

10th Science – Physics Book Back Questions With Answers in English

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10th Std – Physics

14. Measuring Instruments

I. Fill in the blanks

1. Screw Gauge is an instrument used to measure the dimensions of very small objects up to _____

Ans: 0.01 mm

2. In a Screw Gauge, if the zero of the head scale lies below the pitch scale axis, the zero error is _____

Ans: positive

3. The Screw Gauge is used to measure the diameter of a _____

Ans: thin wire

4. One light year is equal to _____

Ans: $365.25 \times 24 \times 60 \times 60 \times 3 \times 10^8 \text{m}$

5. One astronomical unit is the mean distance between the centre of the Earth and centre of the _____

Ans: Sun

6. Screw gauge works on the principle of _____

Ans: Screw

7. In a screw gauge, the distance between two threads is called _____ of the screw.

Ans: pitch

8. Velocity of light is _____

$3 \times 10^8 \text{m/s}$

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9. The Zero division of head scale does not coincide with the index line of pitch scale there is a _____

Ans: Zero error

10. Zero division of head scale is below the index line of pitch scale the error is _____

Ans: Positive error

11. The least count of ordinary scale: _____ then for screw gauge: _____

Ans: 0.1 cm, 0.01 mm

12. Screw gauge consists of _____ scale and _____ scale.

Ans: Pitch, Head

13. Screw gauge is used to measure _____ of a glass plate and _____ of a thin wire.

Ans: thickness, diameter

14. The least count is defined as the ratio of _____ to the _____.

Ans: pitch of the screw, no. of head scale divisions

15. Screw gauge works on the principle of _____ and the distance between two adjacent threads is _____

Ans: screw in a nut, pitch

16. The thickness of the glass plate is measured by screw gauge using a formula _____

Ans: $P.S.R + (H.S.R \times L.C) \pm Z.C$

II. Choose the correct answer.

1. To measure very small lengths a _____ is used.

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- a. metre scale
b. vernier calliper
c. **screw gauge**
d. vernier scale

2. The screw head is provided with _____ to prevent from undue pressure exerted by the user.

a. frame
b. milled head
c. pitch
d. **ratchet**

3. The principle of the crew is used in a _____

a. **screw gauge**
b. vernier calliper
c. physical balance
d. scale

4. The distance between two screw threads is called _____

a. **pitch**
b. least count
c. zero error
d. zero correction

5. The distance moved by the tip of the screw for a rotation of one division on the head scale is _____

a. length of the screw
b. the pitch of the screw
c. the diameter of the screw
d. **least count of the screw**

6. The pitch scale is graduated in _____

a. **millimetre**
b. metre
c. division
d. centimetre

7. The head scale is graduated in _____

a. metre
b. **division**
c. millimetre
d. centimetre

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8. If the zero of the head scale coincides with the pitch scale axis, the error in the instrument is _____

- a. positive
- b. negative
- c. **zero**
- d. one

9. If the zero of the head scale is below the pitch scale axis, the error in the screw gauge is _____

- a. **positive**
- b. negative
- c. zero
- d. one

10. The least count of screw gauge is _____

- a. **0.01 mm**
- b. 0.1 mm
- c. 0.01cm
- d. 0.1 cm

11. Screw gauge is used to measure _____

- a. diameter of a ball bearing
- b. thickness of metal sheet
- c. small change in the length of rod when heated
- d. **all the above**

12. The unit used to measure very long distance is _____

- a. **astronomical unit**
- b. kilometre
- c. millimetre
- d. none

13. The distance of the centre of the sun from the centre of the earth is _____

- a. light year
- b. **astronomical unit**
- c. angstrom
- d. kilometre

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14. The distance travelled by light in one year in vacuum is _____

- a. **light year**
- b. astronomic unit
- c. velocity of light
- d. none

15. In a screw gauge, the head of the sleeve is divided into _____

- a. 1000 divisions
- b. 10 divisions
- c. **100 divisions**
- d. 2 divisions

16. One Astronomical unit is equal to _____

- a. 1.469×10^{11} m
- b. 1.496×10^{-11} m
- c. **1.496×10^{11} m**
- d. 1.496×10^{10} m

III. Match the following

1.

- 1. Distance between two successive thread of a screw a. Millimetre
- 2. pitch scale b. Laser pulse method
- 3. Least count of the screw c. Pitch of the screw
- 4. Distance of a moon from the earth d. Pitch/ No. of head scale divisions

Ans: 1-c,2-a,3-d,4-b

15. Laws of motion and gravitation

I. Choose the correct answer

1. When a force is exerted on an object, it can change its _____

- a. state
- b. shape
- c. position
- d. **all the above**

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2. SI unit of force is _____

- a. Dyme
- b. **Newton**
- c. $kgms^{-1}$
- d. Joule

3. Force is a _____ quantity.

- a. **vector**
- b. fundamental
- c. scalar
- d. none

4. An imbalanced force acts on a body, the body_____

- a. must remain at rest
- b. **must be accelerated**
- c. must move with uniform velocity
- d. move with uniform motion

5. The laws of motion of a body is given by _____

- a. Galileo
- b. Archimedes
- b. Einstein
- d. **Newton**

6. When two or more forces acting on a body and the body does not change its position then the forces are _____

- a. imbalanced
- b. mechanical force
- c. **balanced forces**
- d. none

7. From the following statements write down that which is not applicable to mass of an object:

- a. It is a fundamental quantity
- b. It is measured using physical balance
- c. **It is measured using spring balance**
- d. It is the amount of matter

8. Newton's first law of motion defines_____

- a. inertia
- b. force

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c. acceleration

d. **both inertia and force**

9. An object cannot change the state of rest or motion, until any force is applied. This inability of the object is called _____

a. **inertia**

b. mass

c. weight

d. acceleration

10. When an object undergoes acceleration _____

a. its velocity increases

b. its speed increases

c. its motion is uniform

d. **a force always acts on it**

11. on what factor does inertia of a body depend?

a. volume

b. area

c. **mass**

d. density

12. A motor car starts from rest and moves after 5 seconds, if its velocity is 200m/s then its acceleration is _____

a. 100 m/s²

b. **40 m/s²**

c. 20 m/s²

d. 80 m/s²

13. If mass of an object is m, velocity v, acceleration a and applied force is F and momentum p is given by _____

a. **$p = m \times v$**

b. $p = m \times a$

c. $p = \frac{m}{v}$

d. $p = \frac{v}{m}$

14. Which of the following is a vector quantity?

a. speed

b. distance

c. **momentum**

d. time

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15. The inability of the body to change its state is _____

- a. force
- b. momentum
- c. acceleration
- d. **inertia**

16. Force is measured based on _____

- a. Newton's first law
- b. **Newton's second law**
- c. Newton's third law
- d. all the above

17. Force measures rate of change of _____

- a. acceleration
- b. velocity
- c. **momentum**
- d. distance

18. When a net force acts on an object, the object will be accelerated in the direction of force with an acceleration proportional to _____

- a. **force on the object**
- b. velocity
- c. mass
- d. inertia

19. The momentum of a given mass of a body is proportional to _____

- a. density
- b. **velocity**
- c. shape
- d. volume

20. A bus of 800 kg increases its velocity from 5 m/s to 10 m/s within 10 seconds by a constant force. The magnitude of the applied force is _____

- a. 4000 N
- b. **400 N**
- c. 800 N
- d. 200 N

21. A force of 48 N acts on a body of mass 10 kg on a horizontal plane. Its acceleration is _____

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a. 2.4 m/s^2

b. 1.2 m/s^2

c. 9.6 m/s^2

d. **4.8 m/s^2**

22. The acceleration of a body is due to _____

a. balance force

b. electrostatic force

c. **unbalanced force**

d. conservative force

23. A force applied on an object is equal to

a. product of mass and velocity

b. sum of mass on the same body

c. **product of mass and acceleration**

d. sum of mass and acceleration

24. Action and reaction do not balance each other because they _____

a. act on the same body

b. **do not act on the same body**

c. are in opposite direction

d. are unequal

25. The unit of weight is _____

a. kg

b. g

c. **Newton**

d. ms^{-2}

26. Action and reaction forces are _____

a. equal in magnitude

b. equal in direction

c. opposite in direction

d. **both equal in magnitude and opposite in direction**

27. If mass of a body is doubled then its acceleration becomes _____

a. **halved**

b. doubled

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c. thrice

d. zero

28. The principle involved in the working of a jet plane is _____

a. Newton's first law

b. **conservation of momentum**

c. law of inertia

d. Newton's second law

29. In a collision between a heavier body and a lighter body, which body experiences greater force?

a. heavier body

b. lighter body

c. **both the body experience same force** d. both body exchange acceleration

30. A gun gets kicked back when a bullet is fired. It is a good example of Newton's _____

a. gravitational law

b. first law

c. second law

d. **third law**

31. The law of conservation of momentum states that the momentum of a system _____

a. cannot be changed

b. **is constant**

c. **can be changed by an external force** d. cannot be constant

32. When a bus starts suddenly the passengers in the standing position are pushed backwards, this action is due to _____

a. **first law of motion**

b. second law

c. third law of motion

d. conservation momentum

33. When a body at rest breaks into pieces of equal masses, then the parts will move _____

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a. in same direction

b. along different directions

c. in opposite directions with unequal speeds

d. in opposite directions with equal speeds

34. The principle of function of a jet aeroplane is based on _____

a. first law of motion

b. second law of motion

c. **third law of motion**

d. all the above

35. Which of the following has the largest inertia?

a. pin

b. book

c. pen

d. table

36. An athlete runs a long path before taking a long jump to increase _____

a. energy

b. inertia

c. **momentum**

d. force

37. Which is incorrect statement about the action and reaction referred to Newton's third law of motion?

a. They are equal

b. They are opposite

c. **They act on the same object**

d. They act on two different objects

38. The tendency of a force to rotate a body about a given axis is called _____

a. turning effect of a force

b. moment of force

c. torque

d. all the above

39. The magnitude of the moment of force is _____

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a. **product of force and the perpendicular distance**

