INDEX

Physics

1 UNIT - I

Measurement of Length

1. Least count of an oridnary scale is
   a) 1 mm b) 1 cm c) 0.1 mm d) 0.01 mm
2. If x is the distance travelled by the tip of the screw through a nut when 'n' complete revolutions of the head are made, then pitch of the screw P=
   a) nx b) $\frac{x}{n}$ c) d) x + n
3. If P is the pitch of the screw and N is the number of head scale divisions then the least count (L.C.)=
   a) PN b) P + N c) d)

KEY

1) a 2) b 3) c

2

UNIT - II

Our Iniverse - Gravitation

1. According to Kepler concept the orbit of a planet around the sun is
   a) circular b) elliptical c) rectangular d) linear
2. The weight of an object
   a) is the quantity of matter in it b) is the force with which it is attracted to the earth
   c) is basically the same quantity as its mass but is expressed in different units
   d) is independent of gravitational pull
3. The weight of 400 gm stone is
   a) 0.041 N b) 0.4 N c) 3.9 N d) 3920 N
4. The value of acceleration due to gravity 'g' is nearly
   a) b) c) d)
5. The value of 'G' is
   a) b) $6.67\times10^{-11}Nm^{2}Kg^{-2}$ d) $6.67\times10^{-11}Nm^{2}Kg^{-2}$
6. Numerical value of 'G' is experimentally found to be
   a) $6.67\times10^{-11}Nm^{2}Kg^{2}$ b) $6.67\times10^{-11}Nm^{2}Kg^{-2}$
   c) $6.67\times10^{-11}Nm^{-2}Kg^{-2}$ d) $6.67\times10^{-11}Nm^{-2}Kg^{2}$
7. Relation between g, G,M and r
   a) $g=\frac{GM}{r}$ b) g=GMr c) $g=\frac{GM}{r^{2}}$ d) $g=\frac{Gr^{2}}{M}$
8. As we move upwards from the surface of earth the value of g
   a) does not change b) decreases c) increases d) becomes zero
9. At poles the value of g is
   a) constant b) decreases c) maximum d) minimum
10. The earth is flattened at poles and bulged at the equator. This is due to
    a) The earth revolves round the sum in an elliptical orbit
    b) The angular velocity of spinning about its axis is more at the equator
    c) The centrifugal force is more at the equator than it poles
    d) None of the above

11. If the earth is $\frac{1}{4}$ of its present distance from the sun, the duration of year would be

a) of the present year b) of the present year

c) of the present year d) of the present year

12. Which one of the following changes with change in place?
a) mass b) weight c) mass and weight d) none of these

13. The theory that states that the earth and the other planets move around the sun is-----
a) heliocentric b) ptolemic theory c) geocentric theory d) dalton's theory

14. "Every object in this universe attracts every other object". This foce is called
a) Gravitational force b) frictional force c) cohision force d) nuclear force

15. The astronomer who proposed geometric theory is
a) copernicus b) Tycho brahe c) ptolemy d) kepler

16. The relation between the gravitational constant (G) and the force of attraction between two unit masses when they are unit distance apart is
a) F>G b) F<G c) F=G d) FG=constant

17. The value of 'g' ont eh moon is
a) b) c) d)

18. The value of 'g' on the sun is
a) $27.4m/s^2$ b) [illegible] Nm^2/kg d)

19. The quantity of matter contained in a abody is called its
a) volume b) weight c) momentum d) mass

20. The S.I unit of weight is
a) Kg b) newton c) pascal d) watt

21. The gravitational unit of force in C.G..S system is.....
a) Kg.wt b) N. Force c) Quinta wt d) Gm.wt

22. When a spring is fixed at one end and a force is applied to the other end, the streetching of the spring is proportional to the applied force. this law is known as
a) newton's second law of motion b) graham's law of diffusion
c) newton's law of universal gravitation d) hooke's law

KEY

1) b	2) b	3) c	4) a	5) d	6) b	7) c	8) b
9) c	10) c	11) c	12) b	13) a	14) a	15) c	16) c
17) b	18) a	19) d	20) a	21) d	22) d		

3

UNIT - III

Kinematics

1. The value of the acceleration due to gravity 'g' is nearly

   a) b) c) d)

2. A body is projected vertically upwards with a avelocity of 10 m/s. The maximum height reached by the body is (Take g=10)

   a) newton's second law of motion b) graham's law of diffusion
   c) newton's law of universal gravitation d) hooke's law

3. The maximum height reached by body thrown up with an initial velocity 'u' is

   a) b) c) d)

4. The time taken by a body thrown up to reach maximum height 'h' is called its

   a) time of descent b) time of flight c) time of ascent d) none

5. The time for which the body remains in air is called

   a) time of ascent b) time of descent c) time of flight d) mean time

6. Time of descent =

   a) b) c) d)

