PHYSICS

Questions: 40 **Marks: 160**

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3.	Electricity, its Heating and Chemical Effects	(3)
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6.	Reflection of Light	(3)
7.	Optical Instruments	(3)
8.	Magnetic Effects of Electric Current	(3)
9.	Motion	(2)
10.	Force	(3)
11.	Gravitation	(3)
12.	Work, Power and energy	(3)
13.	Heat	(3)
14.	Wave Motion and Sound	(3)

CHAPTER - 1
THE UNIVERSE

Multiple Choice Questions

1. Name the star closest to us :
   a) Pole star b) Alpha centuari
   c) Uranus d) None of these

2. Big Bang theory was proposed by :
   a) Newton b) Hubble
   c) Kepler d) All of these

3. Which planet is called the morning star as well as the evening star ?
   a) Venus b) Mercury
   c) Mars d) Jupiter

4. Great Bear is commonly known as
   a) Saptrishi b) Dhruv tara
   c) Pole star d) Orion

5. Planets which do not have satellites are
   a) Mars
   b) Venus & Mercury
   c) Jupiter d) Saturn

6. The planet having the largest number of satellites amongst the following is
   a) Saturn b) Jupiter
   c) Mars d) Uranus

7. Natural satellite of earth is
   a) Sun b) Moon
   c) Saturn d) Uranus

8. The smallest planet amongst the following is
   a) Mercury b) Venus
   c) Jupiter d) Saturn

9. The biggest planet amongst the following is
   a) Mercury b) Venus
   c) Jupiter d) Saturn

10. Any heavenly body that revolves around a planet is called
    a) comet b) nebulae
    c) star d) Satellite

11. Light takes ———— seconds to reach earth from the sun
    a) 400 b) 450
    c) 500 d) 550

12. The planet nearest to the sun is
    a) Mercury b) Venus
    c) Jupiter d) Saturn

13. Pulsar is another name of
    a) White dwarf b) Neutron star
    c) Nabula d) Black hole

14. SHOOTING STAR is another name for
    a) comet b) nebulae
    c) meteor d) Solar flare

15. Distance between Sun and Earth is about _____ million Km
    a) 159.6 b) 150.6
    c) 140.6 d) 149.6

16. Tail of a comet always points
    a) towards the sun
    b) away from the sun
    c) towards moon
    d) towards center of earth and sun

17. Sun is also known as
    a) Star b) Pole
    c) Setellite d) Planet

18. Which if the following planets have rings around it?
    a) Uranus b) Mars
    c) Jupiter d) Saturn

19. Planet Venus spins about its axis from
    a) west to east b) east to west
    c) north to south
    d) south to north

20. A family of stars is called a
    a) solar system b) galaxy
    c) universe d) none of these

21. Moon is setellite of
    a) Mars b) Earth
    c) Jupitar d) Saturn

22. Inferior planet amongst the following is
    a) Mercury b) Jupiter
    c) Neptune d) none of these

23. Titan is a satellite of
    a) Mercury b) Venus
    c) Neptune d) Saturn

24. Triton is a satellite of
    a) Mercury b) Venus
    c) Neptune d) Saturn

25. Oberon is a satellite of
    a) Mercury b) Venus
    c) Neptune d) saturn

26. All stars appear to move from
    a) east to west b) west to east
    c) north to south d) south to north

27. Which of the following does not emit any light
    a) sun b) white dwarf star
    c) proto star d) alpha centauri

28. Exploding star is called
    a) nova b) supernova
    c) pulsar d) black hole

29. Number of supernovas that have been recorded till date are
    a) 2 b) 3
    c) 4 d) 5

30. Indian name mangal is for the planet
    a) Mars b) Uranus
    c) Neptune d) Saturn

31. Meteor is also known as
    a) Comet b) Shooting Star
    c) Nabula d) Pole star

32. Temperature of the surface of the Sun is
    a) 5550°C b) 5005°C
    c) 5050°C d) 5500°C

33. Shani graha is the name for
    a) Mars b) Uranus
    c) Neptune d) Saturn

34. Indra is the name for
    a) Mars b) Uranus
    c) Neptune d) Saturn

35. Which of the following takes minimum time to revolve around the sun
    a) Mercury b) Uranus
    c) Neptune d) Saturn

36. Hottest planet of the solar system is
    a) Mercury b) Uranus
    c) Neptune d) Saturn

37. Asteroids are
    a) Small Planet
    b) Shooting Stars
    c) Found in a belt between earth and venus
    d) none of these

38. **SROSS** stands for
    a) Stretched Rohini Satellite Series
    b) Stretching of shooting star
    c) search of satellite station
    d) none of these

Answers

1	a	2	b	3	a	4	a	5	b
6	a	7	b	8	a	9	c	10	d
11	c	12	a	13	b	14	c	15	d
16	b	17	a	18	d	19	b	20	b
21	b	22	a	23	d	24	c	25	b
26	a	27	c	28	b	29	d	30	a
31	b	32	d	33	d	34	b	35	a
36	a	37	a	38	a	39	d	40	b
41	c	42	a						

CHAPTER - 2

NUCLEAR FISSION AND FUSION

Multiple Choice Questions

1. Which of the following nuclei will be more stable :
   a) $^{32}_{16}S$ b) $^{27}_{13}Al$
   c) $^{235}_{92}U$ d) $^{14}_{7}N$

2. Name the city where enrichment of uranium is done :
   a) Muradabad b) Sikandrabad
   c) Hyderabad d) Illahabad

3. The nuclear fuel in the sun is :
   a) Helium b) Nitrogen
   c) Hydrogen d) Pu-239

4. Which of the following is used as a coolant :
   a) Graphite b) Water
   c) Heavy water d) None of these

5. The number of neutrons in $_{92}U^{238}$ is
   a) 330 b) 238
   c) 146 d) 92

6. The number of protons in $_{92}U^{238}$ is
   a) 330 b) 238
   c) 146 d) 92

7. Atom bomb is based on the principle of:
   a) Nuclear fusion
   b) Nuclear fission
   c) Radio activity
   d) Nuclear fission and fusion both

