# TEST III PHYSICS

1. Nuclear sizes are expressed in a unit named
   a. Fermi          b. angstrom          c. Newton          d. tesla

2. What is the SI unit of the Planck's constant?
   a. watt second          b. watt per second
   c. joule second          d. joule per second

3. If the kinetic energy of a body is decreased by 36%, the percentage decrease in the linear momentum will be
   a. 12%          b. 20%          c. 28%          d. 36%

4. Choose the scalar quantity from the following
   a. energy          b. torque          c. momentum    d. force

5. The period of revolution of a geostationary satellite is
   a. 12 hours          b. 1 day          c. 30 days          d. 365 days

6. A person climbing a hill bends forward in order to
   a. avoid slipping
   b. increase speed
   c. keep the centre of gravity of his body within his feet
   d. keep the centre of gravity of his body outside his feet

7. The density of sea water increase as
   a. depth and salinity increase
   b. depth and salinity decrease
   c. depth increases and salinity decreases
   d. depth decreases and salinity increases

8. When a ship enters a sea from a river, it rises a little because
   a. density of sea water is less than that of river water
   b. sea is deeper than river
   c. sea has more water than river
   d. sea water being denser than river water, exerts a greater upthrust on the ship

9. The relative density of a liquids is measured by using an instrument called
   a. altimeter     b. hydrometer          c. barometer          d. galvanometer

10. A hydrogen – filled balloon rises in air because
    a. the atmospheric pressure decreases with altitude
    b. the acceleration due to gravity decreases with altitude
    c. the density of air decreases with altitude
    d. the buoyant force exerted by the air on the balloon is greater than the weight of the balloon

11. Arrange in descending order of wave length (long to short)
    I. Infra – red                    II) Ultra violet
    III. Gamma rays                   IV) Micro waves
    **The correct order is**
    a) IV, I, II III                  b) I, IV, II, III
    c) I, II, III, IV                 d) III, II, I, IV

12. Electromagnetic radiation are given out due to
    a. jumping of electrons from low energy to high level energy
    b. jumping of electrons from high energy to low level energy
    c. Revolution of electrons in specified orbits
    d. None of these

13. In general, when the temperature of a metal is raised, its conductance
    a) increases                          b) decreases
    c) remains the same                   d) first decreases then increases

14. Which falls down fastest in vacuum, a feather, a wooden ballor a steel ball?
    a) wooden ball          b) feather
    c) steel ball           d) all will fall down at the same speed

15. Reed instrument without pipe is
    a) Trumpet              b) Harmonium
    c) Flute                d) Nathaswaram

16. If sound persists even after its source has stopped producing sound, then its called
    a) forced vibration     b) free vibration     c) resonance     d) reverberation

17. The velocity of a freely falling body
    a) decreases                          b) increases
    c) remains constant                   d) may increase or may decrease

18. Nodes are
    a.  Positions of maximum displacement
    b.  Positions of no displacement
    c.  A position between no displacement and maximum displacement
    d.  None of these

19. The process in which heat is transmitted  without the aid of the intervening medium is
    a) conduction                         b) convection
    c) radiation                          d) none of these

20. For the measurement of very low temperature we use
    a. mercury thermometer
    b. vapour pressure thermometer
    c. resistance thermometer
    d. radiation thermometer

21. Which of the following actions will double the period of a simple pendulum?
    a. double the length of the pendulum
    b. double the mass of the bob
    c. double the mass of the bob $\sqrt{2}$ times greater
    d. make the pendulum four times long.

22. Which of the following functions is performed by a photo-cell?
    a. it converts magnetic energy into electrical energy
    b. it converts chemical energy into electrical energy
    c. it converts electrical energy into light electrical
    d. it converts light energy into electrical energy

23. The radioactivity decay follows

    a) $N = N_o e^{\alpha t}$ 　　　　　　　　　　　　 b) $N = N_o e^{\alpha 2t}$

    c) $N = N_o e^{-\alpha t}$ 　　　　　　　　　　　　 d) $N = N_o e^{-\alpha 2t}$

24. Which of the following is an insulator?
    a) aluminium 　　　　 b) copper 　　　　 c) glass 　　　 d) silver

25. Light emerging from a nicol prism has
    a. vibrations in all directions
    b. no vibration at all
    c. vibration in two mutually perpendicular directions
    d. vibrations in only one direction

