

Physics-Previous Year Questions [1995-2010]

General Physics, Particle Physics, Nuclear Physics etc.

1. **What is the principle by which a cooling system (Radiator) in a motor car works? [2010]**
 - a) Conduction only
 - b) Convection
 - c) Radiation only
 - d) Both conduction and radiation

2. **India – based Neutrino Observatory is included by the Planning Commission as a mega science project under the 11th Five Year Plan. In this context, consider the following statements: [2010]**
 1. Neutrinos are chargeless elementary particles that travel close to the speed of light.
 2. Neutrinos are created in nuclear reactions of beta decay.
 3. Neutrinos have a negligible, but non zero mass.
 4. Trillions of Neutrinos pass through human body every second.

Which of the statements given above is/are correct?

 - a) 1 and 3 only
 - b) 1, 2 and 3 only
 - c) 2, 3 and 4
 - d) 1, 2, 3 and 4

3. **If a potato is placed on a pure paper plate which is white and unprinted and put in a microwave oven, the potato heats up but the paper plate does not. This is because: [2010]**
 - a) Potato is mainly made up of starch whereas paper is mainly made up of cellulose.
 - b) Potato transmits microwaves whereas paper reflects microwaves.
 - c) Potato contains water whereas paper does not contain water.
 - d) Potato is a fresh organic material whereas paper is a dead organic material.

4. **In the year 2008, which one of the following conducted a complex scientific experiment in which sub-atomic particles were accelerated to nearly the speed of light? [2009]**
 - a) European Space agency
 - b) European Organization for Nuclear Research
 - c) International atomic Energy agency.
 - d) National aeronautics and Space administration

5. **Which one among the following has the highest energy? [2009]**
 - a) Blue light
 - b) Green light
 - c) Red light
 - d) Yellow light

6. **Which one of the following types of waves are used in a night vision apparatus? [2009]**
 - a) Radio waves
 - b) Microwaves
 - c) Infra-red waves
 - d) None of the above

7. **Assertion (A) : In the visible spectrum of light, red light is more energetic than green light.: [2008]**
Reason (R) : The wavelength of red light is more than that of green light.
 - a) Both A and R are individually true and R is the correct explanation of A

- b) Both A and R are individually true and R is not the correct explanation of A
 c) A is true but R is false
 d) A is false but R is true

8. Assertion (A) : Radio waves bend in a magnetic field.: [2008]

Reason (R) : Radio waves are electromagnetic in nature.

- a) Both A and R are individually true and R is the correct explanation of A
 b) Both A and R are individually true and R is not the correct explanation of A
 c) A is true but R is false
 d) A is false but R is true

9. Who among the following scientists shared the Nobel Prize in Physics with his son? [2008]

- a) Max Planck
 b) Albert Einstein
 c) William Henry Bragg
 d) Enrico Fermi

10. Consider the following statement: [2008]

1. A widely used musical scale called diatonic scale has seven frequencies.
 2. The frequency of the note S is 256 Hz and that of N is 512 Hz.

Which of the statement given above is/are correct?

- a) 1 only b) 2 only
 c) Both 1 and 2 d) Neither 1 nor 2

11. Which one of the following laser types is used in a laser printer? [2008]

- a) Dye laser
 b) Gas laser
 c) Semiconductor laser
 d) Excimer laser

12. Who among the following discovered heavy water? [2008]

- a) Heinrich Hertz b) H.C. Urey
 c) Bengali d) Malayalam

13. Consider the following statements: [2007]

1. If magenta and yellow coloured circles intersect, the interested are will have red colour.
 2. If cyan and magenta coloured circles intersect, the interested are will have blue colour.

Which of the statements given above is/are correct?

- a) 1 only b) 2 only
 c) Both 1 and 2 d) Neither 1 nor 2

14. Consider the following statements: [2007]

1. A flute of smaller length produces waves of lower frequency.
 2. Sound travels in rocks in the form of longitudinal elastic waves only.

Which of the statements given above is/are correct?