8. $_{6}c^{11}$ on decay produces:-
   a) Positron b) ß Particle
   c) a Particle d) None

9. A Cyclotron of an electric field cannot accelerate:-
   a) Proton b) Deuterons
   c) Neutrons d) None

10. Specific charge is given by
    a) e/m b) m/e
    c) e x m d) e^m

11. The specific charge of an electron is
    a) 1.602×10^{19} C
    b) -1.602×10^{19} C
    c) -1.76×10^{11} C/kg
    d) 1.76×10^{11} C/kg

12. An atom bomb is based on
    a) nuclear fission
    b) nuclear fusion
    c) both fission and fusion
    d) none of these

13. The average energy released during fission of a uranium atom is about
    a) 50 MeV b) 100 MeV
    c) 200 MeV d) 400 MeV

14. The atomic number of the parent atom, when a beta particle is given out
    a) increases by unity
    b) decreases by unity
    c) gets halved
    d) remains same

15. Radioactivity was discovered by
    a) Bohr b) Becquerel
    c) Curie d) Rutherford

16. Sun energy results because of
    a) nuclear blasts
    b) nuclear fission
    c) nuclear fusion
    d) none of these

17. Neutron was discovered by
    a) Curie b) Becquerel
    c) Chadwick d) Rutherford

18. The temperature of sun's core is
a) 10^6 °C b) 10^5 °C
c) 10^4 °C d) 10^3 °C

19. Out of the following, the fuel used in nuclear reactors is
a) U-235 b) U-236
c) U-237 d) U-239

20. The massless, neutral subatomic particle in an atom is
a) neutron b) Proton
c) neutrino d) Positron

21. Which is not fissionable material:-
a) U-238 b) U-235
c) U-233 d) U-239

22. The process of increasing U-235 percantage in U-238 is called
a) fusion
b) fission
c) chain reaction
d) enrichment

23. Amongst the following , the most important propellent used in rockets is
a) liquid petrol
b) liquid hydrogen
c) liquid oxygen
d) none of these

24. The first controlled chain reaction was carried out by
a) Otto Hahn
b) Newton
c) Fermi
d) Bethe and Blotch

25. The first atomic power station in India is
a) Bhabha atomic Research Centre
b) Narora power station
c) Tarapur Atomic Power station
d) Hyderabad atomic power station

26. Hydrogen bomb once exploded is a/an
a) controlled nuclear fusion reaction
b) Uncontrolled nuclear fusion reaction
c) controlled nuclear fission reaction
d) Uncontrolled nuclear fission reaction

27. Nuclear fusion takes place at
a) low temperature
b) low pressure c) high temperature
d) high pressure

28. A positron has the same mass as
a) electron b) proton
c) positron d) deuteron

29. ${}_6c^{14}$ in upper atmosphere is formed by the action of Neutrons on:-
a) ${}^{14}_{7}N$ b) ${}^{17}_{8}O$
c) ${}^{12}_{6}C$ d) ${}^{18}_{8}O$

30. Control rods used in nuclear reactors are made of
a) Steel b) Cadmium
c) boron d) Plutonium

31. Heavy water is:-
a) H_2O^{18} b) H_2O^{16}
c) D_2O d) None

32. Which nuclide is radioactive:-
a) C^{12} b) H^2
d) O^{16} d) Both C^{14} and H^3

33. The percentage of mass that is converted into energy during nuclear fusion is
a) 40% b) 20%
c) 10% d) 1%

34. Nuclear fission reactions are:-
a) uncontrolled in atom bomb
b) Controlled in Nuclear reactors
c) Auto catalytic reaction
d) All of these

35. Which of the following can pass through 20 cm thick steel?
a) α particles b) β particles
c) γ rays d) none of these

36. Half life of radium is 1600 years. The fraction of the sample of radium that remains after 6400 years is

a) $\frac{1}{2}$ b) $\frac{1}{4}$

c) $\frac{1}{8}$ d) $\frac{1}{16}$

37. In the following reaction X is

$$_{12}Mg^{24} +_{2} He^{4} \rightarrow_{14} Si^{X} +_{0} n^{1}$$

a) 27 b) 28

c) 24 d) 20

38. Which pair represents isobars

a) $^{40}_{19}$K and $^{40}_{18}$Ar

b) $^{3}_{2}$He and $^{4}_{2}$He

c) $^{24}_{12}$Mg and $^{25}_{12}$Mg

d) $^{40}_{19}$K and $^{41}_{20}$Ca

39. $_{7}N^{13}$ decays to $_{6}C^{13}$ by emitting a

a) proton

b) electron

c) neutron

d) positron

40. All nuclides exhibit radio activity when the atomic number exceeds:

a) 80 b) 82

c) 90 d) 92

Answers

1	d	2	c	3	c	4	b	5	c
6	d	7	b	8	a	9	c	10	a
11	c	12	a	13	c	14	a	15	b
16	c	17	c	18	a	19	a	20	c
21	a	22	d	23	b	24	c	25	c
26	b	27	c	28	a	29	a	30	b
31	c	32	d	33	d	34	d	35	c
36	d	37	a	38	a	39	d	40	b

CHAPTER - 3

ELECTRICITY, ITS HEATING AND CHEMICAL EFFECTS

Multiple Choice Questions

1. Three 3 ohm resistors are connected to form a triangle. The resistance between any two corners is :
   a) 6Ω b) 4/3Ω
   c) 3/4Ω d) 2Ω

2. The rate of flow of electric charge is defined as:-
   a) current b) Voltage
   c) Power d) electron density

3. Which instrument has maximum resistance:
   a) Ammeter b) Voltmeter
   c) Galvanometer d) Voltaic cell

4. When cells are connected in parallel, then
   a) the current decreases
   b) the current increases
   c) the emf increases
   d) the emf decreases