7. The initial velocity of a freely falling body is

   a) 9.8 m/s b) 10 m/s c) 0 d) none

8. A ball is thrown up and attains a maximum height of 80m. What is its initial speed?

   a) 40 m/s b) 80 m/s c) 45 m/s d) 42 m/s

9. In order to keep a body in air above the earth 12s with what velocity the body is to be thrown vertically up?

   a) b) c) d)

10. For a body the time of descent = s and its time of ascent s, then the time of flight of that body is

    a) 1s b) 2s c) 0 d) none of these

11. The velocity of the stone on reaching the ground when it is dropped from a height of 19.6 m is

    a) b) c) d) 0

12. A body starting from rest falling freely under the influence of gravity its velocity after 4s is
a) b) c) d)

13. A body starting from rest is moving with acceleration of 5 . What is the distance travelled by it in 5s?
a) 125 m b) 62.5 m c) 625 m d) 67.5 m

14. A body thrown upwards takes 1.5 seconds to reach the maximum height it , the initial velocity of the body must be
a) zero b) 19.6 m c) 14.7 m d) 24.5 m

KEY

1) a	2) a	3) c	4) c	5) c	6) c	7) c	8) a
9) c	10) a	11) c	12) b	13) b	14) c		

4 UNIT - IV Dynamics

1. In a uniform circular motion, if the radius is doubled, the centripetal force now required is
   a) one-quarter as great as beofore b) half as great as before
   c) twice as great as before d) four times as great as beofore
2. A car moves on a curved but level road. The necessary centripetal force on the car is provided by
   a) inertia b) gravity
   c) friction between the tyres and the road d) normal reaction of the car
3. The rate of angular displacement is defined as
   a) Angular velocity b) Angular displacement c) Angular acceleration d) Angular force
4. The relation between time period T and frequency f is
   a) T=f b) $\frac{1}{f}=\frac{1}{T}$ c) d)
5. Angular momentum of a particle L=
   a) b) mvr d)
6. The centripetal force F=
   a) b) c) d)
7. Angle of banking is θ then tan =
   a) b) vrg c) d)
8. Centripetal acceleration a=
   a) vr b) c) d)
9. This is a fictitious force in an inertial frame of reference
   a) centrifugal force b) centripetal force c) gravitational force d) none
10. In a uniform circular motion, the angular velocity is
    a) zero b) maximum c) minimum d) constant
11. The forces that help the electron to revolve round the nucleus of an atom
    a) electrostatic forces b) Elecromagnetic forces
    c) Elecrovalent forces d) Photo-electric effect
12. Faster the initial horizontal speed of the stone thrown greater is the radius of
    a) Curved path b) Straight path c) Elliptical path d) Hyperbolic path

13. The forces that govern the translatory motion of a body obey
    a) Kelper's laws b) Newton's laws c) Faraday's laws d) Coulomb's laws
14. Presence of grand water in a region of a country can be detected using
    a) Remote sensing satellites b) Communication satellites
    c) Space research stations d) Natural satellites
15. The motion of a fly wheel is an example for
    a) Rotatory motion b) Translatory motion c) S.H.M d) None of the above
16. The angular velocity is given by
    a) /T radian/ second b) 2 /T radian/second c) 3 /T radian/second d) 4 /T radian/second

KEY

1) c	2) c	3) a	4) c	5) b & a	6) b	7) d	8) d
9) a	10) d	11) a	12) a	13) b	14) a	15)a	16) b

π

5 UNIT - V

Electromagnetic Spectrum

1. The wavelength range of visible spectrum is
   a) 0.001 nm- 10nm b) 0.4
   c) d)
2. Speed of light in vaccum is
   a) b) $3\times10^{5} m/s$ c) $3\times10^{8} m/s$ d) $3\times10^{-8} m/s$
3. The elecromagnetic radiation observed in radioactivity is
   a) α -particle b) -particle c) -rays d) X-rays
4. Which of the following rays are used to take photographs of objects in darkness?
   a) Infrared rays b) Micro waves c) Ultraviolet rays d) Gamma rays
5. Elecro-magnetic radiations with shortest wavelength are
   a) Infra-red b) Gamma rays c) Ultraviolet rays d) X-rays
6. Waves useful in telemetry
   a) X-ray waves [illegible] waves
   c) Radiowaves d) Micro waves
7. Long term exposure to these radiation can lead to skin cancer
   a) Infrared radiations b) X-rays
   c) Ultraviolet radiations d) Gamma radiations
8. Waves produced by the elecromagnetic oscillators of low frequency
   a) Microwaves b) Radiowaves c) X-rays d) Infrared rays
9. Radiations used in medical diagnosis
   a) X-rays b) Soft X-rays c) Hard X-rays d) Gamma rays
10. A spectrum is a group of
    a) Wavelengths b) Frequencies c) A or B d) None
11. These rays are used in testing materials in industry
    a) -rays b) -rays c) -rays d) X-rays
12. The energy of electromagnetic radiation depends on
    a) Both its amplitude adn wavelength
    b) Its wavelength
    c) Its amplitude
    d) Temperature of the medium through which it passes
13. A light wave constitute
    a) electric field b) magnetic field c) both A and B d) none