26. According to Newton's formula, the velocity of sound in a medium is

    a) $V = \sqrt{\dfrac{E}{d}}$ 　　　　　　　　　　　　 b) $V = \dfrac{\sqrt{E}}{d}$

    c) $V = \dfrac{E}{\sqrt{d}}$ 　　　　　　　　　　　　 d) $V = \dfrac{EA}{d}$

27. The splitting of a beam of white light into different color is
    a) refraction 　　　　　　　　　　 b) reflection
    c) dispersion 　　　　　　　　　　 d) none of these

28. The density of pure water will be
    a) maximum at $4\,^\circ$C 　　　　　　　 b) minimum at $4\,^\circ$C
    c) maximum at $0\,^\circ$C 　　　　　　　 d) minimum at $0\,^\circ$C

29. When a vehicle passes, TV reception gets distorted due to
    a. metal reflecting radio waves
    b. sparkplug creating electromagnetic disturbances
    c. passing vehicle affecting TV components
    d. use of electronic ignition system

30. The lowest level energy band in a solid is called
    a) valence bond 　　　　　 b) conduction bond
    c) Fermi level 　　　　　　 d) equal level

31. Pure silicon is used in
    a) Electronic industry 　　　　　 b) Textile industry
    c) Paint industry 　　　　　　　 d) Pharmaceuticals

32. Electrons can be accelerated to very high energies by means of
    a) thyratrons 　　　　　　　　 b) magnetrons
    c) betatrons 　　　　　　　　　 d) cyclotrons

33. The size of the atomic nucleus is
    a. $10^{-14}$ m 　　　 b. $10^{-10}$ m 　　　 c. $10^{-24}$ m 　　　 d. $10^{-6}$ m

34. If you move towards a plane mirror at a speed of 10 cm/s at what speed does your image approach you?
a) 5 cm/s                          b) 10 cm/s
c) 20 cm/s                         d) information inadequate

35. The minimum lengths of a plane mirror in which a person can see himself in full length should be
    a. equal to the person's height
    b. slightly more than his height
    c. nearly half of his height
    d. nearly one fourth of his height

36. On adding a little antimony to germanium, we get
a) p-Type semiconductor            b) n-type semiconductor
c) metallic conductor              d) intrinsic semiconductor

37. A 100 watt bulb will consume one unit of electrical energy in
a) 1 hour          b) 10 hours          c) one day          d) 60 hours

38. Which one of the following is not correctly matched?
    a.  Hydraulic press        -    Archimedes principle
    b.  Lift of airplane       -    Bernoulli's principle
    c.  Paint – gun            -    Newton's third law
    d.  Electron microscope    -    Refraction of electron waves

39. Choke is used to
    a. reduce the current in AC circuit
    b. reduce the current in DC circuit
    c. convert AC to DC
    d. convert DC to AC

40. The centre of the Newton's rings pattern is dark since
    a. the light undergoes a phase change $\pi$
    b. the glass plate and the plato – convex lens are in contact with each other at the centre
    c. the light undergoes a phase change $2\pi$
    d. the light undergoes a phase change $\dfrac{\pi}{2}$

41. Which planet has the maximum number of known satellites?
    a. Saturn          b. Jupiter          c. Mars          d. Uranus

42. What is the source of electrical energy in an artificial satellite?
a. a dynamo                b. a thermopile
c. solar cells             d. a Van de Graff generator

43. A filament bulb has a rating of 220 V 40 W. The resistance (in ohms) of its filament is
    a. 1110          b. 1210          c. 1310          d. 1410

44. The most suitable metal for making permanent magnets is
    a. soft iron          b. steel          c. copper          d. aluminium

45. When light travels from air into a glass slab, there is no change in its
    a. speed          b. wavelength          c. amplitude          d. frequency

46. Light from the star, Alpha Centauri, which is nearest to the earth after the sun, reaches the earth in
    a. 4.2 seconds          b. 42 seconds          c. 4.2 years          d. 42 years

47. When ultraviolet light falls on a metal it emits
    a. electrons          b. protons          c. neutrons          d. photons