b. product of force and velocity

c. ratio of force to the acceleration

d. ratio of force to the perpendicular distance

40. If the force rotates the body in the anticlockwise direction, then the moment is called _____

a. clockwise moment

b. **anticlockwise moment**

c. couple

d. torque

41. Anticlockwise moment is _____

a. **positive**

b. negative

c. opposite

d. zero

42. Clockwise moment or torque is _____

a. zero

b. always one

c. **negative**

d. positive

43. SI unit of moment of force is _____

a. Nm^{-2}

b. Nm^{-1}

c. Ns

d. **Nm**

44. Moment of force produces _____

a. acceleration

b. linear motion

c. velocity

d. **angular acceleration**

45. Two equal and opposite forces whose lines of action do not coincide are said to constitute a _____

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- a. couple b. torque
- c. unlike force d. parallel force
46. couple produces _____
- a. translator motion b. rotator motion
- c. translator as well as rotator motion d. neither translator nor rotatory
47. _____ is an example of couple
- a. opening or closing a tap b. turning of a key in a lock
- c. steering wheel of car d. all the above
48. Force of attraction between any two objects in the universe is called _____
- a. gravitational force b. mechanical force
- c. magnetic force d. electrostatic force
49. Universal law of gravitation was given by _____
- a. Archimedes b. Aryabhata
- c. Kepler d. Newton
50. The force of gravitation between two bodies does not depend on _____
- a. heavy bodies only b. small sized objects
- c. light bodies d. objects of any size
52. The value of gravitational constant(G) is _____
- a. different at different places b. same at all places in the universe
- c. different at all places of earth d. same only at all the places of earth
53. The value of G is _____

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a. $6.673 \times 10^{-11} \text{ N m}^2 \text{ kg}^{-2}$ b. 9.8 m/s^2

c. $6.67 \times 10^{-8} \text{ N m}^2 \text{ kg}^{-2}$ d. 980 m/s

54. The unit of gravitational constant is _____

a. $\text{N m}^2 \text{ kg}$ b. kgms^{-2}

c. $\text{N m}^2 \text{ kg}^{-2}$ d. ms^{-2}

55. The weight of an object is _____

a. the quantity of matter it contains

b. its inertia

c. **same as its mass**

d. the force with which it is attracted by the earth

56. In vacuum, all freely falling objects have the same _____

a. speed

b. velocity

c. force

d. **acceleration**

57. The acceleration due to gravity _____

a. has the same value everywhere in space

b. has the same value everywhere on earth

c. **varies with the latitude on earth**

d. is greater on moon due to its smaller diameter

58. When an object is thrown up, the force of gravity _____

a. **is opposite to the direction of motion**

b. is in the same direction as direction of motion

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c. decreases as it rises up

d. increases as it rises up

59. The SI unit of acceleration due to gravity 'g' is _____

a. ms^{-1}

b. ms

c. ms^{-2}

d. ms^2

60. What happens to the value of 'g' as we go higher from surface of earth?

a. **decreases**

b. increases

c. no change

d. zero

61. Mass of a body on moon is _____

a. **the same as that on the earth**

b. $\frac{1}{6}$ th of that at the surface of the earth

c. 6 times as that on the earth

d. none of these

62. At which place is the value of 'g' is zero?

a. at poles

b. **at centre of the earth**

c. at equator

d. above the earth

63. The weight of the body is maximum _____

a. at the centre of the earth

b. **on the surface of earth**

c. above the surface of earth

d. none of the above

64. A rock is brought from the surface of the moon to the earth, then its _____

a. **weight will change**

b. mass will change

c. both mass and weight will change

d. mass and weight will remain the same

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65. Why is the acceleration due to gravity on the surface of the moon is lesser than that on the surface of earth?

- a. because mass of moon is less b. radius of moon is less
- c. mass and radius of moon is large d. **mass and radius of moon is less**

66. If the distance between two bodies is doubled, then the gravitational force between them is _____

- a. halved b. doubled
- c. **reduced to one-fourth** d. increased by one fourth

67. Mass of the earth is _____

- a. 5.89×10^{24} kg b. **5.98×10^{24} kg**
- c. 6.023×10^{23} kg d. 3×10^8 kg

68. An artificial structure designed for humans to live and work in outer space is _____

- a. space ship b. space shuttle
- c. **space station** d. space probe

69. Which cryogen is legally purchasable throughout the world?

- a. liquid helium b. liquid hydrogen
- c. **liquid nitrogen** d. all the above

70. The issues that limit long term habitability in space station is _____

- a. lack of gravity b. very low recycling rates
- c. relatively high radiation levels d. **all the above**

71. The third country to launch a space station is _____

- a. USA b. France

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c. India

d. **China**

72. The main achievement of Chandrayaan I is _____

a. **presence of water molecules in moon**

b. mapping and surveying

c. weather monitoring

d. telecommunication

73. The weak solar flares are detected by _____

a. Terrain Mapping Camera(TMC)

b. Lunar Laser Ranging Instrument (LLRI)

c. **Chandrayaan I Imaging X-ray Spectrometer(CIXS)**

d. Hyper Spectral Imager(HYSI)

74. The Terrain Mapping Camera has taken _____

a. signatures of aluminium and silicon

b. **images of peaks and craters**

c. images of large caves

d. images of the earth

75. For how much time is Chandrayaan operated?

a. 312 months

b. 365 days

c. **312 days**

d. 96 days

76. A force of 48N acts on a body of mass 6 kg on a horizontal plane. Its acceleration is _____

a. 4ms^{-2}

b. **8ms^{-2}**

c. 288ms^{-2}

d. 0.125ms^{-2}

77. A bus starts for rest and moves after 4 seconds. Its velocity is 100ms^{-1} . Its uniform acceleration is _____

a. 10ms^{-2}

b. **25ms^{-2}**

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c. 400 ms^{-2}

d. 2.5 ms^{-2}

78. A body of mass 10 kg increases its velocity from 2 m/s to 8 m/s within 4 second by the application of a constant force. The magnitude of the applied force is _____

a. 1.5 N

b. 30N

c. **15N**

d. 150N

79. Which of the following is used for specially chilling and freezing applications?

a. liquid helium

b. liquid hydrogen

c. liquid ammonia

d. **liquid nitrogen**

80. The moment of force in clockwise direction is _____ the moment in the anticlockwise direction.

a. **equal to**

b. lesser than

c. greater than

d. none

81. Which one of the following is scalar quantity?

a. momentum

b. moment of force

c. **speed**

d. velocity

82. Name the space station used for military and civilian purposes.

a. Sky lab

b. Mir

c. Tiangong 1

d. **Salyut**

83. The space station Salyut was launched by _____

a. **Soviet Union**

b. United States

c. Japan

d. China

84. Name the space station to be launched by China.

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a. Sky lab

b. **Tiangong 1**

c. Mir

d. Salyut

85. The unit newton can also be written as _____

a. kgm

b. kg ms^{-1}

c. **kg ms^{-2}**

d. $\text{kg m}^{-2}\text{s}$

86. To change the state or position of an object _____ force is essential.

a. balanced

b. **imbalanced**

c. electric

d. elastic

87. The acceleration in a body is due to _____

a. balanced force

b. **unbalanced force**

c. electro static force

88. The physical quantity which is equal to the rate of change of momentum is _____

a. displacement

b. acceleration

c. **force**

d. impulse

89. The momentum of a massive object at rest is _____

a. very large

b. very small

c. **zero**

d. infinity

90. The weight of a person is 50kg. The weight of that person on the surface of the earth will be _____

a. 50 N

b. 35 N

c. 380 N

d. **490N**

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91. The freezing of biotechnology products like vaccines require _____ freezing system.

- a. Helium
- b. Nitrogen
- c. Ammonia
- d. Chlorine

II. Match the following

1.

- | | |
|-------------------------------------|--------------------------------|
| 1. Relation between 'g' and 'G' | a. $F = G \frac{m_1 m_2}{r^2}$ |
| 2. Universal gravitational law | b. $W = mg$ |
| 3. Mass of an object is measured by | c. Physical balance |
| 4. Unit of g | d. $g = \frac{GM}{r^2}$ |
| 5. Relation between mass and weight | e. m/s^2 |

Ans: 1-d, 2-a, 3-c, 4-e, 5-b

2.

1.

- | | |
|------------------------------------|-------------------------------------|
| 1. Resultant of the forces is zero | a. Law of conservation of momentum |
| 2. Newton's first law | b. Vector |
| c. Force | c. Quantitative definition of force |
| 4. Newton's third law | d. balanced force |
| 5. Newton's second law | e. Inertia |

Ans: 1-d, 2-e, 3-b, 4-a, 5-c

3.