14. Information about the universe is provided by
a) Radar b) Radio astronomy c) Palmisty d) Crystallographic studies

15. Electromagnetic waves transprot
a) charge b) frequency c) wavelength d) energy

KEY

1) b	2) c	3) c	4) a	5) b	6) d	7) c	8) b
9) b	10) c	11) d	12) b	13) c	14) b	15) d	

6 UNIT - VI
Sound

1. Velocity of sound in air is

   a) b) $v = \sqrt{\frac{\rho P}{\gamma}}$ c) $v = \sqrt{\frac{\gamma P}{\rho}}$ d) $v = \sqrt{\frac{P}{\rho}}$

2. A medium transmits a sound wave through it by virtue of its
   a) elasticity b) inertia c) density d) elasticity and inertia
3. Distance between a node and the next antinode in a stationary wave is 10 cm. Then the wavelength is
   a) 5 cm b) 40 cm c) 20 cm d) 10 cm
4. The distance between a successive node and antinode is

   a) $\frac{\lambda}{2}$ b) c) d)

5. Periodic vibrations of decreasing amplitude are called
   a) forced vibrations b) natural vibrations c) stationary vibrations d) damped vibrations
6. A vibrating body produces
   a) electricity b) sound c) atomic energy d) solar energy
7. The distance between two consecutive nodes in a stationary wave is equal to
   a) b) c) d)
8. In a stationary wave, the points at which the displacement is minimum are called
   a) nodes b) antinodes c) crests d) troughs
9. The waves that consist of compressions and rarefactions are called
   a) radio waves b) transverse waves c) longitudinal waves d) tidal waves
10. The value of for air is
    a) 1.15 b) 2.4 c) 1.41 d) 1.14
11. If a spring is compressed and relased then the waves generated are
    a) longitudinal b)transverse c) stationary d) none
12. Which of the following statement is true?
    a) Distance between two successive nodes is b) Sound waves in air are transverse
    c) Stationary waves in a amedium cannot transport energy
    d) Nodes and antinodes are produced in progressive waves
13. Wavelength of sound whose velocity and frequency 100 Hz is
    a) 3.5 cm b) 35 cm c) 28.5 cm d) 26.5 cm

14. Formula for velocity of sound

a) b) c) d)

15. On reflection from a rigid end a wave undergoes a phase change of

a) 0^0 b) c) d)

16. Always an antinode is formed at the

a) closed end b) open end c) either at closed end d) none

17. The frequency of a turning fork depends on its

a) width of prongs b) amplitude of vibration c) dimensions d) none of the above

18. radians is equal to

a) b) c) d)

19. The vibrating particles in a wave transfer

a) energy b) motion c) mass d) material

KEY

1) c	2) d	3) b	4) c	5) d	6) b	7) b	8) a
9) c	10) c	11) a	12) c	13) b	14) c	15) c	16) b
17) c	18) c	19) a					

$\frac{}{C_V}$

7

UNIT - VII

Light - Nature of Light

1. Light is
   a) wave phenomenon b) particle phenomenon
   c) both particle and wave phenomenon d) none of these
2. The speed of light depends
   a) on elasticity as well as inertia b) on elasticity of the medium only
   c) on inertia of the medium only d) neither on elasticity nor on inertia
3. Electromagnetic theory was proposed by
   a) Hertz b) Huygen c) Positrons d) Max planck
4. Corpuscular theory of light could not explain the phenomena of light called
   a) interference b) polarisation c) diffraction d) all
5. The imaginary three dimensional surface formed byt he envelope of the particles of the medium which are vibrating in the same phase is called
   a) Electromagnetic wave b) Population inversion
   c) Wavefront d) Pencil light
6. The imaginary line drawn normal to any wavefront that represents the path along which light travels is called
   a) cosmic ray b) light ray c) X-ray d) cathode ray
7. The bending of wavefront or its deviation fromt he original direction of propagation when it meets a small obstacle is called
   a) diffraction b) coherence c) interference d) reflection
8. The trough of water wave in aripple tank behaves like a
   a) convex lens b) cylindrical lens c) planoconvex lens d) concave lens
9. According to newton velocity of light in a denser medium is..... than in a rarer medium
   a) more b) less c) zero d) infinity
10. Scientist who proposed wave theory?
    a) Fresnel b) Newton c) Young d) Huygens
11. Velocity of water waves depend upon
    a) Hardness b) Softness c) Depth d) None of the above
12. Shallow water region behaves as
    a) Boundary of the media b) Denser medium
    c) Rarer medium d) None of the above
13. The crest of the water wave in a ripple tank behaves as
    a) Concave lens b) Plano concave lens c) Double concave lens d) Convex lens