48. An atomic pile is used for
    a. producing X – rays          b. conducting nuclear fission
    c. conducting nuclear fusion          d. disposing of nuclear waste

49. A cyclotron is used for
    a. producing highly penetrating rays          b. starting a chain fission reaction
    c. starting a fusion reaction          d. accelerating neutrons

50. Cadmium rods are used in a nuclear reactor for
    a. slowing down the neutrons
    b. speeding up slow neutrons
    c. absorbing neutrons
    d. regulating the power level of the reactor

51. The half life of a radioactive substance depends upon
    a. its temperature
    b. the external pressure
    c. the mass of the substance
    d. the strength of the nuclear force between the nucleons of its atoms

52. The Uranium nucleus $_{92}^{238}U$ has
    a. 92 electrons and 146 neutrons          b. 92 neutron and 146 proton
    c. 92 neutrons and 146 electrons          d. 92 protons and 146 neutrons

53. The kind of fuse wire to be used depends on
    a. the voltage of the mains          b. the wattage of the appliance
    c. the cost of the appliance          d. none of the above

54. When an electric bulb breaks, there is a mild bang which is produced by
    a. the breaking of glass
    b. the sudden escape of compressed gases from the bulb
    c. the sudden rushing in of the air to fill the evacuated space
    d. the sudden oxidation of the filament

55. In a DC generator, the current in the armature is
    a. DC          b. pulsating DC          c. AC          d. neither AC nor DC

56. Ultrasonics are
    a. sound waves of a very high frequency
    b. sound waves of a very low frequency
    c. electromagnetic waves of a very high frequency
    d. electromagnetic waves of a very low frequency

57. What will be the colour of the sky as seen from the moon which has no atmosphere?
    a. black          b. faint blue          c. dark blue          d. orange

58. The wave theory of light, in its original form, was postulated by
    a. Isaac Newton          b. Thomas Young
    c. Albert Einstein          d. Christian Huygens

59. How many calories of heat are required to completely evaporate 1 gram of ice at $0^\circ$ C?
    a. 620          b. 720          c. 820          d. 920

60. Match the following:
    A. Movement of water and          1. Bernoulli's principle
    minerals from earth to
    leaves of plants through roots
    B. Lift of an aeroplane during its          2. Capillary action
    flight
    C. Formation of a star          3. Surface tension
    in the Universe
    D. Cleaning action of soap          4. Gravitational force

    |    | A | B | C | D |
    |----|---|---|---|---|
    | a. | 2 | 1 | 4 | 3 |
    | b. | 2 | 4 | 3 | 1 |
    | c. | 3 | 1 | 2 | 4 |
    | d. | 3 | 4 | 2 | 1 |

61. Which of the following waves can propagate in vacuum
    1. Radio waves          2. Light waves
    3. X – rays          4. Ultrasonic waves
    a. 1, 2 and 3          b. 1, 2, 3 and 4
    c. 2, 3 and 4          d. 1 and 4

62. What is the wavelength of visible spectrum
    a. 1300 – 3000 A°          b. 3900 – 7600 A°
    c. 7800 – 8000 A°          d. 8500 – 9800 A°

63. A moderator is used in nuclear reactors in order to
    a. increase the number of neutrons
    b. decrease the number of neutrons
    c. slow down the speed of neutrons
    d. accelerate the neutrons

64. The wavelength of X – rays is of the order of
    a. 1 cm          b. 1 m
    c. 1 Angstrom          d. 10 micron

65. In a refrigerator, cooling is produced by
    a. the ice which deposits on the freezer
    b. the sudden expansion of a compressed gas
    c. the evaporation of a volatile liquid
    d. None of the above

66. Aviation fuel for jet aeroplanes consists of purified
    a. petrol          b. kerosene          c. gasoline          d. diesel

67. Who is the recepient of Nobel Prize for the development of Wireless Telegraphy
    a. J. J. Thomson                          b. Kamerling Onnes
    c. Samuel Morse                           d. Marconi