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- | | |
|--------------------|-----------------------------------|
| 1. Liquid Helium | a. Lunar Laser Ranging Instrument |
| 2. Sky lab | b. Magnetic resonance imaging |
| 3. Liquid nitrogen | c. lunar probe |
| 4. LLRI | d. space station |
| 5. Chandrayaan-I | e. Freezing |

Ans: 1-b,2-d,3-e,4-a,5-c

III. Fill in the blanks

1. Force = mass x _____ and Newton is the unit of _

Ans: acceleration, force

2. Momentum is the product of _____ and _____

Ans: mass, velocity

3. To produce an acceleration of 1m/s^2 in an object of mass 1kg. the force required is _____ and for 3kg of mass to produce same acceleration, the force required is _____

Ans: 1N, 3N

4. Two or more forces are acting in an object and does not change its position, the forces are _____ and it is essential to act some _____ force, to change the state or position of an object.

Ans: balanced, unbalanced

5. The force of attraction between two objects is directly proportional to the product of their _____ and inversely proportional to the square of the _____ between them.

Ans: masses, distance

6. The value of g varies with _____ and _____

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Ans: altitude, depth

7. The value of gravitational constant is _____ at all places but the value of acceleration due to gravity _____

Ans: same, differs

8. If a feather and coin are released in vacuum. They will reach the ground at the _____ and gravitational acceleration always acts towards _____ of earth.

Ans: same rate, centre

9. The space stations _____ and _____ have been monolithic.

Ans: Salyut, skylab

16. Electricity and Energy

I. Choose the correct answer

1. Electric current is defined as the rate of flow of _____

- a. energy
- b. power
- c. mass
- d. charges

2. Electric charge is expressed in _____

- a. Volt
- b. Joule
- c. **Coulomb**
- d. Ohm

3. The unit of electric current is _____

- a. **ampere**
- b. volt
- c. watt
- d. kilo-watt

4. 1 Coulomb of charge is equivalent to the charge of _____

- a. **6.25×10^{18} electrons**
- b. 6×10^{18} protons

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- c. 1.6×10^{-19} electrons d. 1.6×10^{-19} protons
5. Which instrument is used to measure current?
- a. voltmeter **b. ammeter**
- c. galvanometer d. ohmmeter
6. The amount of work done to move a unit charge from one point to the other is _____
- a. resistance b. current
- c. **potential** d. none of the above
7. Which quantity is measured by voltmeter?
- a. current **b. potential**
- c. resistance d. capacitance
8. Ohm's law gives the relation between potential difference and _____
- a. emf b. temperature
- c. resistance **d. current**
9. The equation of ohm's law _____
- a. $\frac{V}{I} = R$** b. $V = \frac{I}{R}$
- c. $VR = I$ d. $VI = R$
10. In an electrical circuit, voltmeter reads 24V and ammeter reads 6A. the value of resistance is _____
- a. 40Ω b. 2Ω
- c. 0.25Ω d. **4Ω**
11. Ohm is also expressed as _____

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a. **volt/ampere**

b. volt/coulomb

c. newton

d. none

12. Which property of a body oppose the flow of electric charge through it?

a. potential

b. resistance

c. temperature

d. none

13. When more than one resistors are in series, which quantity remains the term?

a. **Current**

b. Potential difference

c. Resistance

d. Power

14. To increase resistance, one should use combination of resistors in _____

a. series

b. parallel

c. series and parallel

d. series always

15. The effective resistance of the resistors in parallel is given as _____

a. $R_p = R_1 + R_2$

b. $R_p = \frac{1}{R_1} + \frac{1}{R_2}$

c. $\frac{1}{R_p} = \frac{1}{R_1} + \frac{1}{R_2}$

d. $\frac{1}{R_p} = R_1 + R_2$

16. Which quantity remains the same when resistors are connected in parallel?

a. current

b. potential difference

c. emf

d. resistance

17. 1 Joule / 1 coulomb _____

a. 1 watt

b. 1 kwh

c. 1 volt

d. 1 ampere

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18. How much heat is generated when current I is passing through a resistor for time

- a. I^2Rt
- b. IR^2t
- c. VI
- d. I^2R

19. When a resistance of 6Ω is connected with a cell of electromotive force $1.5V$, the current flowing through the cell is _____

- a. $2A$
- b. **$0.25A$**
- c. $0.5A$
- d. $9A$

20. Three resistances 2Ω , 2Ω and 2Ω are connected in parallel with each other. The effective resistance is _____

- a. 1.5Ω
- b. **0.66Ω**
- c. 6Ω
- d. 0.75Ω

21. The value of current flowing through a circuit consisting of two resistances 6Ω and 18Ω in series with a battery of $3V$ is _____

- a. $0.5A$
- b. **$0.125A$**
- c. $6A$
- d. $0.25A$

22. Which of the following is used to measure potential difference?

- a. ammeter
- b. galvanometer
- c. **voltmeter**
- d. wattmeter

23. The work done in moving a charge of $10C$ through two points having potential difference of $5V$ is _____

- a. $100J$
- b. **$50J$**
- c. $5J$
- d. $250J$

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24. The commonly used safely fuse wire is made of _____

- a. nickel
- b. lead
- c. **an alloy of tin and lead**
- d. copper

25. According to international convention of colour coding in a wire _____

- a. **live is red, neutral is black**
- b. live is red, neutral is green
- c. live is brown, neutral is blue
- d. live is green, neutral is black

26. Kilowatt-hour is the unit of _____

- a. potential difference
- b. electric power
- c. **electrical energy**
- d. charge

27. One kilowatt-hour is _____

- a. **$3.6 \times 10^6 \text{ J}$**
- b. 1000W
- c. 3600 W s^{-1}
- d. $2.778 \times 10^3 \text{ J}$

28. Name the physical quantity which is measured in KW _____

- a. electric energy
- b. **electric power**
- c. electric current
- d. electric potential

29. Negatively and positively charged ions which are free to move constitute a current _____

- a. In conductors
- b. **In an electrolytes**
- c. In metals
- d. In liquids

30. Who built the first battery?

- a. Lechlanche
- b. Daniel

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c. **Volta**

d. Edison

31. In cells, chemical energy is converted into _____

a. mechanical energy

b. heat energy

c. sound energy

d. **electrical energy**

32. Which of the following is not connected with a voltaic cell?

a. copper electrode

b. **spongy lead**

c. voltage

d. dil. H_2SO_4

33. The emf generated in voltaic cell is _____

a. 1.5 V

b. 2V

c. **1.08V**

d. 2.2V

34. In _____ positively and negatively charged ions that are free to move constitute an electric current.

a. conductors

b. **metals**

c. liquids

d. electrolyte

35. The emf 1.5V is produced by _____

a. Daniel cell

b. Voltaic cell

c. **Lechlanche**

d. Lead acid accumulator

36. Which of the following is not a primary cell?

a. Daniel cell

b. Lechlanche

c. **Lead acid accumulator**

d. none

37. Which of these is not a feature of Daniel cell?

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- a. Copper vessel b. Zinc rod
- c. Copper sulphate solution d. **Carbon rod**
38. Charging is a process of reproducing _____
- a. **active materials** b. current
- c. voltage d. power
39. The emf obtained from secondary cell is _____
- a. 1.08V b. 1.5V
- c. **2.2 V** d. 1.2 V
40. A good fuel should _____
- a. provide large amount of energy b. be easily accessible
- c. be easy to store and transport d. **all the above**
41. Which of the following is non-renewable source of energy?
- a. **Coal** b. Sun
- c. Gobar gas d. Tides
42. The electrolyte used in voltaic cells is _____
- a. conc. H_2SO_4 b. Manganese dioxide
- c. Ammonium chloride d. **dil. H_2SO_4**
43. The change that extracts electric current from a secondary cell is _____
- a. charging b. electrostatic induction
- c. electromagnetic induction d. **discharging**
44. Which of the following is formed under the earth over millions of years?

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- a. coal
b. petroleum
c. natural gas
d. **all the above**
45. Choose the source of energy which is different from others _____
- a. wood
b. falling water
c. wind
d. **petroleum**
46. In a thermal power plant, energy of _____ is used.
- a. blowing wind
b. **burning fuel**
c. flowing water
d. breaking of heavy atom
47. Energy of flowing water is use in a _____
- a. wave energy plant
b. thermal power plant
c. **hydro power plant**
d. nuclear power plant
48. Hydro power plants generate _____
- a. nuclear energy
b. thermal energy
c. **electrical energy**
d. wind energy
49. In hydro power plants _____ is converted into electrical energy.
- a. potential energy
b. **kinetic energy**
c. nuclear energy
d. thermal energy
50. A wind mill converts _____ into electrical energy.
- a. **kinetic energy**
b. thermal energy
c. potential energy
d. sound energy

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51. To maintain the required speed of the turbine, the speed of the wind should be

- _____
- a. **higher than 15 km per hour** b. higher than 15 km per second
c. lesser than 15 km per hour d. lesser than 15 m per second

52. Which of the following is renewable source of energy?

- a. wood b. wind
c. flowing water **d. all the above**

53. Out of 60 W and 40W lamps, which one was a higher electrical resistances when in use? [$P = I^2 R$]

- a. 40W **b. 60W**
c. both have equal resistances d. none

54. When a blackened plate is placed in sunlight, its temperature will _____

- a. decrease continuously
b. increase continuously
c. **increase for some time and then remains constant**
d. remains constant

55. Pollution can be minimised when food is cooked _____

- a. burning of coal b. burning of cooking gas
c. burning of wood **d. using a solar cooker**

56. Ultimate source of all renewable energy on earth _____

- a. wind b. Petroleum
c. **Sun** d. Coal

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57. Which statement is incorrect about a solar cooker?