14. The trough of the water wave in a ripple tank behaves as
    a) convex lens b) plano convex lens c) concave lens d) none of the above
15. When a crest of a wave falls on the crest of another wave then the interference is
    a) constructive b) destructive c) normal d) abnormal
16. When a crest of one wave falls on the trough of another wave then the interference is
    a) Constructive b) normal c) Abnormal d) Destructive
17. Bending of light waves around an obstacle is known as
    a) Refraction b) Diffraction c) Polarisation d) Reflection
18. According to Huygens, the light waves are
    a) transverse & mechanical waves b) longitudinal & mechanical waves
    c) mechanical waves only d) stationary waves
19. Interference is a chracteristic phenomenon of
    a) Water waves b) Sound waves c) Light waves d) all waves

KEY

1) c	2) d	3) c	4) d	5) c	6) b	7) a	8) d
9) a	10) d	11) c	12) b	13) d	14) c	15) a	16) d
17) b	18) b	19) d					

8

UNIT - VIII
Magnetism

1. The length of a steel bar after magnetisation
   a) increases b) decreases c) remains same d) none
2. The scientist who developed molecular theory is
   a) weber b) coulomb c) curie d) ewing
3. Magnetic substance
   a) Brass b) Wood c) Nickel d) Paper
4. Load stone is a
   a) man made magnet b) natural magnet c) permanent magnet d) non-magnetic substance
5. The manget with only one pole
   a) exists b) does not exist c) is a strong magnet d) is a weak magnet
6. The substance repelled by magnet is
   a) Fe b) Al c) Pt d) Steel

KEY

1) a 2) d 3) c 4) b 5) b 6) d

8.2INVERSE SQUARE LAW OF MAGNETISM

1. The unit of pole strength in S.I. units is
   a) Weber b) ampere-metre c) ampere/meter d) ampere-metre^2
2. The relative permeability for a diamagnetic substance is
   a) very high b) nearly equal to 1 c) more than 1 d) zero
3. When the distance between the poles is halved the magnetic force is
   a) decreases by 4 times b) increases by 4 times
   c) doubles d) becoems half
4. Relation between , B and A is
   a) ` b) c) d)
5. Unit of pole strength is S.I. system
   a) Ampere b) Tesla c) Ampere d) metre

6. For air or vaccum

a) b) $4\pi \times 10^{7} H/m$ c) $4\pi \times 10^{-17} H/m$ d) 1

KEY

1) b 2) b 3) b 4) c 5) c 6) d

8.3 INVERSE SQUARE LAW OF MAGNETISM

1. The unit of magnetic moment in S.I. system
   a) Ampere-metre^2 b) Ampere-metre c) Ampere/metre d) Ampere/metre^2
2. If the resultant magnetic moment is zero then such substances are
   a) dia b) para c) ferro d) anti ferro
3. The magnetic field induction on the axial line of a short magnet at a distance 'd' isB=.....Newton/ Ampere-metre.

a) $\frac{M}{d^3}$ b) c) d) $\frac{\mu_0}{4\pi}.\frac{2M}{d^3}$

KEY

1) a 2) a 3) d

$\frac{2M}{4\pi \times 10^{-7}} H/m$

$\frac{}{d^3 \cdot l^3}$

8.4 MAPPING OF MAGNETIC LINES OF FORCE DUE TO A BAR MAGNET: NEUTRAL POINTS

1. The material is used in make electro magnets
   a) steel b) copper c) iron d) soft iron
2. The resulatnt magnetic fields of the earth and the bar-magnet at the neutral points is
   a) greater than 1 b) maximum c) zero d) none

KEY

1) d 2) c

8.5 MAGNETIC PROPERTIES OF MATERIALS

1. Which one of the following is not a diamagnetic substance?
   a) Air b) Water c) Iron d) Bismuth
2. If the resultant magnetic moment is not zero then such substances are
   a) para b) dia c) molecular magnet d) none
3. The substances which are easily attracted by a magnet are
   a) magnetic substances b) non-magnetic substances
   c) paramagnetic substances d) diamagnetic substances

4. The dipoles in a particular domain are
   a) irregular b) parallel to each other c) perpendicular to each other d) none
5. Aluminium is an example for ..... magnetic substance
   a) Dia b) Para c) Ferro d) None
6. The material which has high retentivity
   a) steel b) copper c) Iron d) Soft iron
7. The units of χ are
   a) b) c) d) No units
8. For diamagnetic substance
   a) b) c) d)
9. Example of a magnetic substance
   a) Water b) Paper c) Aluminium d) Steel
10. For ferro magnetic substances
    a) b) c) d)
11. Which one of the following is not a diamagnetic substance?
    a) air b) water c) iron d) bismuth
12. Aluminum is an example for..... magnetic substance
    a) Dia b) Para c) Ferro d) None