68. Match the following
    **Discovery**                    **Scientist**
    A. Radioactivity                 1. Issac Newton
    B. Relativity                    2. Roentgen
    C. Gravitation                   3. Henry Bacquerel
    D. X – rays                      4. Albert Einstein

    |      | A | B | C | D |
    |------|---|---|---|---|
    | a.   | 3 | 1 | 2 | 4 |
    | b.   | 3 | 4 | 1 | 2 |
    | c.   | 1 | 3 | 4 | 2 |
    | d.   | 2 | 4 | 1 | 3 |

69. In our houses we get 220 V. A. C. what does the value 220 represent?
    a. Constant voltage                       b. Effective voltage
    c. Average voltage                        d. Peak voltage

70. The quality of a sound depends upon the
    I.   size of the vibrating body
    II.  Material of the vibrating body
    III. overtones produced
    IV.  shape of the vibrating body
    a. I, II and III                          b. I, II, III and IV
    c. I and III                              d. II, III and IV

71. The emission of $\beta$ - particles
    a.  increases the atomic number by one
    b.  decreases the atomic number by one
    c.  increases the mass number by one
    d.  decreases the mass number by one

72. Kinetic Energy depends
    a.  on the mass of the moving body
    b.  the velocity or speed of the moving body
    c.  the pressure of the moving body
    d.  both mass and velocity of the moving body

73. An astronaut of mass 60 kg is revolving around the earth in a satellite. What will be his weight inside the satellite assuming g = 10 m / s²
    a. 1200 N          b. 600 N                c. Infinite          d. Zero

74. Match the following
    **Energy conversion**                     **Device / process**
    A. Heat to electric              1. Car braking
    B. Electric to sound             2. Nuclear reactor
    C. Mass to heat                  3. Loudspeaker
    D. Chemical to heat + light      4. Solar cell
    E. Kinetic to heat               5. Fuel burning

|      | A | B | C | D | E |
|------|---|---|---|---|---|
| a.   | 1 | 2 | 3 | 4 | 5 |
| b.   | 5 | 3 | 2 | 1 | 4 |
| c.   | 2 | 1 | 3 | 5 | 4 |
| d.   | 3 | 1 | 2 | 4 | 5 |

75. Match the following

| A. Petrol engine | 1. Compression |
|------------------|----------------|
| B. Diesel engine | 2. Spark plug  |
| C. Ship          | 3. Turboprop   |
| D. Jet aircraft  | 4. Propeller   |

|      | A | B | C | D |
|------|---|---|---|---|
| a.   | 1 | 2 | 3 | 4 |
| b.   | 2 | 1 | 4 | 3 |
| c.   | 1 | 2 | 4 | 3 |
| d.   | 2 | 1 | 3 | 4 |

76. One micron is equal to

a. $\dfrac{1}{10}$ th of mm

b. $\dfrac{1}{100}$ th of mm

c. $\dfrac{1}{1000}$ th mm

d. $\dfrac{1}{10000}$ th of mm

77. Match the following

| Items | Units of length |
|-------|-----------------|
| A. Distance between earth and stars | 1. Microns |
| B. Inter atomic distances in a solid | 2. Angstroms |
| C. Size of nucleus | 3. Light year |
| D. Wavelength of infrared laser | 4. Fermi |
|  | 5. Kilometres |

|      | A | B | C | D |
|------|---|---|---|---|
| a.   | 3 | 2 | 4 | 1 |
| b.   | 3 | 4 | 1 | 2 |
| c.   | 5 | 2 | 4 | 3 |
| d.   | 5 | 4 | 2 | 1 |

78. The pH of water of $25^0$ C is 7. When it is heated to $100^0$ C, the pH of water

a. increases    b. remains same

c. decreases    d. decreases upto $50^0$ C and then it increases

79. Match the following

| Type of Electromagnetic Radiation | Corresponding Wavelength |
|-----------------------------------|--------------------------|
| A. Radio Waves | 1. $4 \times 10^{-7} – 7 \times 10^{-7}$ m |
| B. Ultraviolet waves | 2. $10^{-11} - 10^{-9}$ m |
| C. Visible light | 3. $10^{-6} - 10^{-3}$ m |
| D. X – ray | 4. $10^{-3} – 10^{5}$ m |
|  | 5. $10^{-9} - 10^{-7}$ m |

|     | A | B | C | D |
|-----|---|---|---|---|
| a.  | 3 | 2 | 4 | 5 |
| b.  | 4 | 5 | 1 | 2 |
| c.  | 3 | 5 | 4 | 2 |
| d.  | 4 | 2 | 1 | 5 |