- a. it causes no pollution
- b. Nutrients of food are not destroyed
- c. Use of solar cooker for cooking food saves fuel
- d. **It can cook the food at any time**

58. Which of the following converts solar energy directly into electricity?

- a. Solar cooker
- b. Solar water heater
- c. **Solar cell**
- d. Solar dryer

59. The source of Sun's energy is _____

- a. burning of hydrogen
- b. solar flares
- c. **nuclear fusion**
- d. combustion of coal present in its crust

60. Which sources of energy are not related to energy of Sun?

- a. Wave energy
- b. **nuclear energy**
- c. Tidal energy
- d. Wind energy

61. The process of splitting heavy atom into lighter nuclei is _____

- a. **nuclear fission**
- b. nuclear fusion
- c. nuclear reaction
- d. radioactivity

62. In nuclear reactor energy is released due to _____

- a. controlled nuclear fusion
- b. uncontrolled nuclear fusion
- c. **controlled nuclear fusion**
- d. uncontrolled nuclear fission

63. The phenomenon of radioactivity is discovered by _____

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a. Marie Curie

b. Rutherford

c. Roentgen

d. **Hentry Becquerel**

64. Marie Curie and Pierre Curie discovered _____

a. **radioactive elements**

b. X-ray

c. γ – ray

d. radioactivity

65. The radiations emitted by natural radioactive elements _____

a. IR rays

b. UV rays

c. X-rays

d. **α, β, γ rays**

66. The radioactive phenomenon is not affected by _____

a. temperature

b. pressure

c. electric and magnetic fields

d. **all the above**

67. Who discovered nuclear fission?

a. Henri Becquerel

b. **Otto Hahn and Strass man**

c. Marie and Pierre Curie

d. Roentgen

68. The amount of energy released during nuclear fission of uranium ${}_{92}\text{U}^{235}$ is _____

a. **200 MeV**

b. 200KeV

c. 200eV

d. 200J

69. Nuclear fusion is a process of _____

a. breaking of heavy atom

b. combining heavy nuclei

c. **combining lighter nuclei**

d. breaking of light atom

70. Einstein's mass-energy relation is _____

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a. $E = \frac{m}{c^2}$

b. $E = mc^2$

c. $E = h\nu$

d. $\frac{1}{2}mc^2$

71. The fusion reactions occur at _____

a. low pressures

b. low temperatures

c. **extremely high temperature**

d. high pressure

72. The nuclear fusion reaction is known as _____

a. **thermo nuclear reaction**

b. chemical reaction

c. physical reaction

d. chain reaction

73. The energy produced when 1 kg of a substance is fully converted into energy is _____

a. $9 \times 10^{16} \text{ J}$

b. $9 \times 10^8 \text{ J}$

c. $18 \times 10^8 \text{ J}$

d. $18 \times 10^{16} \text{ J}$

74. A hydrogen bomb is an example for an _____

a. controlled nuclear fission

b. uncontrolled nuclear fission

c. controlled nuclear fusion

d. **uncontrolled nuclear fusion**

75. An uncontrolled fission reaction takes place in an _____

a. **atom bomb**

b. hydrogen bomb

c. nuclear reactor

d. sun

76. The measure of the departure of a reactor from critically is called _____

a. Roentgen

b. **nuclear reactivity**

c. curie

d. nuclear activity

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77. Roentgen is the unit of _____

- a. nuclear activity
- b. **radiation exposure**
- c. intensity of radiation
- d. speed of nuclear reaction

78. The safe limit of receiving the radiation is _____

- a. **250mR per week**
- b. 250 R per week
- c. i 250mR per day
- d. 500mR per week

79. Radioactive materials are kept in _____

- a. thin walled lead container
- b. thick walled copper container
- c. thin walled aluminium container
- d. **thick walled lead container**

80. To check the safety limit of radiation _____ is worn.

- a. lead aprons
- b. lead gloves
- c. **small micro film badge**
- d. none of these

81. Energy available from the oceans is _____

- a. tidal energy
- b. wave energy
- c. ocean thermal film badge
- d. **all the above**

82. The energy available due to the difference in the temperature of water at the surface of the ocean and at deeper levels is called _____

- a. tidal energy
- b. wind energy
- c. solar energy
- d. **ocean thermal energy**

83. Tidal energy is due to gravitational pull of _____

- a. **moon**
- b. earth

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c. sun

d. mars

84. The difference in sea levels gives _____

a. wind energy

b. wave energy

c. **tidal energy**

d. OTE

85. Which of the following pair of energy does not create pollution?

a. Solar energy and biogas

b. **Solar energy and wind energy**

c. Tidal energy and coal

d. Natural gas and bio mass

86. The renewable source of energy is _____

a. **tidal energy**

b. coal

c. petroleum

d. natural gas

87. Tidal energy is harnessed by constructing _____

a. **dams**

b. wind mill

c. biomass unit

d. geothermal unit

88. What is the amount of current, when 20C of charges flows in 4S through a conductor?

[$I = q/t$]

a. **5A**

b. 80A

c. 4A

d. 2A

89. The symbol of Ammeter is _____

a. V

b. **A**

c. G

d. I

90. The main source of bio-mass energy is _____

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- a. coal
- b. heat energy
- c. thermal energy
- d. **cow-dung**

91. The potential difference required to pass a current 0.2A in a wire of resistance 20 ohm is _____

- a. 100V
- b. **4 V**
- c. 0.01V
- d. 40V

92. Two electric bulbs have resistances in the ratio 1:2. If they are joined in series, the energy consumed in these are in the ratio _____

(**1:2** , 2:1, 4:1, 1:1)

93. Kilowatt-hour is the unit of _____

- a. potential difference
- b. electric power
- c. **electric energy**
- d. charge

94. _____ surface absorbs more heat than any other surface under identical conditions.

- a. White
- b. Rough
- c. **Black**
- d. Yellow

95. The atomic number of natural radioactive element is _____

- a. **greater than 82**
- b. less than 82
- c. not defined
- d. at least 92

96. Which one of the following statements does not represent Ohm's law?

- a. current/potential difference = constant
- b. potential difference/ current = constant
- c. **current = resistance x potential difference**

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II. Fill in the blanks.

1. The flow of charges: Electric current. A continuous closed path of an electric current is _____. The unit of charge: coulomb then current _____

Ans: Electric circuit, Ampere

2. Electric current I : Charge(Q)/ _____ while electric potential V is _____

Ans: Time(t), Work done(W)/ Charge(Q)

3. In series connection of resistors: _____. Then for parallel connection of resistors: _____

Ans: Current is same, potential difference is same

4. The transformation of energy in Electric oven: _____ Electric cell _____

Ans: electrical into heat energy, Electrical into chemical energy

5. The expressions is obtained from ohm's law _____ joule's law _____

Ans: $V=IR$, $H=I^2Rt$

6. The unit of electric power _____ the electric energy _____

Ans: kilowatt, watt hour

7. Examples of non renewable sources of energy _____ renewable sources of energy _____

Ans: fossil fuels(coal, petroleum and natural gas), solar energy, wind, ocean energy

8. Breaking of heavy nucleus is _____ combining of lighter nuclei is _____

Ans: nuclear fission, nuclear fusion

9. The equivalent of 1 volt _____ then for 1 ohm _____

Ans: 1 joule/ 1 coulomb, 1 volt/ 1 ampere

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10. The tap-key is used to _____ and _____ an electric circuit.

Ans: open, close

11. The opposition to flow of current is called _____ and its unit is _____

Ans: resistance, ohm

12. The heat developed in a conductor is directly proportional to the square of _____ and _____ of flow.

Ans: current, time

13. Charcoal burns without flames is _____ and has higher _____

Ans: smokeless, heat efficiency

14. Bio gas is mainly obtained from _____ and popularly known as _____

Ans: cow dung, go bar-gas

15. The rotatory motion of the windmill is used to turn the _____ of the electric generator to generate _____

Ans: turbine, electricity

16. The principal advantages associated with solar cells are that they have _____ and require _____

Ans: no moving part, little maintenances

17. In a nuclear reactor _____ reaction releases energy in a _____ manner.

Ans: fission chain, controlled

18. Madam Marie Curie and her husband discovered the highly radioactive elements _____ and _____

Ans: radium, polonium

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19. The measure of the departure of a reactor from criticality is _____

Ans: nuclear reactivity

20. The fusion process can be carried out at extremely high temperature of the order _____ and these fusion reactions are known as _____

Ans: 10^7 K, thermo nuclear reactions

21. The important primary cells are _____ and _____.

Ans: Daniel, Leclanche cell

22. The amount of energy produced by nuclear fission is _____ times the energy produced by combination of an atom of carbon from _____

Ans: 10 million, coal

23. If the reactivity is positive then the reactor is _____ and the reactivity is negative then the reactor is _____

Ans: super critical, sub critical

17. Magnetic effect of electric current and light

I. Fill in the blanks.

1. The magnification produced by a mirror is $+\frac{1}{3}$. Then the mirror is a _____

Ans: concave mirror

2. The phenomenon of producing an emf in a circuit whenever the magnetic flux linked with a coil changes is _____

Ans: electromagnetic induction

3. An electric current through a metallic conductor produces _____ around it.

Ans: magnetic field

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4. The field of view is maximum for _____

