, the cycle starts to slow down.
(b) While catching a fast approaching cricket ball, the fielder slowly moves his hand backwards with the moving ball.
(c) When a bus starts abruptly, the passengers are jerked backwards.
(d) Rocket launching

RRB Group-D 05-11-2018 (Shift-III)

Ans : (c) Newton's First Law of Motion - If an object is in rest position, it will remain in the rest position until an external force is applied on it.
When the bus is not moving the passengers are in the state of rest and they have inertia of rest. When the bus starts moving suddenly, the lower part of the body of passengers, which is in contact with the bus, come in motion, but upper part of their body tends to be in the state of rest and the passengers fall backward or jerked backwards.

415. How many law of motion did Isaac Newton formulate?
(a) Three (b) Four
(c) Two (d) Five

RRB NTPC 01.04.2021 (Shift-II) Stage Ist

Ans : (a) Sir Issac Newton formulated his three laws of motion in his book "Mathematical Principles of Natural Philosophy" first published in 1687. The laws form the basis for classical mechanics. He also proposed the law of Gravity and formulated the theory of Universal Gravitation as well.

416. The three laws of motion were proposed by:
(a) Aristotle (b) Galileo
(c) Newton (d) Edison

RRB NTPC 08.01.2021 (Shift-II) Stage Ist

Ans : (c) Sir Isaac Newton proposed the three Laws of Motion, which is first Law, Second Law and Third Law explain the relationship between motion of an object and forces acting on object.
Newton's three laws of motion are:–
1. Every object in a state of uniform motion will remain in that state of motion unless an external force acts on it.
2. Rate of change of momentum is proportional to the applied force.
3. For every action there is an equal and opposite reaction.

The first law is also called as the law of inertia.

417. What is the equation for Newton's second law of motion?
(a) $F = mc^2$ (b) F = ma
(c) F = AP (d) $F = \frac{1}{2}mv^2$

RRB NTPC 12.02.2021 (Shift-I) Stage Ist

Ans : (b) Second law of motion expressed by Newton as follows:
The rate of change of momentum of a body is directly proportional to the applied force on the body and in the direction in which the force acts. This statement is expressed in equation form as,
F = ma

where,

F = force

m = mass of object

a = acceleration

The unit of force is $kg.m.s^{-2}$ or Newton, which is represented by symbol N. The second law of motion gives us a method to measure the force acting on an object as a product of its mass and acceleration.

418. What is the other name of Newton's first law of motion?

(a) Law of momentum
(b) Law of movement
(c) Law of inertia
(d) Law of displacement

RRB NTPC 04.01.2021 (Shift-II) Stage Ist

Ans : (c) The first law of Newton is also termed as Law of Inertia. It states that a body in rest or motion continues to be in such state, untill and unless an external force is applied on it.

The second law of Newton says that force applied on a body is equal to product of its mass and acceleration.

$F = m \times a$

The third law of Newton mentions about action-reaction process.

419. Second law of motion is related to. . . . . .

(a) Pressure (b) Inertia
(c) Thrust (push) (d) Momentum

RRB Group-D 30-10-2018 (Shift-I)

Ans : (d) The second law of motion is related to momentum. According to the second law of motion, "the change in momentum of an object is proportional to the force exerted on that object and occurs in the same direction."

From Newton's second law of motion,

$$\vec{F} = \frac{d\vec{p}}{dt}$$

Here, F is the force, p is momentum and t is time.

420. Newton's second law of motion:

(a) Explains the relationship between forces on two mutually effective objects.
(b) Also known by the law of inertia.
(c) It is helpful to understand the effects of force.
(d) Also known by the law of conservation of energy.

RRB Group-D 27-11-2018 (Shift-III)

Ans : (c) The rate of change of momentum of an object is proportional to the force exerted on that object. The momentum changes in the direction of the force.

In the second law, the force on an object is equal to product of its mass and its acceleration.

$\therefore F = ma$

where, m = mass and a = acceleration.