5. A body has a negative charge of 1 coulomb. It means that
   a) it has lost one electron
   b) it has acquired one additional electron
   c) it has lost $6{\cdot}25 \times 10^{18}$ electron
   d) it has acquired 6.25×10^{18} additional electrons

6. The ratio of electric force between two electrons to two protons separated by the same distance in air is
   a) 10^0 b) 10^6
   c) 10^4 d) none of the above

7. An ebonite rod acquires a negative charge of 0.8×10^{-10} C. The number of excess electrons it has is
   a) 0.5×10^9 b) 0.5×10^{-9}
   c) 0.5×10^{-29} d) 0.5×10^{29}

8. If a charged body attracts another body, the charge on the other body is
   a) negative b) positive
   c) may be positive or negative
   d) must be zero

9. Electromotive force of a cell has the units
   a) ampere b) Volt
   c) dyne d) joule

10. One can express electrical energy in

    kilowatt-hours = $\frac{volt^2 \times - .....}{R \times 1000}$

    a) time in hours b) time in minutes
    c) time in seconds d) time in days

11. Kilowatt hour is the unit of
    a) force b) momentum
    c) impulse d) energy

12. Electron volt (eV) is the unit of
    a) potential difference
    b) energy
    c) mass d) density

13. 1 kWh is equal to
    a) 3.6×10^3 J b) 3.6×10^4 J
    c) 3.6×10^5 J d) 3.6×10^6 J

14. 1 MeV is equal to
    a) 1.6×10^{-13} J b) 1.6×10^{-14} J
    c) 1.6×10^{-15} J d) 1.6×10^{-16} J

15. The substances that allow large currents to flow through them are called
    a) semiconductors b) insulators
    c) conductors d) none of these

16. The direction of conventional current is
    a) the direction in which electrons flow
    b) the direction of flow of positive charge
    c) the direction of motion of atoms
    d) the direction of motion of molecules

17. The unit of resistance is
    a) Ohm b) mho
    c) Ohm – meter d) Ohm/meter

18. The unit of specific resistance
    a) Ohm b) mho
    c) Ohm – meter d) Ohm/ meter

19. One Ampere is equal to
    a) 10^6 μA b) 10^{-6} μA
    c) 10^6 mA d) 10^{-4} μA

20. The reciprocal of resistivity of a conductor is
    a) conductance b) conductivity
    c) resistance d) none of these

21. Repulsive force between two α particles separated by a distance of $3.2 \times 10^{-15} m$ in air is
    a) 90 N b) 900 N
    c) 9000 N d) None of these

22. Two point charges +6 μ C and -2 μ C attract each other with a force of 12 N. If a charge of – 4 μ C is added to each of these charges, the force would be
    a) zero b) 8 N
    c) 4 N d) 12 N

23. Force between two charges separated by a certain distance in air is F. If each charge were doubled and distance between them also doubled, force. would be,
    a) F b) 2 F
    c) 4 F d) F/4

24. The best instrument far measurement of e.m.f of a cell is
    a) Voltmeter b) Meter bridge
    c) Potentiometer d) ammeter

25. Number of electrons in one coulomb of charge will be
    a) $5{\cdot}46 \times 10^{29}$ b) $6{\cdot}25 \times 10^{18}$
    c) $7{\cdot}6 \times 10^{19}$ d) 9×10^{11}

26. 1 volt is numerically equal to
    a) $\frac{1N}{C}$ b) $\frac{1J}{C}$
    c) $\frac{1N}{Sec}$ d) $\frac{1J}{Sec}$

27. Electric potential of earth is taken to be zero, because earth is a good
    a) insulator b) conductor
    c) semi-conductor d) dielectric

28. Laws of electrolysis were given by
    a) Oersted b) Faraday
    c) Newton d) Lenz

29. Charge on 2 electron is
    a) 3.2×10^{-18}C b) 3.2×10^{18}C
    c) 3.2×10^{-19}C d) 3.2×10^{-19}C

30. The length of a conductor is halved, its conductivity will be
    a) doubled b) halved
    c) quadrupled d) unchanged

31. The length of a conductor is doubled. Its conductance will be
    a) unchanged b) halved
    c) doubled d) quadrupled

32. Value of absolute electrical permittiability of free space is
    a) 8.854×10^{-10} b) 8.854×10^{-22}
    c) 8.854×10^{-12} d) 8.854×10^{-8}

33. The internal resistance of a cell depends on
    a) the distance between the plates
    b) the area of the plates immersed
    c) the concentration of the electrolyte
    d) all the above

34. By increasing the temperature, the specific resistance of a conductor and semiconductor
    a) increases for both
    b) decreases for both
    c) increases, decreases
    d) decreases, increases

35. A resistor of 20 cm length and resistance 5 ohm is stretched to a uniform wire of 40 cm length. The resistance now is
    a) 5 ohm b) 10 ohm
    c) 20 ohm d) 200 ohm

36. There are two charge +3μc and +4μc. The ratio of forces acting on them will be
    a) 2:6 b) 1:1
    c) 1:3 d) 3:1

37. Specific resistance of a wire depends upon
    a) length b) cross-sectional area
    c) mass d) none of these

38. S.I. unit of potential difference
    a) Volt b) Ampere
    c) Joule d) Newton

39. The equivalent resistance of network of three 2Ω resistors can not be
    a) 0.67 Ω b) 2 Ω
    c) 3 Ω d) 6 Ω

40. I kwh is equal to
    a) 3.6×10^{3}J b) 36×10^{0}J
    c) 3.6×10^{-3}J d) 3.6×10^{6}J

41. A current of 0.5A is drawn by a filament of an electric bulb for 10 minutes. The amount of electric charge that flow through the circuit is
    a) 100C b) 200C
    c) 110C d) 300C

42. The work done to move a charge 2C across two point having pottential difference 2V is
    a) 1J b) 2J
    c) 4J d) 3J

43. 1 B.O.T. is equal to
    a) 1wh b) 1KWh
    c) 1mWh d) 1MWh¶

44. The commonly used fuse wire is made of
    a) copper b) lead
    c) an alloy of copper and lead
    d) an alloy of lead and tin