80. Who of the following recognized that large quantity of energy is released as a result of the fusion of hydrogen nuclei to form deuterium?
a. EnricoFermi
b. Glenn Seaborg
c. Hans Bethe
d. Werner Heisenberg

81. In a sprayer the liquid rises in the tube due to
a. capillarity
b. evaporation
c. lower pressure at the upper end
d. un known reasons

82. Nichrome wire is used as a heating element in many appliances because
   a. it can be drawn out into wires easily
   b. it has high resistively
   c. it resists oxidation in air when red hot
   d. both (b) and (c) are correct

83. The force between two protons (Positively charged particle ) is
a. always repulsive
b. always attractive
c. attractive or repu1sive depending on the distance between them
d. always zero

84. An artificial satellite can be tracked very precisely from the earth by using
a. Doppler effect
b. radar
c. sonar
d. Zeeman effect

85. Heavenly matter landing on the earth's surface is known as
a. meteor
b. shooting star
c. meteorite
d. UFO

86. Hydraulic brakes in automobiles work on
a. Bernoulli's principle
b. Posieuille's principle
c. Pascal's principle
d. Archimede's principle

87. A hydrogen – filled balloon
   a. always rises in the air
   b. rises only if its total weight is much less than the weight of are it displaces.
   c. Rises only if its total weight is equal to the weight of air it displaces
   d. Can never rise in the air

88. X- rays are actually
a. slow moving electrons
b. fast moving electrons
c. electromagnetic waves
d. slow moving neutrons

89. Which of the following are semiconductors?
1. Silicon   2. Ceramic   3. Germanium   4. Quartz
a. 2 and 4   b. 1 and 3   c. 1, 3 and 4   d. all the four

90. A device used for converting a.c. into d.c. is called
    a. transformer      b. rectifier      c. induction coil      d. dynamo

91. An astronaut on a space walk changes his direction
    a. by moving his limbs in the opposite direction
    b. by moving his limbs in the same direction
    c. by using a hand rocket
    d. by remote control from within the ship

92. As a metal brick, thrown into a deep lake, sinks deeper and deeper, the force acting on it
    a. increases
    b. decreases
    c. vanishes at a particular depth
    d. remains constant

93. The current drawn in amperes by 750 W electric iron when operated at 220 V is
    a. 0.34      b. 0.29      c. 2.90      d. 3.41

94. Cobalt – 60 is commonly used in radiation therapy because it emits
    a. alpha rays      b. beta rays      c. gamma rays      d. X-rays

95. A storm is predicted if atmospheric pressure
    a. falls gradually      b. rises gradually
    c. rises suddenly      d. falls suddenly

96. In which of the following the speed of sound is maximum?
    A. in the air of $0^0$c      B. in the air of $100^0$C
    C. in the water      D. in the wood

97. Which type of waves are utilized in the night visionary equipment?
    A. Radio wave      B. Micro wave
    C. Infra red wave      D. None of these

98. On raising the temperature of the medium the velocity of light:
    A. increases      B. decreases
    C. remains the same      D. suddenly decreases

99. The inside pressure of the soap bubble is:
    A. more than the atmospheric pressure
    B. less than the atmospheric pressure
    C. equal to the atmospheric pressure
    D. half of the atmospheric pressure

100. Water expansion is
    A. $\dfrac{L_1}{L_2}$      B. $\dfrac{L_2}{L_1}$      C. $L_2 + L_1$      D. $L_2 - L_1$

# TEST III PHYSICS ANSWER

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| A | C | B | A | B | C | A | D | B | D |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| A | B | B | D | B | D | B | B | C | A |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| D | D | C | C | D | A | C | A | B | A |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| A | C | A | B | C | B | B | A | A | A |
| 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |
| A | C | B | B | D | C | A | B | D | D |
| 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| D | D | B | C | C | A | A | D | B | A |
| 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 |
| C | B | C | C | C | B | D | B | B | B |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
| A | D | D | B | B | C | A | B | B | A |
| 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 |
| C | D | C | A | C | C | B | C | B | B |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |
| C | D | D | C | D | D | C | A | A | D |