- a) 1 only b) 2 only
 c) Both 1 and 2 d) Neither 1 nor 2

15. Four wires of same material and of dimensions as under as stretched by a load of same magnitude separately. Which one of them will be elongated maximum? [2007]

- a) Wire of 1 m length and 2 mm diameter
 b) Wire of 2 m length and 2 mm diameter
 c) Wire of 3 m length and 1.5 mm diameter
 d) Wire 1 m length and 1 mm diameter

16. Assertion (A): A jet aircraft moving at Mach number equal to 1, travels faster at an altitude of 15 km than while moving at

Mach number equal to 1 at sea level.: [2007]

Reason (R): the velocity of sound depends on the temperature of the surrounding medium.

- a) Both A and R are individually true and R is the correct explanation of A.
- b) Both A and R are individually true but R is not the correct explanation of A.
- c) A is True but R is false
- d) A is false but R is true

17. In which one among the following is the speed of sound maximum? [2006]

- a) Air at 0°C b) Air at 100°C
- c) Water d) Wood

18. Which of the following pairs is/are correctly matched? Inventor Invention: [2006]

- 1. Christopher: Hovercraft Cockerell
- 2. David Bushnell: Submarine
- 3. J.C. Perrier: Steamship

Select the correct answer using the code given below:

- a) 1, 2 and 3 b) 1 and 2, only
- c) 2 and 3, only d) 1 and 3, only

19. Consider the following statements: [2006]

- 1. The Richter scale is a logarithmic scale and so an increase of 1 magnitude unit represents a factor of 10 times in amplitude.
- 2. Each integer reading of the Richter scale has an energy 100 times that of the previous integer reading.

Which of the statements given above is/are correct?

- a) 1 only b) 2 only
- c) Both 1 and 2 d) Neither 1 nor 2

20. Which one of the following is printed on a commonly used fluorescent tubelight? [2006]

- a) 220 k b) 273 k
- c) 6500 k d) 9000 k

21. What is the order of magnitude of electric resistance of the human body (dry)? [2005]

- a) 10^2 ohm b) 10^4 ohm
- c) 10^6 ohm d) 10^8 ohm

22. Who among the following invented Lasers? [2005]

- a) Theodore Maiman
- b) Denis Papin
- c) William Morton
- d) Francis Cricks

23. Assertion (A): In our houses, the current in AC electricity line changes direction 60 times per second.: [2004]

Reason (R): The frequency of alternating voltage supplied is 60 hertz.

- a) Both A and R are individually true and R is the correct explanation of A
- b) Both A and R are individually true but R is not the correct explanation of A
- c) A is true but R is false
- d) A is false but R is true

24. A spherical body moves with a uniform angular velocity around a circular path of radius r . Which one of the following statements is correct? [2004]

- a) The body has no acceleration
- b) The body has a radial acceleration directed towards the centre of the path.
- c) The body has a radial acceleration directed away from the centre of the path.
- d) The body has an acceleration tangential to its path

25. A hydrogen-inflated polythene balloon is released from the surface of the earth. As the balloon rises to an altitude up in the atmosphere, it will: [2003]

- a) Decrease in size
- b) Flatten into a disc-like shape
- c) Increase in size
- d) Maintain the same size and shape

26. Consider the following statements: [2003]

1. Steam at 100° C and boiling water at 100° C contain same amount of heat.
2. Latent heat of fusion of ice is equal to the latent heat of vaporization of water.
3. In an air-conditioner, heat is extracted from the room-air at the evaporator coils and is rejected out at the condenser coils.

Which of these statements is/are correct?

- a) 1 and 2
- b) 2 and 3
- c) Only 2
- d) Only 3

27. Consider the following statements: A 4-wheel vehicle moving a sharp circular path at high speed will: [2003]

1. Overturn about its outer wheels
2. Overturn about its inner wheels
3. Skid outwards
4. Skid inwards

Which of these statements are correct?

- a) 1 and 3
- b) 2 and 4
- c) 2 and 3
- d) 1 and 4

28. Which one of the following statements is correct? [2003]

- a) Liquid Sodium is employed as a coolant in nuclear reactors
- b) Calcium carbonate is an ingredient of toothpaste
- c) Bordeaux mixture consists of sodium sulphate and lime

d) Zinc amalgams are used as a dental filling

29. Diffusion of light in the atmosphere takes place due to: [2003]

- a) Carbon dioxide
- b) Dust particles
- c) Helium
- d) Water vapours

30. An oil tanker is partially filled with oil and moves forward on a level road with uniform acceleration. The free surface of oil then: [2003]