Ans: convex mirror

5. An object is placed 25cm from a convex lens whose focal length is 10cm. the image distance is _____

Ans: 16.66cm

II. Choose the correct answer.

1. The space surrounding a magnet where a magnetic force is experienced is called _____

a. **magnetic field**

b. magnetic lines of force

c. magnetic poles

d. magnetic induction

2. The path taken by the north pole is called _____

a. magnetic force

b. magnetic field

c. **magnetic lines of force**

d. magnetic intensity

3. The characteristics of magnetic lines of forces is _____

a. field lines emerges from north pole and merge at south pole

b. closed curves

c. never cross each other

d. **all the above**

4. When current flows in a wire, it creates _____

a. an electric field outside

b. **magnetic field around it**

c. both the electric and magnetic fields

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- d. neither the electric nor the magnetic fields
5. What is the direction of magnetic needle placed near the conductor in which current flows in clockwise direction?
- a. move towards east**
- b. move towards west
- c. No movement
- d. Move opposite i.e. south to north
6. A current through a horizontal power line flows in east to west direction. What is the direction of the magnetic field at a point directly below it?
- a. South to north
- b. North to south**
- c. East to west
- d. West to east
7. which of the following correctly describes the magnetic field near a long straight wire?
- a. The field consists of straight lines perpendicular to the wire
- b. The field consists of straight lines parallel to the wire
- c. The field consists of radial lines originating from the wire
- d. The field consists of concentric circles centred on the wire**
8. The direction of magnetic field around a straight conductor carrying current can be determined by _____
- a. Fleming's right hand rule
- b. Fleming's left hand rule

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c. Lenz's law

d. None of the above

9. Magnetic field is produced by the flow of current in a straight wire. This phenomenon was discovered by _____

a. Maxwell

b. Faraday

c. Oersted

d. Coulomb

10. The magnetic lines of force, inside a current carrying circular loop are _____

a. circular at the ends but they are parallel to the axis inside the loop

b. along the axis are parallel to each other

c. perpendicular to the axis and equidistant from each other

d. concentric circles

11. What is the direction of magnetic field at the centre of a coil carrying current in anticlockwise direction?

a. along the axis of the coil inwards

b. along the axis of the coil emerges outwards

c. perpendicular to the axis of the coil inwards

d. perpendicular to the axis of the coil outwards

12. The strength of the magnetic field due to a current carrying conductor depends on _____

a. number of turns of a coil

b. magnitude of current

c. size of the coil

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d. all the above

13. The magnetic field produced due to a circular wire at its centre is _____

a. in the plane of the wire

b. perpendicular to the plane of the wire

c. at 45^0 to the plane of the wire

d. none of the above

14. A current carrying conductor placed in a magnetic field experiences _____

a. mechanical force

b. magnetic force

c. electrical force

d. gravitational force

15. A current carrying conductor experiences a force in a magnetic field was shown by _____

a. Hans Christian Oersted

b. Michael Faraday

c. Andre Marie Ampere

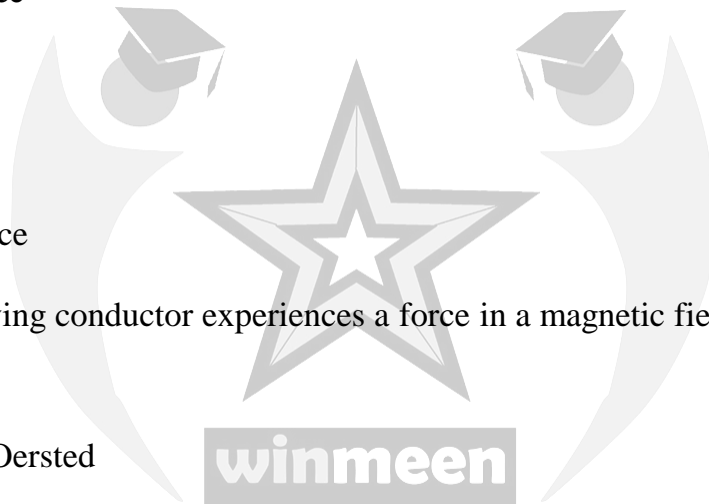
d. Fleming

16. Name the effect of current when a current carrying conductor is placed in a magnetic field _____

a. electrical effect

b. mechanical effect

c. magnetic effect



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d. heating effect

17. The direction of mechanical force produced by a current carrying conductor in a magnetic field is _____

a. perpendicular to the direction of magnetic field only

b. perpendicular to the direction of current flow

c. perpendicular to both the direction of current and magnetic field

d. parallel to the direction of magnetic field

18. The direction of force on the current carrying conductor depends upon _____

a. direction of current

b. direction of magnetic field

c. direction of suspension of a conductor

d. direction of current and direction of magnetic field

19. The magnitude of mechanical force acting on a current carrying conductor in proportional to _____

a. current

b. magnetic induction

c. length of the conductor

d. all the above

20. The force of a conductor is maximum when the current carrying conductor is _____

a. along the magnetic field

b. at right angles to the magnetic field

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c. towards east

d. towards west

21. When the current carrying conductor is placed along the direction of magnetic field, then the force is _____

a. maximum

b. minimum

c. zero

d. equal to one

22. When a current carrying conductor is placed in a strong magnetic field, the direction of force is determined by _____

a. Right hand thumb rule

b. Fleming's left hand rule

c. Fleming's right hand rule

d. Faraday's law

23. In Fleming's left hand rule, the first three fingers of the left hand are stretched at _____

a. acute angles

b. obtuse angles

c. right angles

d. 180°

24. The motion of the conductor in Fleming's left hand rule is represented by _____

a. fore finger

b. thumb

c. middle finger

d. none

25. In Fleming's left hand rule, the forefinger represents the direction of _____

a. magnetic field

b. current

c. motion of a conductor

d. electric field

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26. The direction of current in Fleming's left hand rule is represented by _____

- a. thumb
- b. forefinger
- c. **middle finger**
- d. little finger

27. An electric motor converts _____

- a. mechanical energy into electrical energy
- b. mechanical energy into heat energy
- c. electrical energy into heat energy
- d. **electrical energy into mechanical energy**

28. The principle of electric motor is based on _____

- a. **mechanical effect of current**
- b. electric induction
- c. magnetic induction
- d. heating effect of current

29. The coil used in a DC motor is called _____

- a. split ring
- b. **armature**
- c. resistance coil
- d. induction coil

30. In DC motor, the split rings are known as _____

- a. slip rings
- b. armature
- c. **commutator**
- d. resistor

31. An electric motor uses _____ to reverse current.

- a. transformer
- b. **sliprings**

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c. commutator

d. brushes

32. The direction of force in DC motor is given by _____

a. Fleming's left hand rule

b. Fleming's right hand rule

c. Right hand thumb rule

d. Lenz law

33. In DC motor, the two equal and opposite forces constitutes _____

a. torque

b. magnetic induction

c. couple

d. restoring

34. In DC motor, the couple rotates the coil in the _____

a. clockwise direction

b. upward direction

c. anticlockwise direction

d. downward direction

35. The coil in electric motor continues to rotate in the anticlockwise direction as long as _____

a. existence of magnetic field

b. current in the coil is zero

c. at restoring force in the coil

d. current flows through it

36. The couple in an electric motor is to _____

a. vibrate the coil

b. stop the coil

c. rotate the coil

d. oscillate the coil

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37. The power of an electric motor can be increased by _____

a. increasing the number of turns in armature

b. decreasing the number of turns in the coil

c. decreasing the current

d. decreasing the strength of the magnetic field

38. In an electric motor when the current is increased, _____

a. energy is increased

b. power is decreased

c. power is increased

d. energy is decreased

39. The total number of magnetic lines of forces crossing a given area is _____

a. magnetic field

b. magnetic induction

c. magnetic strength

d. magnetic flux

40. The commercial motors use _____

a. electro magnet

b. permanent magnet

c. horse shoe magnet

d. bar magnet

41. The phenomenon of electromagnetic induction was discovered by _____

a. Ampere

b. Christian Oersted

c. Lenz

d. Michael Faraday

42. Electromagnetic induction is involved in _____

a. rotation of the coil of an electric motor

b. charging a body with negative

c. production of current by relative motion between a magnetic and a coil

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d. generation of magnetic field due to a current carrying loops

43. The generation of emf by varying the magnetic field is _____

a. electrostatic induction

b. magnetic induction

c. electromagnetic induction

d. mechanical effect of current

44. In Faraday's experiments, there is a deflection in the galvanometer when a _____

a. magnet is moved towards the coil

b. coil is moved towards the magnet

c. by changing the magnitude of current

d. all the above

45. The current due to the relative motion between the coil and the magnet is called _____

a. direct current

b. alternating current

c. induced current

d. none of these

46. The phenomenon of inducing an emf, when the magnetic flux linked with a coil, changes is called _____

a. electromagnetic induction

b. electric induction

c. electrostatic induction

d. magnetic induction

47. The induced emf depends on _____

a. magnetic induction

b. number of turns of the coil

c. relative speed between the magnet and the coil

d. all the above

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48. The induced emf is independent on _____