Hence Newton's second law of motion is helpful to under stand the effects of force.

421. The equation F = ma, is given by Newton's …….. law of motion:

(a) II (b) III
(c) I (d) IV

RRB Group-D 05-12-2018 (Shift-I)

Ans : (a) The equation F = ma, is given by Newton's II law of motion.

422. Which of the following Newton's Law of Motion provides an explanation for why a ball thrown on the wall collides and returns?

(a) First law of motion (b) Second law of motion
(c) Third law of motion (d) None of the rules

RRB NTPC Stage Ist 26.04.2016 (Shift-II)

Ans. : (c) The ball thrown on the wall bounces back which explains the third law of motion. When in the interaction of two objects, the force of one object exerts the same force on the other object, the second object also exerts the same force on the first object in the opposite direction, one of these forces is called action and the other force is called reaction. The rule is also called Newton's Third Law of Motion.

423. Which of the following statements is true for Newton's Third Law of Motion.

(a) The force is applied to the same body.
(b) The force is applied on the same body in the opposite direction.
(c) The force is applied on different body in opposite direction.
(d) Force is dependent on distance.

RRB Group-D 12-10-2018 (Shift-I)

Ans : (c) Newton's Third Law of Motion : According to this law, to every action, there is an equal and opposite reaction.

When one objects exert a force (action) on another object, then the second object also exert a force (reaction) on the first object. These two forces are always equal in magnitude but opposite in direction.

424. The famous law of motion is given by-

(a) Dalton (b) Newton
(c) Galileo (d) Thomson

Group-D 26-10-2018 (Shift-II)

Ans : (b) Newton gave three laws of motion, which are as follows :

(i) Law of Inertia
(ii) Law of Force, Mass and Acceleration
(iii) Law of Action-Reaction

425. The rate of change in momentum of a body is proportional to ———.

(a) Applied displacement
(b) Applied force
(c) Applied potential energy
(d) Applied pressure

RRB Group-D 22-09-2018 (Shift-III)

Ans : (b) The rate of change in momentum of an object is proportional to the force applied on it and in the direction of force. It is also called Newton's second law of motion.

426. The second law of motion shows-

(a) Every object will remain in a state of constant or uniform motion, unless it is forced to change its state by the action of pure force.
(b) When pure force is applied, each object will move in the same speed.
(c) The rate of change in the speed of the object will change with the applied net force.
(d) The rate of change of momentum of an object is proportional to the net force applied to the object in the direction of net force.

RRB Group-D 22-09-2018 (Shift-II)

Ans : (d) Second Law of Motion - The rate of change of momentum is directly proportional to the applied force. The larger the force acting on a body, greater is the change in its momentum. Since change in momentum is equal to the product of mass and the acceleration and the mass of the body remains constant, so the rate of change of momentum is directly proportional to the rate of change of velocity i.e., acceleration. Hence force (F) is directly proportional to mass (m) and acceleration (a)

$$\boxed{F \propto ma}$$

Rate of change of momentum =

$$\frac{\text{Change of momentum}}{\text{Time taken}} = \frac{m(v-u)}{t} = ma$$

$$\left[\because \frac{v-u}{t} = a\right]$$

where, a is the acceleration of the body.

427. Which of the following statements is false

(a) When a bus stops suddenly, a passenger sitting in the bus is jerked backwards.
(b) When a person jumps from a moving bus, he falls.
(c) When a rotating fan stops, it rotates for some time.
(d) When a bus stops suddenly, a passenger sitting in the bus gets a shock in the front

RRB Group-D 07-12-2018 (Shift-I)

Ans : (a) 1. When a moving bus stops, the lower part of our body in contact with the bus comes to rest while the upper part of our body tends to keep moving due to inertia of motion. Hence, we fall (or forwards)
2. When the bus accelerates from rest, the lower part of our body comes into motion along with the bus while the upper part of body tends to remain at rest due to inertia of rest. Hence we fall backwards.

428. 1 Kg × 1 ms^{-2} , It is said.....