- a) Remains horizontal
- b) Is inclined to the horizontal with smaller depth at the rear end
- c) Is inclined to the horizontal with larger depth at the rear end
- d) Assumes parabolic curve

31. Which one of the following statements is correct? [2003]

- a) The velocity of sound in air increases with the increase of temperature
- b) The velocity of sound in air is independent of pressure
- c) The velocity of sound in air decreases as the humidity increases
- d) The velocity of sound in air is not affected by the change in amplitude and frequency

32. Regarding the atom of a chemical element, the magnetic quantum number refers to: [2003]

- a) orientation
- b) shape
- c) size
- d) spin

33. Assertion (A): The weight of a body decreases with the increase of latitude on earth: [2003]

Reason (R): The earth is not perfect sphere

- a) Both A and R are individually true and R is the correct explanation of A

- b) Both A and R are individually true but R is NOT the correct explanation of A
 c) A is true but R is false
 d) A is false but R is true

34. Consider the following natural phenomena: [2002]

1. Terrestrial heating
2. Reflection of light
3. Refraction of light
4. Diffraction of light

Due to which of these phenomena is mirage formed?

- a) 1 and 2 b) 2, 3 and 4
 c) 1 and 3 d) 4 only

35. Sun's halo is produced by the refraction of light in: [2002]

- a) Water vapour, in Stratus clouds
 b) Ice crystals in Cirro-Cumulus clouds
 c) Ice crystals in Cirrus clouds
 d) Dust particles in Stratus clouds

36. Consider the following statements: [2002]

1. Light of longer wavelength is scattered much more than the light of shorter wavelength.
2. The speed of visible light in water is 0.95 times and speed in vacuum.
3. Radio waves are produced by rapidly oscillating electrical currents.
4. To detect the over speeding vehicles, police use the Doppler effect of reflected short radio waves

Which of these statements are correct?

- a) 1 and 2 b) 1 and 3
 c) 2 and 4 d) 3 and 4

37. Assertion (A): With the increase of temperature, the viscosity of glycerine increases.: [2002]

Reason (R): Rise of temperature increases kinetic energy of molecules.

- a) Both A and R are individually true and R is the correct explanation of A
 b) Both A and R are individually true but R is not a correct explanation of A
 c) A is true but R is false
 d) A is false but R is true

38. Assertion (A): An iron ball floats on mercury but gets immersed in water.: [2002]

Reason (R): The specific gravity of iron is more than that of mercury.

- a) Both A and R are individually true and R is the correct explanation of A
 b) Both A and R are individually true but R is not a correct explanation of A
 c) A is true but R is false
 d) A is false but R is true

39. Consider the following statements: In a nuclear reactor, self-sustained chain reaction is possible, because: [2001]

- I. More neutrons are released in each of the fission reactions.
- II. The neutrons immediately take part in the fission process.
- III. The fast neutrons are slowed down by Graphite.
- IV. Every neutron released in the fission reaction initiates further fission.

Which of these statements are correct?

- a) I, II and III b) I and III
 c) II and IV d) II, III and IV

40. Who amongst the following was the first to state that the Earth was spherical? [2001]

- a) Aristotle b) Copernicus
 c) Ptolemy d) Strabo

41. If the stars are seen to rise perpendicular to the horizon by an observer, he is located on the: [2001]

a) Equator
b) Tropic of Cancer
c) South Pole
d) North Pole

42. Assertion (A): A stick is dipped in water in a slanting position. If observed sideways, the stick appears short and bent at the surface of water.: [2001]

Reason (R): The light coming from the stick undergoes scattering from water molecules giving the stick a short and bent appearance.

a) Both A and R are individually true and R is the correct explanation of A
b) Both A and R are individually true but R is NOT a correct explanation of A
c) A is true but R is false
d) A is false but R is true

43. Assertion (A): The boiling point of water decreases as the altitude increases.: [2001]

Reason (R): The atmospheric pressure increases with altitude.

a) Both A and R are individually true and R is the correct explanation of A
b) Both A and R are individually true but R is NOT a correct explanation of A
c) A is true but R is false
d) A is false but R is true

44. When lightwaves pass from air to glass, the variables affected are: [2001]

a) Wavelength, frequency and velocity
b) Velocity and frequency
c) Wavelength and frequency
d) Wavelength and velocity