KEY

1) c 2) a 3) a 4) b 5) b 6) a 7) d 8) c
9) c 10) c 11) c 12) b

9 UNIT - IX(a)
Current Electricity

1. Current detector is
   a) Ammeter b) Voltmeter c) Galvanometer d) none
2. The study of electric charges at rest
   a) Electrostatics b) Electrodynamics c) Hydrostatics d) none
3. The unit of Electric current is
   a) Ampere b) Volt c) Coulomb d) Ohm
4. Example of a power source
   a) cell b) bulb c) resistance d) rheostat
5. A number of small bulbs connected in series used in marriage decoration; one of the bulbs is broken
   a) All the remaining glow b) All the bulbs prior to it glow
   c) All the bulbs after the broken glow d) All the bulbs fail to glow
6. The wiring bulb sets of many small bulbs in decorative lighting of functions connected
   a) In series b) In parallel
   c) Neither in series nor in parallel d) Either in series or in parallel
7. A number of bulbs connected in parallel; one of them is broken
   a) Remaining bulbs glow b) Bulbs above it glow
   c) Bulbs below it glow d) All the bulbs fail to glow
8. If three cells of IV, 1.5V, and 2V are connected in paralle then the total e.m.f. will be
   a) 2.5V b) 2V c) 1.5V d) 4.5V

KEY

1) c 2) a 3) a 4) a 5) d 6) a 7) a 8) b

9.2 ELECTRICAL RESISTANCE-OHM'S LAW AND ITS VERIFICATION

1. Example for a conductor
   a) rubber b) silicon c) carbon d) wood
2. Example for an insulator
   a) acid b) human body c) impure water d) pure water
3. The filament in the bulb is
   a) bad conductors b) capacitor c) high resistance d) source
4. 1 volt/ 1 ampere=?
   a) 1 coulomb b) 1 ohm-metre c) 1 ohm d) none

5. Metallic nature arises due to
   a) lack of electrons b) absence of electrons c) free electrons d) none
6. The characteristic property of a conductor is
   a) Wattage b) Voltage c) Resistance d) Resistivity
7. Opposition to flow of charges is called
   a) Conductivity b) Resistance c) Reisistivity d) Specific Resistance
8. Electric current is measured in
   a) Coulombs b) Amperes c) Volts d) Ohm-meter
9. Oppositon to the flow of electrons is
   a) Resistance b) Resistivity c) Conductivity d) None
10. Ohmic conductor
    a) Semi conductors b) Electrolytes c) Junction diode d) Metals
11. Non- ohmic conductor
    a) Electrolyte b) Metals c) Copper d) Aluminium

KEY

1) c 2) d 3) c 4) c 5) c 6) c 7) b 8) b
9) a 10) d 11) a

9.3 LAWS OF RESISTANCE

1. As the temperature increases resistance.....for a conductor
   a) increases b) decreases c) no change d) none
2. Specific resistance =
   a) b) R L A c) d) $\frac{R_p}{A}$
3. Unit for specific resistance
   a) ohm b) meter c) ohm-meter d) ohm/meter

KEY

1) a 2) c 3) c

9.4 RESISTANCES IN SERIES AND PARALLEL

1. Given =100 ohms and ohm, calculate the effective resistance, if resistances are connected in parallel
   a) 0.99 ohms b) 9.9 ohms c) 0.909 ohms d) 101 ohms
2. What is the equivalent resistance of two resistors 6 and 12 when connected in series
   a) 18 b) 12 c) 6 d) 4
3. The equivalent resistance when two resistors of 8 each are connected in parallel
   a) 2 b) 8 c) 16 d) 4

KEY

1) a 2) a 3) d

9.5 HEATING EFFECTS OF ELECTRIC CURRENT: JOULE'S LAW

1. 1 kWh=..... joules
   a) b) 3.6×10^4 c) 3.6×10^5 d) 3.6×10^3
2. Fuse wire is an alloy of
   a) tin, steel b) iron, lead c) tin and lead d) none
3. 1 calorie=
   a) 2.4 J b) 4.8J c) 4.2 J d) 4.0 J
4. Unit of work in SI system is
   a) erg b) newton c) m/s d) Joule
5. Walt is the unit of
   a) current b) potential difference c) power d) none
6. The ratio of electrical work done in a conductor to mechanical equivalent of heat is
   a) power b) energy c) heat produced d) none
7. Watt hour is a unit of
   a) Heat energy b) Electrical energy c) Electrical power d) None
8. Wattage relates to
   a) power b) work done c) energy d) potential
   36×10^4
9. 1 kilo watt=..... watts
   a) 10 b) 100 c) 10,000 d) 1000
10. Chemical energy is converted into electrical energy
    a) Battery b) Immersion heater c) Electric stove d) Electric-iron