45. The domestic consumption of electricity is calculated in
    a) joules b) watts
    c) kilowatt/hour d) kilowatt-hour

46. The filament of an electric bulb is generally made of
    a) copper b) nichrome
    c) constantan d) tungsten

47. How much electrical energy in kW hr is consumed in operating 10, 100w bulbs for 10 hours per day in a month (30 days),
    a) 500 b) 400
    c) 300 d) 200

48. A 25 W and 100 W bulbs are joined in series and connected to the mains. Which bulb will glow brighter ?
    a) 25 W b) 100 W
    c) both will glow with same brightness
    d) none of these

49. 100J of heat are produced in each second in a 4Ω resistance. the potential difference across the resister is
    a) 20V b) 21V
    c) 40V d) 22V

50. The power dissipated by light bulb with 4ohm resistance when connected in parallel to 12 v battery is:-
    a) 036 W b) 0.036 W
    c) 3.6 W d) 36 W

51. An electric bulb is connected to a 220V generator. The current is 0.5A. The power of bulb is
a) 120W b) 110W
c) 130W d) 140W

52. SI unit of electro power is
a) J b) N
c) *dyne* d) Watt

53. A heater is marked 1000 W. The energy consumed by it in ten hours is:-
a) 10 J b) 10 KJ
c) 10 kwh d) 10wj

54. Faraday's laws are consequence of conservation of
a) charge b) momentum
c) energy d) electric current

55. For electroplating a utensil such as say spoon, it is placed in the voltameter at
a) cathode b) anode
c) cathode or anode d) none of these

56. Electrolysis is carried in a vessel called
a) voltmeter b) voltameter
c) galvanometer d) all of these.

57. A million electrons are added to a pith ball. Its charges is
a) $1{\cdot}6 \times 10^{-19}$ C b) $1{\cdot}6 \times 10^{-13}$C
c) $-1{\cdot}65 \times 10^{-13}$C d) $-1{\cdot}6 \times 10^{-10}$C

58 An ebonite rod acquires a negative charge of 1.6×10^{-10} C. The number of excess electrons it has is
a) 1×10^{9} b) 1×10^{-9}
c) 1×10^{-29} d) 1×10^{29}

59. A heating element of an electric toaster has a resistance of 22Ω and is connected to 110V circuit. The heat generated in 1min will be
a) 9.68×10^{3} cal b) 5 *k* cal
c) 7.89 *k* cal d) 12.61 *k* cal

60. An electric heater of resistance 6ohm is run full 10 minutes on a 120volt line. The energy liberated in this period of time is:-
a) $7.2x\ 10^{5}$J b) $14.4\ x\ 10^{5}$J
c) $43.2x\ 10^{5}$J d) $28.8\ x\ 10^{5}$J

61. The current Capacity of the storage cell is 3Ah- The maximum current it can supply full half hour is ?
a) 1.5A b) 3A
c) 4.5A d) 6A

62. A heater is marked 2000 W. The energy consumed by it in ten hours is:-
a) 20 J b) 20 KJ
c) 20 kwh d) 20wj

Answers

1 d	2 a	3 b	4 b	5 d	6 a	7 a
8 c	9 b	10 a	11 d	12 b	13 d	14 a
15 c	16 b	17 a	18 b	19 a	20 b	21 a
22 d	23 a	24 c	25 b	26 b	27 b	28 b
29 c	30 a	31 b	32 c	33 d	34 c	35 c
36 b	37 d	38 a	39 b	40 d	41 d	42 c
43 c	44 d	45 d	46 b	47 c	48 a	49 a
50 b	51 b	52 d	53 c	54 c	55 b	56 b
57 c	58 a	59 c	60 b	61 d	62 c	

CHAPTER - 4
SOURCES OF ENERGY

Multiple Choice Questions

1. Very high temperature can be obtained in solar heater devices by using :
   a) Plane reflectors
   b) Parabolic Reflectors
   c) Plane absorbers
   d) None of these

2. The source of geothermal energy is :
   a) Magma b) Ocean
   c) Sun d) CO_2

3. A single solar cell measuring about 4 cm^2 provide electricity of the voltage :
   a) 10 V b) 0·4 to 0·5V
   c) 4 to 5V d) none of these

4. The gaseous fuel produced by see weed plantation is :
   a) natural gas b) producer gas
   c) methane d) none of these

5. ..... is added to L.P.G. to detect gas leakage :
   a) CH_4 b) CH_3
   c) C_2H_5SH d) C_2H_5OH

6. Steam Engine converts heat energy into
   a) electrical energy
   b) mechanical energy
   c) nuclear energy
   d) chemical energy

7. Which of the following is a non- renewable source of energy?
   a) Wood b) Sun
   c) Fossil fuels d) Wind

8. In a battery, chemical energy is converted into
   a) electrical energy
   b) mechanical energy
   c) nuclear energy
   d) chemical energy

9. Energy possessed by a body by virtue of its position and configuration is called
   a) kinetic energy
   b) mechanical energy
   c) nuclear energy
   d) potential energy

10. Energy possessed by a body by virtue of its motion is called
    a) kinetic energy
    b) mechanical energy
    c) nuclear energy
    d) potential energy

11. The ratio of CGS unit and SI unit of energy
    a) 10^{-4} b) 10^{-5}
    c) 10^{-6} d) 10^{-7}

12. The country ranks first in the world to produce electricity from wind:-
    a) India b) USA
    c) Denmark d) Japan

13. Which of the following is different from the others?
    a) Watt b) erg
    c) Joule d) kilo watt hour

14. The biggest unit amongst the following is
    a) electron volt b) joule
    c) Kilowatt hour d) erg

15. One kilowatt hour is equal to
    a) 3.6 mJ b) 3.6 K
    c) 3.6 MJ d) 3.6 μJ

16. If speed of a vehicle doubles than its kinetic energy becomes
    a) twice b) four fold
    c) six times d) none of these