45. Match List I with List II and select the correct answer using the codes given below the: [2001]

List I (Characteristic)	List II (Particle)
I. Zero mass	A) Positron
II. Fractional charge	B) Neutrino
III. Fractional spin	C) Quark
IV. Integral spin	D) Phonon

Codes:

a) I-B, II-C, III-A, IV-D
b) I-C, II-B, III-D, IV-A
c) I-B, II-C, III-D, IV-A
d) I-C, II-B, III-A, IV-D

46. The mass of a body on Earth is 100 kg (acceleration due to gravity, $g_e = 10 \text{ m/s}^2$). If acceleration due to gravity on the Moon is $g_e/6$, then the mass of the body on the moon is: [2001]

a) $100/6 \text{ kg}$ b) 60 kg
c) 100 kg d) 600 kg

47. Consider the following statements: A simple pendulum is set into oscillation. Then: [2001]

I. The acceleration is zero when the bob passes through the mean position.

II. In each cycle the bob attains a given velocity twice.

III. Both acceleration and velocity of the bob are zero when it reaches its extreme position during its oscillation.

IV. The amplitude of oscillation of the simple pendulum decreases with time. Which of these statements are correct?

a) I and II b) III and IV
c) I, II and IV d) II, III and IV

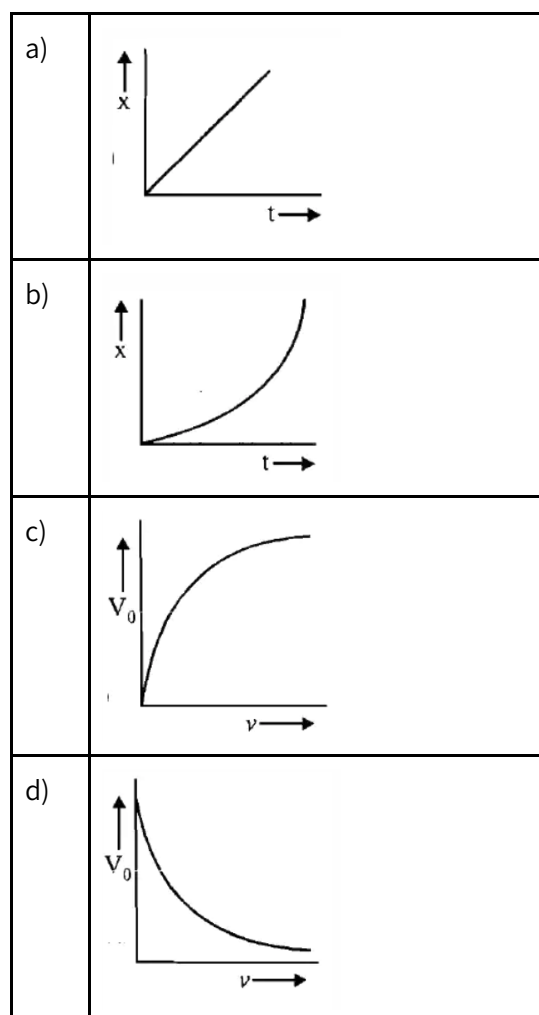
48. Which of the following weather conditions is indicated by a sudden fall in barometer reading? [2001]

- a) Stormy weather
- b) Calm weather
- c) Cold and dry weather
- d) Hot and sunny Weather

49. A radioactive substance has a half-life of four months. Three-fourth of the substance would decay in: [2001]

- a) 3 months
- b) 4 months
- c) 8 months
- d) 12 months

50. Which of the following distance-time graph ($x - t$) represents one- dimensional uniform motion? [2001]



51. Which one of the following does a TV remote control unit use to operate a TV set? [2000]

- a) Light waves
- b) Sound waves
- c) Micro waves
- d) Radio waves

52. A noise level of 100 decibels would correspond to: [2000]

- a) Just audible sound
- b) Ordinary conversation
- c) Sound from a noisy street
- d) Noise from a machine-shop

53. Consider the following features of newer models of motor cars: [2000]

- I. Radial tyres
 - II. Streamlined body
 - III. Multipoint fuel injection
 - IV. Catalytic converter with exhaust
- Which of these features make the newer models of motor cars more fuel efficient?
- a) I and II
 - b) II and III
 - c) II, III and IV
 - d) I, III and IV