KEY

1) c 2) c 3) c 4) d 5) c 6) c 7) b 8) a
9) d 10) c

9 UNIT - IX(b) Electricity

9.6 FARADAY'S LAWS OF ELECTROLYSIS

1. Substances which dissociate when electricity passes through them are known as
   a) electric conductors b) electric insulators c) electrolytes d) semiconductors
2. Unit of Z (ece) is
   a) gm/ ampere b) gm/sec c) gm/coulomb d) none
3. In electrotyping the mould is made of
   a) lead b) gold c) silver d) wax

KEY

1) c 2) c 3) d

9.7 MAGNETIC EFFECTS OF ELECTRIC CURRENT

1. The production of e.m.f in one coil due to changes in current in another coil close by is called
   a) self induction b) mutual induction c) electromagnetic induction d) none
2. $B = \frac{\mu_0 i}{2\pi r}$ is
   a) Coulomb's law b) Maxwell's law c) Ampere's law d) none
3. A wire carrying current has.....energy around it
   a) sound b) light c) magnetic d) mechanical
4. A current carrying conductor behaves like
   a) Magnet b) Galvanometer c) Ammeter d) Voltmeter
5. The direction of magnetic force due to a straight conductor carrying current can be expressed by
   a) Maxwell's rule b) Ampere's right hand rule
   c) Ampere's swimming rule d) Fleming's left hand rule

KEY

1) b 2) c 3) c 4) a 5) b

9.8 PRINCIPLE OF WORKING OF AN ELECTRIC MOTOR

1. A device to convert electrical energy into mechanical energy
   a) Transformer b) Dynamo c) Electric motor d) Junction -diode
2. Armature of an electric motor
   a) Rectangular coil b) Permanent magnet c) Soft iron cylinder d) None
3. An instrument to reverse the direction of current
   a) Rheostat b) Resistrance box c) Commutator d) Tap-key
4. Which component of electric motor utilises mechanical energy?
   a) Armature b) Permanent magnet c) Shaft d) Coil
5. Two metallic half-rings in an electric motor act as
   a) Magnetic poles b) shaft c) permanent magnet d) commutator
6. Shaft of an electric motor is rotated by
   a) induced field b) permanent field c) coil d) commutator
7. Current enters into an electric motor through
   a) coil b) brush and half ring c) shaft d) armature
8. Current leaves the coil of an electric motor through
   a) Shaft b) Armature c) Commutator ring; brush d) None
9. Top-surface of the coil of an electric motor acts as
   a) a magnet b) north pole c) south pole d) neither south nor north
10. Bottom surface of the coil of an electric motor acts as
    a) a magnet b) N-pole c) S-pole d) neither N-pole nor-Spole

KEY

1) c 2) a 3) c 4) c 5) d 6) a 7) b 8) c
9) c 10) b

9.9 ELECTRO MAGNETIC INDUCTION

1. A transformer works ont he principle of
   a) Fleming's left hand rule b) Lenz's law
   c) Mutual induction d) Self induction
2. H.T. stands for
   a) higher transformer b) high tension c) high tower d) none
3. Principle of a dynamo is
   a) mutual induction b) self induction c) electromagnetic induction d) none
4. Scientist who discovered laws of electromagnetic induction
   a) Maxwell b) Planck c) Faraday d) Newton
5. Conversion of mechanical energy into electrical energy
   a) dynamo b) amplifier c) dry cells d) rectifier
6. Production of electricity by a changing magnetic field associeated with an electric circuit
   a) Magnetic induction b) Electrostatic induction
   c) Electromagnetic induction d) none

7. The direction of induced current due to electromagnetic induction
   a) In the direction of change b) opposing the change
   c) At right angle to change d) None
8. A.C. generator works on the phenomenon of
   a) Electromagnetic induction b) Electromagnetic radiation
   c) Electrstatic induction d) None
9. Unidirectional current is
   a) A.C b) D.C c) Both d) None
10. Transformer formula
    a) $\frac{V_1}{V_2} = \frac{i_1}{i_2} = \frac{n_1}{n_2}$ b) c) d)
11. A transformer used the following to minimise power losses
    a) slip rings b) iron core c) shaft d) brushes

KEY

1) c 2) b 3) c 4) c 5) a 6) c 7) b 8) a
9) b 10) c 11) b

$$\frac{V_1}{V_2} = \frac{i_2}{i_1} = \frac{n_2}{n_1}$$

10 UNIT - X
Modern Physics

10.1 ATOMIC STRUCTURE

1. The radius of nucleus of an atom is

   a) b) c) d)