17. One Kilowatt is equal to ——— Horse power
    a) 1.34 b) 1.44
    c) 1.54 d) 1.64

18. The main constituent of LPG
    a) Methane b) butane
    c) Hydrogen d) none of these

19. Work done in lifting 1 kg mass to a height of 9.8 m is
    a) 9.8 J b) $(9.8)^2$J
    c) $(9.8)^3$ J d) $\frac{1}{9 \cdot 8}$

20. Which of the following devices transforms light energy into chemical energy?
    a) motor b) dynamo
    c) fan d) none of these

21. Wind possesses
    a) potential energy
    b) kinetic energy
    c) electrical energy
    d) chemical energy

22. The efficiency of heat engine can never be
    a) 100% b) 50%
    c) 30% d) 10%

23. Wood is a
    a) secondary fuel b) primary fuel
    c) liquid fuel d) processed fuel

24. 1 erg is
    a) 10^7J b) 10^{-8} J
    c) 10^8J d) 10^{-7}J

25. Steam when passed over hot coke produces
    a) water gas b) natural gas
    c) producer gas d) coal gas

26. Producer gas is a mixture of
    a) carbon monoxide and hydrogen gas
    b) carbon monoxide and oxygen gas
    c) carbon monoxide and nitrogen gas
    d) carbon monoxide and sulphur gas

27. Which of the following is not obtained by fractional distillation of petroleum
    a) Asphalt b) wax
    c) coal gas d) petrol gas

28. Least calorific value is of
    a) wood b) alcohol
    c) biogas d) coal

29. The calorific value of gasoline is approximately
    a) 37 b) 47
    c) 57 d) 67

30. Kerosene burns more rapidly than coke because it has
    a) more oxygen
    b) liquid hydrocarbons
    c) low ignition temperature
    d) none of these.

31. Which of the following is a non renewable source of energy?
    a) Gobar gas
    b) sun energy
    c) coal
    d) energy of tides

32. The Source of energy of the sun is
    a) Nuclear fission
    b) Nuclear fusion
    c) Chemical reaction
    d) None of these

33. The source of energy which is different from others is:
    a) uranium
    b) natural gas
    c) petroleum d) wood

34. Radiation which are harmful to the living organisms are:
    a) Infra-red radiation
    b) Ultra- violet radiation
    c) visible radiation
    d) Micro- waves

35. Water energy is called
    a) hydro energy
    b) chemical energy
    c) mechanical energy
    d) solar energy

36. Ocean energy is called
    a) wave energy
    b) solar energy
    c) tidal energy
    d) none of these.

37. SI unit of calorific value of a fuel is
    a) Joule b) Kg/J
    c) J/Kg d) erg/kg

38. The greatest calorific value amongst the following is of
    a) wood
    b) petrol
    c) biogas
    d) kerosene

39. A welder wears coloured glasses to protect his eyes from:-
    a) red rays
    b) infra- red rays
    c) ultra- violet rays
    d) the becteria

40. Which of the following converts light energy into electrical energy
    a) motor b) dynamo
    c) battery d) solar cell

Answers

1	b	2	a	3	b	4	c	5	c
6	b	7	c	8	a	9	d	10	a
11	d	12	c	13	a	14	c	15	c
16	b	17	a	18	b	19	b	20	d
21	b	22	a	23	b	24	d	25	a
26	c	27	c	28	a	29	b	30	c
31	c	32	c	33	d	34	b	35	a
36	c	37	c	38	b	39	c	40	d

CHAPTER - 5
REFRACTION OF LIGHT

Multiple Choice Questions

1. In case of spherical mirrors, the focal length and radius of curvature are related as :

   a) $f = \frac{R}{2}$ b) $f = 2R$

   c) $f = R$ d) None of these

2. Magnification produced by a plane mirror is :

   a) +1 b) +2

   c) +1/2 d) –1

3. When a ray of light enters a glass slab from air :
   a) Its wavelength decreases
   b) Its wavelength increases
   c) Its frequency increases
   d) Neither wavelength nor Frequency changes

4. Which one is false:

   a) $n = \frac{1}{\sin C}$ b) $P = \frac{1}{f}$

   c) $R = 2f$ d) None of these

5. When light travels from glass to air, the incident angle is θ_1 and the refracted angle is θ_2. The true relation is

   a) $\theta_1 = \theta_2$ b) $\theta_1 < \theta_2$

   c) $\theta_1 > \theta_2$ d) none of these

6. When light travels from one medium into another, it suffers:
   a) reflection b) refraction
   c) interference d) dispersion

7. When a ray of light travels from an optically less denser medium to a more denser medium, it
   a) bends towards the normal
   b) bends away from the normal
   c) passes undeviated
   d) none of these

8. A monochromatic beam of light passes froma denser medium to a rarer medium. As a result:
   a) Its velocity increases
   b) Its velocity decreases
   c) Its frequency decreases
   d) Its wavelength decreases

9. The ratio of the sine of angle of incidence to the sine of angle of refraction is called
   a) Brewster's law
   b) Snell's law
   c) Young's law
   d) Huygens' law

10. The phenomenon due to which a pencil dipped in water appears to be bent is
    a) reflection b) refraction
    c) diffraction d) interference

11. A well cut diamond appears bright because:-
    a) It emits light
    b) It is radioactive
    c) of total internal reflection
    d) It has high density

12. When a ray of light travels from air to a glass slab than it's
    a) wavelength decreases
    b) wavelength increases
    c) frequency increases
    d) frequency decreases

13. Twinkling of stars is due to
    a) refraction b) reflection
    c) scattering
    d) polarization of light

14. The phenomenon of mirage is due to
    a) reflection b) refraction
    c) total internal reflection
    d) diffraction

15. The refractive index of air is 1.5. Then the speed of light in air is
    a) 2×10^8 m/s b) 2.25×10^8 m/s
    c) 4×10^8 m/s d) 1.33×10^8 m/s

16. The basic reason for the shining of a diamond is
    a) reflection b) refraction
    c) dispersion
    d) total internal reflection