- a. magnetic induction
- b. number of turns of the coil
- c. relative speed between the magnet and the coil
- d. length of the magnet**

49. Who stated that whenever there is a change in the magnetic flux linked with a coil an emf is induced in it?

- a. Faraday's law**
- b. Newton's law
- c. Fleming's left hand rule
- d. generator rule

50. The direction of induced current is given by _____

- a. Ampere rule
- b. Fleming's left hand rule
- c. Fleming's right hand rule**
- d. Thumb rule

51. When a current carrying conductor is placed in a strong magnetic field, the direction of force is determined by _____

- a. Fleming's left hand rule**
- b. Faraday's law
- c. Fleming's right hand rule
- d. Right hand thumb rule

52. Fleming's right hand rule is also known as _____

- a. motor rule
- b. cork screw rule
- c. thumb rule
- d. generator rule**

53. In Fleming's right hand rule, the thumb represents _____

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a. direction of magnetic field

b. direction of induced current

c. direction of force

d. **motion of conductor**

54. The middle finger in the Fleming's right hand rule represents _____

a. **direction of induced current**

b. direction of magnetic field

c. direction of force

d. motion of conductor

55. Which phenomenon is used to produce large currents?

a. Magnetic induction

b. Electrostatic induction

c. **Electromagnetic induction**

d. Friction

56. Generator is used to convert _____

a. **mechanical into electrical energy**

b. electrical into mechanical energy

c. electrical into sound energy

d. sound into electrical energy

57. AC generator works on the principle of _____

a. photo electric effect

b. mechanical effect of current

c. electrostatic induction

d. **electromagnetic induction**

58. In an Ac generator, the direction of the induced emf at any instant is given by _____

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- a. **Fleming's right hand rule** b. Fleming's left hand rule
- c. Right hand thumb rule d. Cork screw rule
59. The field magnet used in AC generator is _____
- a. an electromagnet b. horse shoe magnet
- c. bar magnet **d. powerful permanent magnet**
60. In generator, the armature is rotated about its axis _____
- a. parallel to the magnetic field
- b. parallel to the direction of induced emf
- c. perpendicular to the direction of magnetic field**
- d. perpendicular to the direction of induced emf
61. The two ends of the coil in AC generator is connected to _____
- a. brushes **b. slip rings**
- c. split rings d. axle
62. When the coil is rotated about an axis perpendicular to the direction of magnetic field in AC generator, there is a continuous change in the _____
- a. induced current b. induced emf
- c. magnetic pole strength **d. magnetic flux**
63. In generator, the change in the magnetic flux linked with the coil induces _____
- a. charges b. current
- c. **an emf** d. electric field
64. The direction of induced current at any instant in generator is given by _____

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a. cork screw rule

b. ampere's rule

c. **Fleming's right hand rule**

d. Fleming's left hand rule

65. In AC generator, the emf varies for every _____

a. full rotation of the coil

b. **half rotation of the coil**

c. one fourth rotation of the coil

d. three fourth rotation of the coil

66. A current which changes direction after equal intervals of time is _____

a. direct current

b. eddy current

c. **alternating current**

d. steady current

67. The principle used in DC generator is _____

a. mechanical effect of current

b. **electromagnetic induction**

c. electrostatic induction

d. Ampere's law

68. DC generator is used to generate _____

a. steady current

b. eddy current

c. **unidirectional current**

d. alternating current

69. The ends of the coil in DC generator is connected to _____

a. **split rings**

b. slip rings

c. brushes

d. axle

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70. The rectangular coil of many turns wound on a soft iron core is called _____

- a. split rings
- b. carbon brushes
- c. **armature**
- d. slip rings

71. The split rings in a DC generator is used to _____

- a. increase the current
- b. decrease the current
- c. **reverse the current**
- d. invert the current

72. Which part is used to convert AC into DC?

- a. slip rings
- b. carbon brushes
- c. coil
- d. **split rings**

73. The induced current from the generator is passed to the external circuit through _____

- a. split rings
- b. armature
- c. commutator
- d. **carbon brushes**

74. In an AC generator, the emf obtained can be increased by _____

- a. increasing the numbers of turns of the coil
- b. increase the speed of rotation of the coil
- c. using a strong field magnet
- d. **all the above**

75. Alternating current changes its direction _____

- a. uniformly
- b. **periodically**
- c. instantaneously
- d. spontaneously

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76. Mirrors having a spherical surface of reflection are _____

- a. plane mirrors
- b. lenses
- c. **spherical mirrors**
- d. prism

77. A spherical mirror, which has reflecting curved inward surface is _____

- a. **concave mirror**
- b. convex
- c. Plano concave
- d. Plano convex

78. The mirror that diverges the light rays is _____

- a. **concave**
- b. convex
- c. plane
- d. none

79. The centre of the sphere, of which a spherical mirror is a part is called _____

- a. pole
- b. radius of curvature
- c. focus
- d. **centre of curvature**

80. The centre of the reflecting surface of a spherical mirror is _____

- a. centre of curvature
- b. focus
- c. **pole**
- d. radius of curvature

81. The point at which the rays are converged or diverged by a mirror is _____

- a. pole
- b. **principal focus**
- c. principal axis
- d. centre of curvature

82. The radius of curvature of the spherical mirror is equal to _____

- a. focal length
- b. **twice the focal length**
- c. thrice the focal length
- d. half of the focal length

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83. Which mirror is called converging mirror?

- a. plane
- b. convex
- c. **concave**
- d. plane concave

84. A virtual and equal sized image is formed by _____

- a. concave mirror
- b. convex mirror
- c. **plane mirror**
- d. none

85. To form a real image, the mirror required is _____

- a. **concave**
- b. convex
- c. plane
- d. none

86. A virtual and enlarged image is formed by _____

- a. convex mirror
- b. **concave mirror**
- c. plane mirror
- d. both concave and convex mirror

87. I. A real image is always inverted

II. A virtual image is always erect

- a. only I is true
- b. only II is true
- c. **both I and II are true**
- d. neither is true

88. To form a virtual image, we use _____

- a. only convex mirror
- b. only concave mirror
- c. **either convex or concave mirror**
- d. plane mirror

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89. According to _____ of light, angle of incidence is equal to angle of reflection.

- a. refraction
- b. dispersion
- c. reflection**
- d. total internal reflection

90. A coin at the bottom of a bucket filled with water is appeared to be raised due to _____

- a. dispersion
- b. reflection
- c. diffraction
- d. refraction**

91. To obtain magnified, erect image in a concave mirror, object should be held _____

- a. at pole (P)
- b. at focus(F)
- c. beyond $2F$
- d. between O and (F)**

92. An object is placed at focus of a concave mirror, image is formed at _____

- a. infinity**
- b. behind the mirror
- c. focus
- d. centre of curvature

93. The image formed by a concave mirror is real, inverted and of same size as that of the object. The position of the object is _____

- a. at F
- b. at C**
- c. between F and $2F$
- d. beyond $2F$

94. An object is placed between F and $2F$ of a concave mirror, image will be formed _____

- a. at infinity
- b. beyond F
- c. beyond $2F$**
- d. between F and O

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95. To obtain same, real and inverted image in concave mirror object should be placed _____

- a. at F
- b. at $2F$
- c. beyond $2F$
- d. between F and optical centre

96. When an object is placed between F and optical centre O in concave mirror the image formed will be _____

- a. real-inverted and diminished
- b. virtual- inverted and diminished
- c. **virtual-erect and diminished**
- d. virtual-erect and enlarged

97. The mirror is used _____

- a. to get powerful parallel beam of light
- b. to obtain a magnified images
- c. **to produce heat**
- d. all the above

98. Concave mirror is used _____

- a. to get powerful parallel beam of light
- b. to obtain magnified images
- c. to produce heat
- d. **all the above**

99. Which mirror is used in solar furnaces?

- a. **concave**
- b. convex

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c. plane

d. none

100. The image formed by a spherical is virtual, erect and smaller in size, whatever be the position of the object, the mirror is _____

a. concave

b. **convex**

c. plane

d. both convex and concave

101. When an object is placed at the principal focus of the convex lens the image formed is _____

a. enlarged

b. diminished

c. **highly enlarged**

d. highly diminished

102. In automobiles, the mirror used to see the rear view is _____

a. concave

b. plane

c. **convex**

d. parabolic mirror

103. Convex mirrors are preferred because _____

a. it gives powerful parallel beams

b. it concentrates the light

c. **always give an erect image**

d. it gives real inverted image

104. Which mirror is used by ENT specialists and dentists?

a. **concave mirror**

b. plane

c. convex

d. parabolic

105. Which mirror is used as shaving mirror?

a. plane

b. **concave**

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c. convex

d. parabolic

106. The mirror used by a dental surgeon is _____

a. plane

b. convex

c. **concave**

d. both concave and convex

107. All the distances measured to the right of the origin is taken as _____

a. **positive**

b. negative

c. either positive or negative

d. none

108. The distance of the image is from the pole of the mirror is called _____

a. focal length

b. **image distance**

c. object distance

d. principal axis

109. The distance of the principal focus from the pole is called _____

a. focal length

b. image distance

c. **object distance**

d. principal axis

110. Object distance is the distance between _____

a. pole and the image

b. **pole and the object**

c. principal focus and the pole

d. none of the above

111. In case of spherical mirrors, the mirror formula is _____

a. $\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$

b. $\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$

c. $\frac{1}{u} = \frac{1}{v} + \frac{1}{f}$

d. $\frac{1}{v} = \frac{1}{f} + \frac{1}{u}$

112. For a concave mirror, value of v is positive, if image formed is _____

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- a. **virtual**
c. diminished
b. real
d. magnified