2. The radius of the nucleus is of the order of

   a) b) $10^{-8} m$ b) $1.66\times10^{-12} m$ d) $3\times10^{8} m$

KEY

1) b 2) a

10.2 ATOMIC NUMBER, ATOMIC MASS AND MASS DEFECT

1. Example for neutral massless particle

   a) positron b) β – particle c) neutron d) neutrino

2. The mass of hydrogen atom is

   a) 1.073 b) 2.0073 c) 1.73 d) 1.0073

3. The mass of an atom is measured in

   a) b) Hertz c) a.m.u d) neutrons

4. If Z is the number of protons and N is the number of neutrons the mass number A is equal to

   a) Z+N b) Z-N c) N-Z d) 2Z+N

5. The expression that denotes mass energy equivalence is

   a) b) $E = \frac{\Delta m}{c^2}$ c) $E = \frac{c^2}{\Delta m}$ d)

6. The number of neutrons is Co is

   a) 27 b) 59 c) 32 d) 86

KEY

1) d 2) d 3) c 4) a 5) a 6) d

10.3 RADIOACTIVITY

1. The ionisation power is highest in case of
   a) -particles b) -particles c) -rays d) X-rays
2. The electromagnetic radiation observed in radiactivity is
   a) -particles b) -particles c) -particles d) X-rays
3. When a -particle is emitted by an atom, its mass number
   a) decreases b) increases c) remains same d) may decrease or increase
4. Isobars are the elements of
   a) same mass number b) same atomic number c) same neutron numberd) sme number of electron
5. Thorium series is a
   a) 4n series b) 4n+1 series c) 4n+2 series d) 4n+3 series
6. Bismuth series is a
   a) 4n series b) 4n+1 series c) 4n+2 series d) 4n+3 series
7. The electromagnetic radiation observed in radioactivtiy is
   a) b) c) d) X-rays
8. The person who discovered the radio activity
   a) Lenard b) Chadwick c) Becquerel d) Bohr
9. Natural radioactivity is shown by the elements whose atomic number is greater than
   a) 82 b) 81 c) 83 d) 84
10. The rays that bent maximum in magnetic field are
    a) -rays b) - rays c) -rays d) none
11. The rays that are undeflected in both electric and magnetic fields are
    a) - rays b) -rays c) -rays d) none
12. Actinium series is ..... series
    a) 4n b) 4n+1 c) 4n+3 d) none
13. T=
    a) 0.963 b) 0.936 c) 0.693 d) none
14. The mass of the -particle is same as the mass of .....
    a) electron b) proton c) neutron d) none
15. Two different elements having same number of neutrons are called
    a) isotones b) isotrons c) isotopes d) isobars
16. .....isotope is used in thedetermination of age of fossils
    a) U b) U c) C d) C
17. The sequential decay of a given nucleus is called
    a) radio active series b) radio active disintegration
    c) thermonic emission d) half wave rectification

18. The daughter nucleus formed when Th undergoes decay

a) U b) U c) Ra d) U

19. The time required to change 1 gm of radio active substance to 1/8 gm
a) T b) 2T c) 3T d) 4T

20. -rays consist of
a) Protons b) Neutrons c) Electrons d) Helium nuclei

21. belongs to
a) Thorium series b) Uranium series c) Actinium series d) Radium series

22. The speed of α -particles in air is of the order of
a) m/s b) m/s c) m/s d) 10^7 m/s

KEY

1) a	2) c	3) c	4) a	5) a	6) b	7) c	8) c
9) c	10) b	11) c	12) c	13) c	14) a	15) a	16) d
17) a	18) d	19) c	20) c	21) c	22) d		

10.4 ARTIFICIAL TRANSMUTATION

1. In Uranium series the parent nucleus is
a) Uranium b) Thorium c) plutonium d) Actinium

2. Moderator in a nuclear reactor reduces the .....of the neutron
a) velocity b) energy c) mass d) none

3. .....reaction takes place in stars
a) Radioactive b) Thermo-nuclear c) Bio-chemical d) None

4. ..... is the method to find the age of fossils
a) Dimensional method b) Carbon dating c) Curie method d) None

5. The shield of nuclear reactor is
a) copper b) silver c) gold d) lead

6. Moderator in a nuclear reactor
a) Slows down neutrons b) Produces slow neutrons
c) Slows down the rate of reaction d) Does all these

7. In a nuclear reactor,..... is used for controlling the rate of fission
a) Cadmium b) Graphite c) Heavy water d) All fo these