54. Fluorescent tubes are fitted with a choke. The choke coil: [2000]

- a) Steps up the line voltage
- b) Steps down the line voltage
- c) Reduce current in the circuit
- d) Chokes low frequency currents

55. For reproducing sound, a CD (Compact Disc) audio player uses a: [2000]

- a) Quartz crystal
- b) Titanium needle
- c) Laser beam
- d) Barium titanate ceramic

56. When a CD (Compact Disc used in audio and video systems) is seen in sunlight, rainbow like colours are seen. This can be

explained on the basis of the phenomenon of: [2000]

- a) reflection and diffraction
- b) reflection and transmission
- c) diffraction and transmission
- d) refraction, diffraction and transmission

57. Assertion (A): A man standing on a completely frictionless surface can propel himself by whistling.: [2000]

Reason (R): If no external force acts on a system, its momentum cannot change.

- a) Both A and R are true, and R is the correct explanation of A
- b) Both A and R are true, but R is not a correct explanation of A
- c) A is true, but R is false
- d) A is false, but R is true

58. Assertion (A): In a motion picture, usually 24 frames are projected every second over the whole length of the film.: [2000]

Reason (R): An image formed on the retina of eye persists for about 0.1 s after the removal of stimulus.

- a) Both A and R are true, and R is the correct explanation of A
- b) Both A and R are true, but R is not a correct explanation of A
- c) A is true, but R is false
- d) A is false, but R is true

59. Assertion (A): Small glass beads fixed on traffic signals glow brightly when light falls upon them.: [2000]

Reason (R): Light is totally reflected when the angle of incidence exceeds a certain critical value and light travelling in a denser medium is reflected from a rarer medium.

- a) Both A and R are true, and R is the correct explanation of A

- b) Both A and R are true, but R is not a correct explanation of A
- c) A is true, but R is false
- d) A is false, but R is true

60. Consider the following statements regarding a motor car battery: [1999]

- I. The voltage is usually 12 V.
 - II. Electrolyte used is hydrochloric acid.
 - III. Electrodes are lead and copper.
 - IV. Capacity is expressed in ampere-hour.
- Which of the above statements are correct?

- a) I and II
- b) II and III
- c) III and IV
- d) I and IV

61. Match List I (Quantity) with List II (Units) and select the correct answer using the codes given below the Lists: [1999]

List I	List II
I. High speed	A) Mach
II. Wavelength	B) Angstrom
III. Pressure	C) Pascal
IV. Energy	D) Joule

Codes:

- a) I-B, II-A, III-C, IV-D
- b) I-A, II-B, III-D, IV-C
- c) I-A, II-B, III-C, IV-D
- d) I-B, II-A, III-D, IV-C

62. For which one of the following is capillarity not the only reason? [1999]

- a) Blotting of ink
- b) Rising of underground water
- c) Spread of water drop on a cotton cloth
- d) Rising of water from the roots of a plant to its foliage

63. Consider the following statements: [1999]

I. If a person looks at a coin which is in a bucket of water, the coin will appear to be closer than it really is.

II. If a person under water looks at a coin above the water surface, the coin will appear to be at a higher level than it really is.

Which of the above statements is/are correct?

- a) I and II b) I alone
c) II alone d) Neither I nor II

64. Low temperatures (Cryogenics) find application in: [1999]

- a) Space travel, surgery and magnetic levitation
b) Surgery, magnetic levitation and telemetry
c) Space travel, surgery and telemetry
d) Space travel, magnetic levitation and telemetry

65. A fuse is used in main electric supply as a safety device. Which one of the following statement about the fuse is correct? [1998]

- a) It is connected in parallel with the main switch
b) It is made mainly from silver alloys
c) It must have a low melting point
d) It must have a very high resistance

66. A ball is dropped from the top of a high building with a constant acceleration of 9.8 m/s^2 . What will be its velocity after 3 seconds? [1998]

- a) 9.8 m/s b) 19.6 m/s
c) 29.4 m/s d) 39.2 m/s

67. Which one of the following elements is essential for the construction of nuclear reactors? [1998]

- a) Cobalt b) Nickel
c) Zirconium d) Tungsten

The difference between a nuclear reactor and an atomic bomb is that: [1995]