17. When light travel from more denser to less denser medium, it
    a) bend away from the normal
    b) bend toward the normal
    c) passes undeviated
    d) None of these

18. The concave lens is also known as
    a) Converging lens
    b) Diverging lens
    c) Collecting lens
    d) None of these

19. A glass slab is placed in the path of a beam of convergent light. The point of convergence of light.
    a) Move towards the glass slab
    b) moves away from the glass slab
    c) remains at the same point
    d) undergoes a lateral shift

20. Relationship between refractive index(n), velocity of light in vacuum (c) and velocity of light in medium (v) is
    a) n = v/c b) n = cv
    c) c = v/n d) n = c/v

21. If the speed of light in vacuum is 3×10^8 m/sec, then its velocity in a medium of refractive index 1.5 is
    a) 2×10^8 b) 2×10^{-8}
    c) 2×10^3 d) 2×10^{-3}

22. If the critical angle for total internal reflection from a medium to vacuum is 30º, the velocity of light in the medium
    a) 3×10^8 m/s b) 1.5×10^8 m/s
    c) 6×10^8 m/s d) 3×10^4 m/s

23 A lens which is thicker in the middle and thinner at the edges is called
    a) convex lens b) concave lens
    c) cylindrical lens d) spherical lens

24. A lens which is thin in the middle and thicker at the edges is called
    a) convex lens b) concave lens
    c) cylindrical lens d) spherical lens

25. Mirages are observed in deserts due to the phenomenon of
    a) Interference of light
    b) total reflection of light
    c) Scattering
    d) double refraction of light

26. The unit of power of a lens is
    a) meter b) dyne
    c) Newton d) Dioptre

27. The least distance of distinct vision for a normal person is
    a) 1m b) 0.5 m
    c) 0.25 m d) 0.125 m

28. The focal length of a lens is 100 cm. Then its power is
    a) 2 D b) 1 D
    c) 25 D d) 50 D

29. If power of a lens is - 0.1 D, its focal length is
    a) 1m b) – 1 m
    c) 10 m d) – 10 m

30. The refractive index of glass is 1.5, the velocity of light in glass is:
    a) $3x10^{10}$ cm/sec b) $4.5\ x10^{10}$ cm/sec
    c) $2x10^{10}$ cm/sec d) 10^{10} cm/sec

31. The index of refraction of diamond is 3.0 velocity of light in diamond in cm per second is approximately.
    a) $6x10^{10}$ b) $3.0x10^{10}$
    c) $2x10^{10}$ d) $1.0x10^{10}$

32. Which of the following pairs can produce erect, diminished and virtual image ?
    a) convex mirror and concave lens
    b) convex lens and convex mirror
    c) convex lens and concave mirror
    d) concave lens and concave mirror

33. Two thin Lenses, one of focal length + 30cm and other of focal length -20cm are put in contact. The combined focal length is:
    a) +15cm b) -60cm
    c) +30cm d) -30cm

34. A concave lens always gives
    a) virtual image b) diminished mage
    c) erect image
    d) all of the above

35. Two thin lenses of focal length -25cm and +30cm are placed incontact with each other. The combination has focal length:-
    a) -10cm b) 50cm
    c) -150cm d) 12cm

36. Brilliance of diamond is due to
    a) shape b) cutting
    c) reflection
    d) total internal reflection

37. If critical angle for a medium is 60º, then the refractive index of the medium is
    a) $\frac{2}{\sqrt{3}}$ b) $\frac{\sqrt{3}}{2}$
    c) $\sqrt{3}$ d) $\frac{\sqrt{2}}{3}$

38. The refractive index of glass is 1.5. Then the speed of light in water is
    a) 3×10^8 m/sec b) $2{\cdot}00 \times 10^8$ m/sec
    c) 4×10^8 m/sec d) $1{\cdot}33 \times 10^8$ m/sec

39. If the critical angle for total internal reflection from a medium to vacuum is 45º, the velocity of light in the medium
    a) 3×10^8 m/sec b) 2.13×10^8 m/sec
    c) 6×10^8 m/sec d) 3×10^4 m/sec

40. A mark at the bottom of a liquid appears to rise by 0.2 m. The depth of the liquid is 1m. The refractive index of the liquid is
    a) 1·33 b) 1/10
    c) 10/8 d) 1·5

Answers

1	a	2	a	3	a	4	d
5	b	6	b	7	a	8	a
9	b	10	b	11	c	12	a
13	a	14	c	15	a	16	d
17	a	18	b	19	a	20	d
21	a	22	b	23	a	24	b
25	b	26	d	27	c	28	b
29	d	30	c	31	d	32	a
33	b	34	d	35	c	36	d
37	a	38	b	39	d	40	c

CHAPTER - 6
OPTICAL INSTRUMENTS

Multiple Choice Questions

1. Power of eye lens of an adult human being is :
   a) 3D b) 4D
   c) 5D d) 6D

2. Eye defect produced due to low converging power of eye lens :
   a) Hypermetropia b) Presbyopia
   c) Astigmatism d) Hyopia

3. Magnifying power of simple microscope when image is formed at infinity is given by M =
   a) $\frac{D}{f}$ b) $\frac{f}{D}$
   c) $D \times f$ d) $\frac{1}{D \times f}$

4. Near point of the eye in case of normal human being is
   a) 25 cm b) 50 cm
   c) 100 cm d) infinity

5. Far point of the eye in case of normal human being is
   a) 25 cm b) 50 cm
   c) 100 cm d) infinity

6. A person suffering from Myopia can not see
   a) near objects clearly
   b) far off objects clearly
   c) none of the objects clearly
   d) none of these.

7. A person suffering from Hypermetropia can not see
   a) near objects clearly
   b) far off objects clearly
   c) none of the objects clearly
   d) none of these.