(a) 1 newton (b) 1 coulomb
(c) 1 pascal (d) 1 joule

RRB Group-D 15-11-2018 (Shift-II)

Ans : (a) From Newton's Second Law -
Force = mass × acceleration
= 1 Kg × 1 m/s^2 = 1 Newton
The unit of force is Newton.

429. What was the year of publication of Newton's laws of motion?

(a) 1678 (b) 1778
(c) 1787 (d) 1687

RRB Group-D 27-11-2018 (Shift-III)

Ans : (d) Newton published the laws of motion in his book Principia in 1687 AD. Newton gave three physical laws of motion. These laws indicate the relationship between the force exerted on an object and the motion of that object generated from it.

430. Why does a fielder turn his arms backwards while catching a fast approaching cricket ball?

(a) Because he is nervous.
(b) Because it helps to aim the ball.
(c) Because he experiences less force over a longer period of time.
(d) Because it gives him vigilance.

RRB Group-D 15-11-2018 (Shift-I)

Ans : (c) The fielder turns his arm backwards while catching a fast approaching cricket ball. It follows Newton's second law of motion. i.e. the rate of momentum changes in the ball decreases due to which it experiences less force over a longer time. Therefore, the impact of the ball is less on the arm.

431. Shot from a rifle. What will be the kinetic energy of the rifle if the rifle comes backwards without stopping?

(a) More than the kinetic energy of the bullet
(b) Less than the kinetic energy of the bullet
(c) Equal to the kinetic energy of the bullet
(d) Zero

RRB Group-D 07-12-2018 (Shift-I)

Ans : (b) According to Newton's third law, when we apply force on a body, it exerts the same force back, it is also called action-reaction force. This is why if the gun pushes the gunner backwards, then the kinetic energy of the gun will be less than the kinetic energy of the bullet.

432. The product of mass and acceleration is called.

(a) Pressure (b) Impulse
(c) Thrust (d) Force

RRB Group-D 12-10-2018 (Shift-I)

Ans : (d) The rate of change of momentum is directly proportional to the applied force. The larger the force acting on a body, greater is the change in its momentum. Since change in momentum is equal to the product of mass and the rate of change in velocity and the mass of the body remains constant, so the rate of change of momentum is directly proportional to the rate of change of velocity i.e., acceleration. Hence force (F) is directly proportional to mass (m) and acceleration (a)

$$\boxed{F = ma}$$

433. Which of the following examples explains Newton's third law of motion?

(a) Rocket launching
(b) On the sudden move of the bus, the passengers get jerked backwards.
(c) When we stop pedaling, the cycle starts to slow down.
(d) While catching a fast approaching cricket ball, the fielder slowly moves his hand backwards with the moving ball.

RRB Group-D 02-11-2018 (Shift-III)

Ans. : (a) According to the Newton's third law of motion, if an object exerts a force on another object, the second object exerts the same force on the first object in the opposite direction. It is also called the law of action reaction. For example –
• Pushing the gun backwards when firing from the gun.
• Rocket launching etc.

434. When a sailor jumps in the forward direction, the boat drifts backwards. Which law of Newton represent the example -

(a) Second law of motion
(b) First and second law of motion
(c) Third law of motion
(d) First law of motion

RRB ALP & Tec. (31-08-18 Shift-III)

Ans : (c) Newton's Third Law of Motion : According to this law, to every action, there is an equal and opposite reaction.
When a sailor jumps out of a rowing boat, the boat moves backwards. As the sailor jumps forwards, he applies a backward force (action) on boat and the boat moves backwards due to the force of reaction.

435. Rocket launching is based on which law?
(a) Newton's third law of motion
(b) Newton's first law of motion
(c) Thermodynamic law
(d) All of Newton's laws of motion

RRB Group-D 15-10-2018 (Shift-III)

Ans : (a) Rocket launching is based on Newton's third law of motion.
Newton stated in his third law that every action has an equal and opposite reaction.