KEY

1) a	2) a	3) b	4) b	5) d	6) a	7) a

11 UNIT - XI Electronics

11.1 BAND THEORY OF SOLIDS

1. The energy gap is highest in the case of
   a) metal b) insulator c) semiconductor d) diode
2. When temperature of a semiconductor is raised, its energy gap
   a) increases b) decreases c) remains same d) may increase of decrease
3. When temperature of a metal increases the resistance
   a) increases b) decreases c) remains same d) none
4. The energy gap of a conductor is
   a) 2 eV b) 3 eV c) 4 eV d) zero
5. A semiconductor is an insulator at.....
   a) b) 0 K c) d) 300 K
6. The best conductor
   a) copper b) Aluminium c) silver d) iron
7. The best insulator
   a) wood b) paper c) glass d) rubber
8. Silicon is a
   a) conductor b) insulator c) semiconductor d) none
9. Number of electrons per cubic meter in conductors is
   a) b) c) d)
10. Number of electrons per cubic meter in insulators is
    a) b) c) d)

KEY

1) b 2) b 3) a 4) d 5) b 6) c 7) c 8) c
9) a 10) c

11.2 INTRINSIC AND EXTRINSIC SEMICONDUCTOR

1. The charge carriers in semiconductors are
   a) electrons b) holes c) electrons and holes d) ions
2. The concentration of free electrons is more in
   a) copper b) silicon c) wood d) germanium

3. In a p-type semiconductor majority carriers are
   a) holes b) electrons
   c) both electrons and holes d) negative ions
4. To make silicon a p-type semi-conductor, the impurity to be doped is
   a) Arsenic b) Aluminium c) Phosphorus d) Antimony
5. P-type semiconductor is formed by the addition of these impurities
   a) Divalent b) Trivalent c) Tetravalent d) Pentavalent
6. The number of holes and number of electrons are equal in
   a) p-type semiconductor b) n-type semiconductor
   c) p-n junction d) intrinsic semiconductor
7. The majority cariers in p-type semiconductor are
   a) holes b) electrons c) protons d) none
8. The majority carriers in n-type semiconductor
   a) holes b) electrons c) protons d) none
9. Introducting impurities in very small quantities into a material is called
   a) Hoping b) Coping c) Closing d) Doping
10. Trivalent impurities are called
    a) donors b) acceptors c) both d) none

KEY

1) c 2) a 3) a 4) b 5) b 6) d 7) a 8) b
9) d 10) b

11.3 JUNCTION DIODE-PROPERTIES AND USES

1. Diode does not conduct in.....condition
   a) forward bias b) Reverse bias c) Both d) None
2. A p-n diode has.....junctions
   a) 1 b) 2 c) 3 d) 4
3. Diodes which glow on supply of electricity are
   a) CDs b) VCDs c) DVDs d) LEDs

KEY

1) b 2) a 3) d

11.4 TRANSISTORS-PROPERTIES AND USES

1. The transistor was invented in
   a) 1946 b) 1947 c) 1948 d) 1949
2. A transistor consists of these junctions
   a) 2 p-n b) 3 p-n c) 4 p -n d) none
3. A transistor has.....junctions
   a) 1 b) 2 c) 3 d) 4

4. This can act as an amplifier
   a) Diode b) Capacitor c) Transistor d)None
5. This can be made as an oscillator
   a) Diode b) Capacitor c) Transistor d) None

KEY

1) c 2) a 3) a 4) c 5) c

11.5 RADIO AND TELEVISION-BASIC PRINCIPLES OF WORKING

1. The previous mechanical system which was used in place of iconoscope is
   a) Kownip disc b) Nipkow disc c) Compact disc d) None
2. In Radio the modulator is
   a) A.M b) F.M c) P.M d) None
3. In TV, for the sound broadcasting the modulator is
   a) A.M b) F.M c) P.M d) None
4. In TV, fot the picture broadcasting the modulator is
   a) A.M b) F.M c) P.M d) None
5. Radio waves are
   a) Sound waves b) Longitudinal waves c) EM waves d) None
6. The frequencies used in radio communications are in the range of.....
   a) 30 Hz- 30 MHz b) 30 KHz- 300 KHz c) 300 KHz- 30 MHz d) 30 MHz- 300 MHz
7. Modulator in radio is
   a) A.M b) F.M c) P.M d) None
8. For sound broadcasting in TV the modulator is
   a) A.M b) F.M c) P.M d) None
9. For picture broadcasting in TV the modulator is
   a) A.M b) F.M c) P.M d) None
10. Carrier waves are produced by
    a) Diode b) Transistor c) Oscillator d) None

KEY

1) b 2) b 3) b 4) a 5) c 6) d 7) b 8) a
9) c 10) a

11.6 COMPUTER-BASIC PRINCIPLES OF WORKING

1. CPU is very much like..... system of the human boyd
   a) Blood circulatory system b) Nervous system
   c) Muscular system d) None
2. The heart of computer is
   a) Key board b) Monitor c) CPU d) Mouse
3. This will do mathematical operations
   a) CU b) ALU c) Memory d) None

KEY

1) b 2) b 3) b