8. Cornea in the eye is a transparent spherical structure which ———— light
   a) reflects b) refracts
   c) disperses d) scatters

9. The screen behind the eye lens is called
   a) pupil b) iris
   c) retina d) ciliary muscle

10. The amount of light entering the eye is controlled by
    a) pupil b) iris
    c) retina d) cornea

11. The eye lens is a
    a) transparent double concave lens
    b) transparent double convex lens
    c) transparent convexo- concave lens
    d) transparent Plano concave lens

12. The eye lens contains a watery liquid called
    a) vitreous humour b) aqueous humour
    c) water d) glycerin

13. Most of the refraction of light takes place in
    a) iris b) pupil
    c) cornea d) retina

14. The ———————— muscles hold the eye lens in position
    a) rod b) cones
    c) ciliary d) iris

15. The focal length of concave lens required to correct myopia is
    a) Less than the distance of far point from eye
    b) Equal to the distance of far point from the eye
    c) equal to 25cms
    d) equal to 125 cms

16. In case of human eye, the image is formed at
    a) cornea b) iris
    c) pupil d) retina

17. When the light is very bright
    a) iris contracts the pupil
    b) iris expands the pupil
    c) pupil expands the iris
    d) pupil contracts the iris

18 When the light is dim
    a) iris contracts the pupil
    b) iris expands the pupil
    c) pupil expands the iris
    d) pupil contracts the iris

19. Magnifying power of an astronomical telescope for normal vision with usual notation is
    a) $-f_o/f_e$ b) $-f_o \times f_e$
    c) $-f_e \times f_o$ d) $-f_o + f_e$

20. The magnifying power of a compound microscope in terms of magnification m_o by objective and m_e by the eyepiece is given by
    a) m_o/m_e b) $m_o \times m_e$
    c) $m_o + m_e$ d) $m_o - m_e$

21. The magnifying power of a simple microscope can be increased if we use eye piece of
    a) higher focal length
    b) smaller focal length
    c) larger diameter
    d) smaller diameter

22 The focal length of a convex lens is 25cm. Its magnifying power will be
    a) 25 b) 52
    c) 2 d) 1.1

23. A person using a lens as a simple microscope sees an
    a) inverted virtual image
    b) inverted real magnified image
    c) upright virtual image
    d) upright real magnified image

24. The magnifying power of a simple microscope "*m*" is given by
    a) $\frac{U}{V}$ b) $1+\frac{D}{f}$
    c) $1+\frac{f}{D}$ d) $\frac{V}{U}$

25. The final image produced by a simple microscope is
    a) virtual and erect
    b) virtual and inverted
    c) real and erect
    d) real and inverted

26. Large aperture of telescope is used for
    a) greater magnification
    b) greater resolution
    c) to reduce lens aberration
    d) ease of manufacturing

27. The image of a distant object as seen through an astronomical telescope is
    a) erect b) inverted
    c) horizontal d) none of these

28. The magnifying power of an astronomical telescope is 10. Then the ratio of the focal length of the objective to the focal length of the eyepiece is
    a) 1/10 b) 10
    c) 100 d) 1/100

29. A cylidrical lens is required to correct
    a) myopia b) presbyopia
    c) Hypermetropia d) Astigmatism

30 The astronomical telescope was invented by
    a) Galileo b) Kepler
    c) Newton d) Huygens

31. Color blindness is due to
    a) absence of cone cells
    b) absence of rod cells
    c) presence of rod cells
    d) none of these

32. The rod cells correspond to
    a) the color of light
    b) the source of light
    c) the intensity of light
    d) none of these

33. A compound microscope has magnifying power as 16. If magnifying power of eye piece is 2, then find magnifying power of objective
    a) 8 b) 10
    c) 6 d) 12

34. A person cannot see the objects beyond 100cm. The power of a lens to correct this vision will be
    a) +2D b) -1D
    c) +5D d) 0.5D

35. Which is not a primary colour of light :
    a) Red b) Green
    c) Yellow d) Blue

36. The focal lengths of objective and eyepiece of a compound microscope are f_o and f_e respectively. Then
    a) $f_o > f_e$
    b) $f_o < f_e$
    c) $f_o = f_e$
    d) $f_o > or < f_e$

37. The focal length of a convex lens is 2.5cm. Its magnifying power will be
    a) 25 b) 52
    c) 11 d) 1.1

38. An astronomical telescope has a magnifying power 10. The focal length of eye piece is 20 cm. The focal length of objective is
    a) 120 cm b) 200 cm
    c) 150 cm d) 180 cm

Answers

1	b	2	a	3	a	4	a
5	d	6	b	7	a	8	b
9	c	10	a	11	b	12	a
13	c	14	c	15	b	16	d
17	a	18	b	19	a	20	b
21	b	22	c	23	c	24	b
25	a	26	b	27	b	28	b
29	d	30	a	31	a	32	c
33	a	34	b	35	c	36	b
37	c	38	b				

CHAPTER - 8
MAGNETIC EFFECTS OF CURRENT

Multiple Choice Questions

1. What is unit of magnitude of magnetic field?
   a) Faraday b) Tesla
   c) Newton d) Newton/m.

2. Which will be more magnetised after keeping inside solenoid ?
   a) Steel rod b) Iron nails
   c) Iron core d) Copper rod.

3. In Fleming's right hand rule, direction of induced current is given by
   a) thumb b) middle finger
   b) first finger d) none of these

4. Magnetic field is produced by the flow of current in a straight conductor. This phenomenon was discovered by
   a) Faraday b) Maxwell
   c) Coulomb d) Oersted

5. Unit of magnetic induction B is
   a) $NA^{-1}m^{-1}$ b) NAm^{-1}
   c) $Nm\ A^{-1}$ d) NA^{-1}

6. An electric charge in uniform motion produces
   a) an electric field only
   b) a magnetic field only
   c) both electric and magnetic field
   d) no such field at all

7. Magnetic induction is measured in
   a) webers b) Weber/m
   c) Weber/m^2 d) Weber/m^3

8. The force acting on a charge q moving with a velocity v in magnetic field of induction B is given by
   a) $q(\vec{v} \times \vec{B})$ b) $\dfrac{q}{\vec{v} \times \vec{B}}$
   c) $\dfrac{(\vec{v} \times \vec{B})}{q}$ d) $\dfrac{(q \times \vec{B})}{\vec{v}}$