436. The force between the two objects is always equal and opposite. Which Newton's law gives idea about the statement:
(a) Third law of motion
(b) Second law of motion
(c) First and second law of motion
(d) First law of motion

RRB ALP & Tec. (31-08-18 Shift-I)

Ans : (a) Newton's Third Law of Motion - According to this law, to every action, there is an equal and opposite reaction.
When one objects exerts a force (action) on another object, then the second object also exerts a force (reaction) on the first. These two forces are always equal in magnitude but opposite in direction.

437. When a stationary bus starts moving, the people standing in it fall in the back direction. Which of the following law explains this situation?
(a) Newton's first law of motion
(b) Newton's third law of motion
(c) Newton's second law of motion
(d) Law of momentum conservation

RRB ALP & Tec. (30-08-18 Shift-II)

Ans : (a) Newton formulated three laws of motion– According to the first law, any object tries to maintain its state of motion or rest. It is also called the law of inertia. The statement in question is based on this law.

438. A man is standing in a boat in still water. If he tries to walk towards the shore, the boat will
(a) move away from the shore
(b) remain stationary
(c) sink
(d) move towards the shore

RRB J.E. (14.12.2014, Green paper)

Ans : (a) A man is standing on a boat in still water. If he walks towards the shore, the boat will move away from the the shore. This is according to Newton's Third Law of Motion, to every action there is equal and opposite reaction.

439. When bullet is fired from the gun, the gun pushes in the opposite direction. This is an example of Newton's law.
(a) First and second laws of motion
(b) Third law of motion
(c) Second law of motion
(d) First law of motion

RRB ALP & Tec. (13-08-18 Shift-II)

Ans : (b) According to Newton's third law of motion, when an object exerts a force on another object, the second object also exerts the same force on the first object, i.e. each action has its equal and opposite reaction. It is also called the Law of action-reaction. The example in question also follows Newton's third law of motion (action-reaction rule). For example, when a person jumps from the boat to the river, the boat goes backwards, launching of rockets, etc.

440. Newton's Third Law of Motion applies to which of the following situations?
(a) When a person jumps from the boat to the river, the boat goes backwards
(b) Passengers standing in a bus fall in the back direction, when the stationary bus suddenly moves
(c) When a person falls on the cement floor, he gets hurt
(d) While catching a fast moving cricket ball, a fielder puts his hands backwards

RRB Group-D 24-10-2018 (Shift-I)

Ans : (a) See the explanation of the above question.

441. Which of the following is an example of Newton's third law of motion:
(a) While catching a fast approaching cricket ball, the fielder slowly moves his hand backwards with the moving ball.
(b) When we stop paddling, the cycle slows down
(c) When a bus moves suddenly, the passengers are jerked backwards
(d) Rocket launching

RRB Group-D 17-09-2018 (Shift-I)

Ans : (d) See the explanation of the above question.

442. On what basis can the definition of force be interpreted?
(a) Newton's second law of motion
(b) Newton's first law of motion
(c) Newton's third law of motion
(d) Newton's law of gravity

RRB ALP & Tec. (20-08-18 Shift-III)

Ans : (b) Newtons' First Law of Motion– Anybody at rest or in uniform motion will remains at rest or in uniform motion unless an external force is applied to change that state. On basis Newton's first law of motion the definition of force be interpreted.

443. At any moment, the acceleration of a rocket is proportional to the n^{th} power of the velocity of the released gases. The value of 'n' should be–
(a) 1 (b) 2
(c) –1 (d) –2

RRB Group-D 31-10-2018 (Shift-II)

Ans : (a) Solid or liquid fuel is ignited in the presence of oxygen in a chamber within the rocket. Which produces gas at high pressure. This gas flows backwards with rapid velocity.
Thus, the speed of the escaping gas is in the opposite direction as the speed of the rocket.
At any moment, the acceleration of a rocket is proportional to the n^{th} power of the velocity of the released gases. The value of 'n' should be 1.
Rocket speed $\propto$ (gas speed)^n
where n = 1