113. Which mirror has a negative focal length?

- a. Plane b. **Concave**
- c. Convex d. All the above

114. Which mirror has a negative value of v and forms a real image?

- a. Plane b. Convex
c. **Concave** d. None

115. For a convex mirror, the image distance is always _____

- a. **positive** b. negative
c. small d. large

116. The distance of the image of an object in spherical mirror is measured from the _____

- a. focus
b. centre of curvature
c. **pole**
d. infinity

117. Which of the following represent the unit of magnification?

- a. dioptre b. metre
c. decimetre d. **no unit**

118. Refraction takes place through _____

- a. opaque b. **transparent**
- c. metals d. none

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119. Magnification of a concave mirror is _____

- a. less than one
- b. more than one
- c. **more or less than one**
- d. infinity

120. A convex mirror has a magnification which is always _____

- a. equal to one
- b. **less than one**
- c. more than one
- d. infinity

121. When a ray of light travels from water to glass, it bends _____

- a. **towards normal**
- b. away from normal
- c. neither towards nor away from normal
- d. along the normal

122. Light travels fastest in _____

- a. **vacuum**
- b. air
- c. glass
- d. diamond

123. No refraction occurs when a ray goes from _____

- a. rarer to denser medium
- b. denser to rarer medium
- c. **one medium to other medium of same optical density**
- d. none

124. The angle between the normal and the refracted ray is called _____

- a. **angle of reflection**
- b. angle of refraction

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c. angle of incidence

d. angle of deviation

125. The second law of refraction is stated by _____

a. C.V.Raman

b. Newton

c. **Snell**

d. Gallile

126. Snell's law of refraction states _____

a. $\mu = \frac{\sin i}{\sin r}$

b. $\mu = \frac{\sin r}{\sin i}$

c. $\sin i = \mu$

d. $\mu = \frac{1}{\sin r}$

127. The velocity of light in air is _____

a. $1.8 \times 10^8 \text{ m/s}$

b. **$3 \times 10^8 \text{ m/s}$**

c. $2.25 \times 10^8 \text{ m/s}$

d. $3 \times 10^6 \text{ m/s}$

128. Value of refractive index does not depend on _____

a. angle of incidence

b. substance of medium

c. **temperature**

d. speed of light in medium

129. An imaginary straight line passing through the two centres of curvature of a lens is _____

a. focal length

b. radius of curvature

c. aperture

d. **principal axis**

130. The effective diameter of length of a lens from whose refraction takes place is called _____

a. focus

b. centre of curvature

c. **aperture**

d. optic centre

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131. In case of thin lenses, radius of curvature is _____

- a. **greater than aperture**
- b. lesser than aperture
- c. equal to aperture
- d. very much lesser than aperture

132. The central point of a lens is called _____

- a. centre of curvature
- b. **optical centre**
- c. principal focus
- d. aperture

133. Optic centre is _____

- a. necessarily at the centre of lens
- b. necessarily inside the lens
- c. **necessarily on principal axis**
- d. can be anywhere

134. The light rays passing through the optic centre will _____

- a. converge
- b. diverge
- c. reflect
- d. **emerge undeviated**

135. A ray passing through the focus of the lens will _____

- a. converge
- b. diverge
- c. **emerges parallel to the principal axis**
- d. none

136. An object is placed away from $2F$ of a convex lens, image is formed _____

- a. at F
- b. **between F and $2F$**

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c. at F

d. at infinity

137. Virtual, erect and enlarged image is produced by convex lens when the object is placed _____

a. beyond $2F$

b. between F and $2F$

c. at F

d. **between F and optic centre(O)**

138. If the object at $2F$ in case of a convex lens, image is necessarily at _____

a. F

b. **$2F$**

c. infinity

d. O

139. The image formed by a convex lens, when the object is placed between F and $2F$ is _____

a. real-inverted and diminished

b. real-inverted and of same size

c. **real- inverted and enlarged**

d. virtual- erect and enlarged

140. A convex lens does not produce _____

a. **virtual diminished image**

b. virtual enlarged image

c. real magnified image

d. real diminished image

141. For a convex lens, as the object distance(u) increases, the image distance(v)_____

a. remains constant

b. increases

c. **decreases**

d. is infinity

142. Which lens is used as a magnifying glass?

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a. **convex**

b. concave

c. biconcave

d. Plano concave

143. A concave lens is a_____

a. **diverging lens**

b. converging lens

c. magnifying lens

d. plane lens

144. The image formed by concave lens is always_____

a. real-inverted and diminished

b. real-inverted and of same size

c. real- erect and enlarged

d. **virtual-erect and diminished**

145. Which statement is correct about a concave lens_____

a. object distance (u) is negative

b. focal length is negative

c. image distance(v) is negative

d. **all the above**

146. The lens formula is _____

a. $\frac{1}{v} + \frac{1}{u} = -\frac{1}{f}$

b. $\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$

c. $\frac{1}{v} + \frac{1}{u} = \frac{1}{f}$

d. $\frac{1}{v} - \frac{1}{f} = -\frac{1}{u}$

147. The reciprocal of focal length of a lens is _____

a. principal focus

b. **power**

c. magnification

d. image distance

148. The SI unit of power of lens is _____

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a. metre

b. decimetre

c. **diopetre**

d. no unit

149. The focal length of lens is 1 metre, then its power is _____

a. **1 diopetre**

b. 1 metre

c. 1 decimetre

d. 1

150. Image of real object formed by concave lens is _____

a. always real

b. **always virtual**

c. sometimes real

d. sometimes virtual

151. Various colours in a rainbow is due to _____

a. reflection

b. refraction

c. deviation

d. **dispersion**

152. A prism is a transparent medium bounded by two _____

a. **non-parallel plane surfaces**

b. parallel plane surfaces

c. spherical surfaces

d. concave surfaces

153. Dispersion takes place due to _____

a. **different speed of different colours of light**

b. all colours of light travel with same speed

c. reflection by the prism

d. transparent medium

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154. Spectrum is the band of distinct _____

- a. 7 colours
- b. 9 colours
- c. 5 colours
- d. 8 colours

155. Twinkling of stars is due to _____

- a. reflection
- b. dispersion
- c. atmospheric refraction
- d. none of the above

156. White light is made up of _____

- a. seven colours
- b. six colours
- c. all colours
- d. no colour

157. Light enters the eye through _____

- a. pupil
- b. iris
- c. cornea
- d. retina

158. In a human eye, the image is formed at _____

- a. pupil
- b. iris
- c. cornea
- d. retina

159. The amount of light entering the eye is adjusted by _____

- a. pupil
- b. iris
- c. cornea
- d. retina

160. The size of pupil of the eye is adjusted by _____

- a. cornea
- b. iris
- c. retina
- d. ciliary muscles

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161. Eye lens is a _____

- a. **double convex lens**
- b. double concave
- c. Plano convex lens
- d. Plano concave lens

162. The eye lens forms an image on the retina is _____

a. **inverted – real image**

- b. erect- real image
- c. virtual erect image
- d. virtual-inverted image

163. A person can see an object, when its image is formed _____

- a. **in front of retina**
- b. in front of cornea
- c. away from retina
- d. on the retina

164. The least distance of distinct vision is _____

- a. **25 cm**
- b. 35cm
- c. 20 cm
- d. infinity

165. Focal length of eye lens increases permanently or contraction of the eye ball results in _____

- a. myopia
- b. presbyopia
- c. **hypermetropia**
- d. astigmatism

166. A convex lens is used to rectify ____

- a. myopia
- b. presbyopia
- c. **hypermetropia**
- d. astigmatism

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167. Ageing results in _____

- a. myopia
- b. **presbyopia**
- c. hypermetropia
- d. astigmatism

168. Elongation of the eye ball results _____

- a. **myopia**
- b. presbyopia
- c. hypermetropia
- d. astigmatism

169. Which lens is used to rectify myopia?

- a. convex
- b. **concave**
- c. bifocal
- d. cylindrical

170. Myopia is also known as _____

- a. **near sightedness**
- b. far sightedness
- c. refractive defects
- d. none

171. An old person cannot see nearby and distant objects can use _____

- a. convex
- b. concave
- c. cylindrical
- d. **bifocal**

172. Presbyopia arises due to _____

- a. contraction of eye ball
- b. elongation of eye ball
- c. **diminishing flexibility of eye ball**
- d. none of the above

173. The person cannot donate eyes, who is suffering from _____

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a. asthma

b. diabetes

c. hypertension

d. leukaemia

174. Focal length of the eye lens is _____

a. fixed

b. variable

c. either fixed or variable

d. neither fixed nor variable

175. Variable focal length of eye lens is responsible for _____

a. accommodation of eye

b. colour blindness

c. persistence of vision

d. least distance of distinct vision

176. When we go out in the bright sunlight, the pupil of the eye _____

a. contracts

b. expands

c. sometimes expands

d. neither contracts nor expands

177. Which telescope was carried by a space shuttle?

a. astronomical

b. Hubble

c. terrestrial

d. none

178. Hubble's telescope is used _____

a. to measure the expansion of universe

b. to find black holes

c. to observe distant supernova

d. all the above

179. The radius of curvature of a concave mirror is -10 cm. its focal length is ____

a. 20 cm

b. -5 cm

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c. 5 cm

d. 10 cm

180. Concave mirror produces 10 cm long image of an object of height 2 cm. The magnification is _____

a. **5**

b. 20

c. 10

d. 2

181. Which of the following controls the pupil of the human eye?

a. cornea

b. citrary muscles

c. **Iris**

d. Retina

182. A device which converts electrical energy into mechanical energy is _____

a. Generator

b. Motor

c. Transformer

d. Power supply

183. The defect myopia can be corrected by using a _____

a. convex lens

b. concave lens

c. concave mirror

d. convex mirror

184. The defect hypermetropia can be corrected by using a _____

a. **convex lens**

b. concave lens

c. concave mirror

d. convex mirror

185. The amount of induced e.m.f when the magnetic field linked with the coil changes is _____

a. **magnetic induction**

b. current produced

c. e.m.f produced

d. changing current

186. _____ discovered electromagnetic induction.