9. A charge q is moving with a velocity parallel to a magnetic field. Force on the charge due to magnetic field is
   a) qvB b) $\dfrac{qB}{v}$
   c) 0 d) $\dfrac{Bv}{q}$

10. If the direction of the initial velocity of the charged particle is perpendicular to the magnetic field, the orbit will be
    a) a straight line b) an ellipse
    c) a circle d) a helix

11. The direction of magnetic field produced by a linear current is given by
    a) right hand thumb rule
    b) Fleming's left hand rule
    c) Joule's law
    d) Ampere's law

12. Two long parallel wires carrying currents in the opposite directions
    a) attract each other
    b) repel each other
    c) do not affect each other
    d) get rotated to be $\perp$ to each other

13. If a current is passed through a spring then the spring will
    a) Expand b) Remain same
    c) compress *d*) none of these.

14. A motor converts
    a) mechanical energy into electrical energy
    b) electrical energy into mechanical energy
    c) mechanical energy into sound energy
    d) electrical energy into sound energy

15. A dynamo converts
    a) mechanical energy into electrical energy
    b) electrical energy into mechanical energy
    c) mechanical energy into sound energy
    d) electrical energy into sound energy

16. By increasing number of turns in a coil, the strength of the magnetic field
    a) increases b) decreases
    c) first increases then decreases
    d) remains unchanged

17. The phenomenon of electromagnetic induction was discovered by
    a) Maxwell b) Lenz
    c) Faraday d) Fleming

18. A current is passed through a straight wire. The magnetic field established around it has its lines of forces
    a) elliptical b) circular
    c) oval d) parabolic

19. A current is flowing north along a power line. The direction of the magnetic field above it, neglecting the earth's field is towards
    a) north b) east
    c) south d) west

20. If a long hollow copper pipe carries a current the magnetic field produced will be:-
    a) inside the pipe only
    b) outside the pipe only
    c) neither inside nor outside the pipe
    d) both inside and outside the pipe

21. A magnetic field
    a) always exerts a force on a charged particle
    b) never exerts a force on a charged particle
    c) exerts a force, if the charged particle is moving across the magnetic field lines
    d) exerts a force, if the charged particle is moving along the magnetic field lines

22. The net charge on a current carrying conductor is
    a) positive b) negative
    c) varying d) zero

23. When a charged particle enters in a uniform magnetic field, its kinetic energy
    a) remains constant
    b) increases c) decreases
    d) becomes zero

24. The resistance of an ideal voltmeter is
    a) zero b) high
    c) infinite d) low

25. Magnetic lines of force
    a) cannot intersect at all
    b) intersect at infinity
    c) intersect within the magnet
    d) intersect at the neutral point

26. Tesla is the unit of :-
    a) electric flux. b) magnetic flux.
    c) electric field. d) magnetic induction.

27. The most suitable metal for making electromagnets and transformer cores is
    a) steel b) iron
    c) copper d) aluminum

28. The most suitable metal for permanent magnets is
    a) steel b) aluminum
    c) copper d) iron

29 Magnetic field intensity at the centre of a coil of 50 turns radius 0.5m and carrying a current of 2 A is:-
    a) 0.5×10^{-5} T b) 1.26×10^{-4} T
    c) 3×10^{-5} T d) 4×10^{-5} T

30. Two parallel wires in free space are 10 cm apart and each carries a current of 10 A, in the same direction. The force, one wire exerts on the other, per meter of length, is
    a) 2×10^{-4} N, attractive

b) 2×10^{-4} N, repulsive
c) 2×10^{-7} N, attractive
d) 2×10^{-7} N, repulsive

31. The frequency of AC mains in India is
a) 100 Hz b) 50 Hz
c) 200 Hz d) 220 Hz

32. Electromagnets are used in
a) telephones b) electric bell
c) generators d) all of these

33. A compass needle placed just above a wire in which electrons are moving towards west, will point
a) west b) North
c) east d) south

34. 1 Tesla is equal to
a) 10^6 Gauss b) 10^4 Gauss
c) 10^3 Gauss d) 10^{-4} Gauss

35. A charge + q is moving in magnetic field B with velocity V. Then the force on it is:-
a) $q(\vec{V} \cdot \vec{B})$ b) $q(\vec{V} \times \vec{B})$
c) $q(\vec{B} \cdot \vec{V})$ d) $q(\vec{B} \times \vec{V})$

36. The relative permability μ of air is
a) 1.5 b) 1
c) 2 d) 1.8

37. The C.G.S unit of magnetic field B is
a) Tesla b) Coulomb
c) Gauss d) Ampere

38. Galvanometer is used to detect
a) Potential Differnce
b) Electric Field
c) Electric Current
d) Power

39. If number of turns, area and current through a coil are given n, A and I respectively then its magnetic moment is
a) nI/A b) IA/n
c) nA/I d) nIA

40. The force on a current carrying conductor in a magnetic field is maximum when angle between current and magnetic field is
a) 60° b) 90°
c) 80° d) 120°

41. Magentic field out side the infinite solenoid is
a) μnI b) μ/nI
c) Infinite d) Zero

42. The best material for the core of a transformer is
a) Hard Iron b) Soft Iron
c) Copper Core d) Steel Rod

43. Magnetic field intensity at the centre of a coil of 50 turns radius 0.5m and carrying a current of 2 A is:-
a) 0.5×10^{-5} T
b) 1.26×10^{-4} T
c) 3×10^{-5} T
d) 4×10^{-5} T

Answers

1	b	2	c	3	b	4	d
5	a	6	c	7	c	8	a
9	c	10	c	11	a	12	b
13	b	14	b	15	a	16	a
17	c	18	b	19	b	20	b
21	c	22	d	23	d	24	c
25	a	26	d	27	b	28	a
29	b	30	a	31	b	32	d
33	b	34	b	35	b	36	b
37	c	38	c	39	d	40	b
41	d	42	b	43	b		