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a. Oersted

b. Faraday

c. Edison

d. Newton

187. The type of mirror used in Hubble space telescope is _____

a. Hyperbolic mirror

b. Concave mirror

c. Convex mirror

d. Plane mirror

II. Match the following

1.

1. Convex mirror

a. Concave lens

2. Radius of curvature of a spherical mirror

b. Metre

c. Focal length

c. Reflecting surface is curved outward

4. Myopia

d. 2 x focal length

Ans: 1-c,2-d,3-b,4-a

2.

1. Refractive index

a. $\frac{\text{image distance}}{\text{object distance}}$

2. Power of a lens

b. Convex lens

3. Hypermetropia

c. Dioptre

4. Magnification

d. $\frac{\text{speed of light in air}}{\text{speed of light in medium}}$

Ans: 1-d,2-c,3-b,4-a

3.

1. Beyond 2F

a. Infinitely large

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2. At 2F
3. At principal focus F
4. Between F and 2F
- b. Enlarged
- c. Same size
- d. Diminished

Ans: 1-d,2-c,3-b,4-a

4.

1. The focal length of a spherical mirror
2. Rainbow
3. Rear view mirror
4. Twinkling of stars
- a. Convex mirror
- b. Atmospheric refraction
- c. $\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$
- d. Dispersion

Ans: 1-c,2-d,3-a,4-b

5.

1. Reciprocal of focal length
2. Search light and vehicles
3. Focal length
4. Supernovae
- a. Metre
- b. Telescope
- c. Power of a lens
- d. Convex lens

Ans: 1-c,2-d,3-a,4-b

6.

1. Iris
2. Optic nerves
3. Retina
4. Pupil
- b. Sending signal to the brain
- b. A delicate membrane
- c. Controls the amount of light entering
- d. A dark muscular diaphragm

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Ans: 1-d,2-a,3-b,4-c

7.

- | | |
|-------------------|-------------------------------------|
| 1. Concave mirror | a. Dispersion |
| 2. Refraction | b. Virtual and erect image |
| 3. Concave lens | c. Snell's law |
| 4. Prism | d. To produce heat in solar furnace |

Ans: 1-d,3-c,3-b,4-a

8.

- | | |
|------------------------------------|--|
| 1. Electric motor
energy | a. Converts mechanical energy into electrical |
| 2. Electric generator | b. Generate electrical signal when illuminated |
| 3. Height sensitive cells | c. Black holes |
| 4. Hubble's observations
energy | d. Converts electrical energy into mechanical |

Ans: 1-d,2-a,3-b,4-c

III. Fill in the blanks

1. Magnetic field has both _____ and _____

Ans: magnitude, direction

2. Inside a magnet, the direction of magnetic field lines is from its _____ pole to its _____ pole.

Ans: south, north

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3. The _____ of magnetic field produced by the electric current depends upon the direction of flow of _____

Ans: direction, current

4. The magnetic field produced by a current carrying conductor, depends _____ on the _____ from it.

Ans: inversely, distance

5. A current carrying conductor generates _____ around it.

Ans: magnetic field

6. The direction of force on the conductor depends upon the direction of _____ and the direction of _____

Ans: current, magnetic field

7. In Fleming's left hand rule, fore finger points in the direction of _____ and thumb points in the direction of _____ acting on the conductor.

Ans: an electromagnet, a soft iron core

8. Fleming's left hand rule, is applied to find the direction of _____ on a current carrying conductor placed in a _____

Ans: rotating device, commutator

9. Commercial motors use _____ and _____

Ans: Fleming's right hand rule

10. An electric motor is a _____ and split acts as a _____

Ans: induced current, magnetic field

11. The direction of induced current can be found by _____

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Ans: Fleming's right hand rule

12. In Fleming's right hand rule, middle finger shows the direction of _____ and fore finger represents the direction of _____

Ans: induced current, magnetic field

13. In an electric motor _____ enhances the power and _____ reverses the direction of current.

Ans: soft iron core, split ring

14. For spherical mirrors of small apertures, the _____ is equal to _____ the focal length.

Ans: radius of curvature, twice

15. Concave mirrors are used in _____ and _____

Ans: torches, search lights

16. Small concave mirrors are used in _____ and large concave mirrors are used in _____

Ans: vehicles, solar furnaces

17. A virtual and erect image is formed when an object is placed at _____ and between infinity and _____ of the convex mirror.

Ans: infinity, optical centre

18. The unit of power is _____ and the unit of focal length is _____

Ans: dioptre, metre

19. The light sensitive cells in the retina generate _____ and they are sent to the brain via the _____

Ans: electric signal, optic nerves

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20. Myopia is corrected by _____ and hypermetropia is corrected by _____ or _____

Ans: concave lens, converging lens or convex lens

21. A common type of bi-focal lenses consists of both _____ and _____ lenses.

Ans: concave lens, convex

22. When current flows in a wire, it creates _____, _____

Ans: a magnetic field around it, perpendicular in direction

23. _____ energy is converted into _____ energy by an electric generator.

Ans: mechanical, electrical

24. The direction of the induced current is obtained by _____

Ans: Fleming's right hand rule

25. The direction of force on the conductors in Fleming's left hand rule is represented by _____ and middle finger represents _____

Ans: Thumb, current

26. Electric motor converts _____ energy into _____

Ans: electrical, mechanical

27. The phenomenon of electromagnetic induction is to produce _____ whenever there is a change in _____

Ans: induced emf, magnetic flux

28. DC generator produces _____ current whereas AC generator produces _____

Ans: unidirectional, alternating

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29. A spherical mirror whose reflecting surfaces is curved inwards is called _____ and if the reflecting surface is curves outwards then it is _____

Ans: concave, convex

30. The straight line passing through the _____ and the _____ of a spherical mirror is called principle axis.

Ans: pole, centre of curvature

31. The distance between them _____ and the _____ of a spherical mirror is called the focal length.

Ans: pole, principal focus

32. Concave mirrors are used in _____, _____ and vehicles head lights to get powerful parallel beams of light.

Ans: Torch light, search lights

33. Mirror that converges light: _____

Mirror which diverges: _____

Ans: concave mirror, convex mirror

34. The centre of the mirror : _____ then for the centre of the sphere which a mirror is a part: _____

Ans: pole, centre of curvature

35. In a convex mirror V is always: _____ then for concave lens: _____

Ans: positive, negative

36. Magnification of a mirror: _____ then for lens: _____

Ans: $\frac{-v}{u}$, $\frac{v}{u}$

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37. Shaving mirror : _____, then rear view mirror : _____

Ans: concave, convex

38. Twinkling stars: _____, then Rainbow : _____

Ans: refraction of light, Dispersion of light

39. For _____ lens, V is always negative then for _____ lens: v is positive.

Ans: concave, convex

40. For spherical mirror: $\frac{1}{f} =$ _____, then for lenses: $\frac{1}{f} =$ _____

Ans: $\frac{1}{v} + \frac{1}{u}$, $\frac{1}{v} - \frac{1}{u}$

41. The unit of focal length: _____ then for power: _____

Ans: metre, dioptre

42. A convex lens is used for rectification of: _____, then concave lens: _____

Ans: long sightedness, short sightedness

43. A _____ mirror and _____ lens always form virtual and diminished image.

Ans: convex, concave

44. For a concave mirror, value of v is positive if the image formed is _____ and for negative value of v the image formed is _____

Ans: virtual, real

45. A _____ mirror or _____ lens has a negative focal length.

Ans: convex, concave

46. Convex lens forms an erect and enlarged image, when object is placed between _____ and _____

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Ans: focus, optic centre

47. A beam of light bends towards the normal when it passes from _____ medium to _____ medium.

Ans: denser, rarer

48. The ratio of the size of _____ to size of _____ is called refractive index of the medium.

Ans: angle of incidence, angle of refraction

49. When the light is very bright, pupil becomes _____ and when the light is dim, it becomes _____ in size.

Ans: smaller, larger

50. Iris controls the size of the _____ and pupil controls the _____ entering into the eye.

Ans: pupil, amount of light

51. Excessive curvature of cornea results in _____ but when eyeball becomes shorter than normal, person suffers from _____.

Ans: myopia, hypermetropia

52. _____ lens is present in human eye and the image is formed at _____

Ans: convex lens, retina