- a) No chain reaction takes place in nuclear reactor while in the atomic bomb there is a chain reaction
b) The chain reaction in nuclear reactor is controlled
c) The chain reaction in nuclear reactor is not controlled
d) No chain reaction takes place in atomic bomb while it takes place in nuclear reactor
Ans: b)

68. Match the names of outstanding Indian scientists given in List I with area of their specialised work given in List II and select the correct answer using the codes given below the lists: [1998]

List I	List II
I. Dr. Raja Ramanna	A) Plant Chemistry
II. Dr. M.S. Swaminathan	B) Nuclear Physics
III. Prof. U.R. Rao	C) Thermodynamics and astrophysics
IV. Prof. Meghnad Saha	D) Space research
	E) Agricultural sciences

Codes:

- a) I-C, II-E, III-B, IV-A
b) I-B, II-A, III-D, IV-C
c) I-B, II-E, III-D, IV-C
d) I-C, II-A, III-D, IV-B

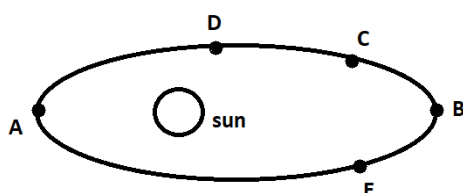
69. The tendency of a liquid drop to contract and occupy minimum area is due to: [1997]

- a) Viscosity b) Surface tension
c) Density d) Vapour pressure

70. Which one of the following is a vector quantity? [1997]

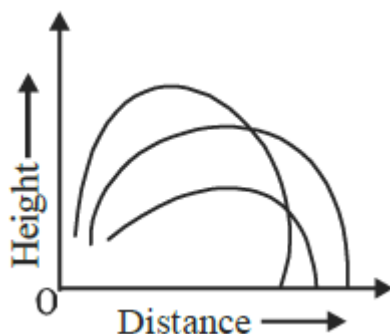
- a) Momentum b) Pressure
c) Energy d) Work

71. The planet Mercury is revolving in an elliptical orbit around the sun as shown in the given figure. The kinetic energy of mercury is greatest at the point labelled [1997]



- a) A b) B
c) C d) D

72. A boy standing at the point 'O' in the given diagram, throws a ball three times with the same force, but projecting it along different inclinations from the ground. The results of the throws have been plotted in the diagram. Which one of the following is a valid conclusion? [1997]



- a) The larger the initial inclination, the longer the throw
b) The larger the height reached, the longer the throw
c) The larger the height reached, the shorter the throw
d) The larger the initial inclination, the greater the height reached

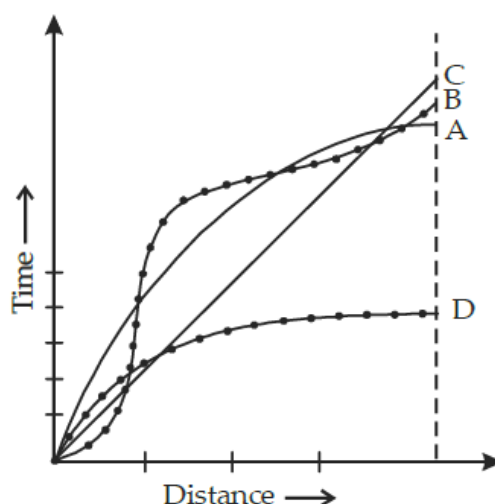
73. The working principle of a washing machine is: [1997]

- a) Centrifugation b) Dialysis
c) Reverse osmosis d) Diffusion

74. Which one of the following is paramagnetic in nature? [1997]

- a) Iron b) Hydrogen
c) Oxygen d) Nitrogen

75. Distance-time graph in respect of a race among four persons is shown in the given figure. Consider the following statements in this regard: [1996]



- I. 'A' stood first in the race.
II. 'C' led all the way.
III. 'D' ran faster than others in the later part of the race.
Of these statements
a) I and III are false and II is true

- b) I and II are false and III is true
 c) I and III are true and II is false
 d) I is true and II and III are false

76. When an air bubble at the bottom of a lake rises to the top, it will: [1996]

- a) Increase in size
 b) Decrease in size
 c) Maintain its size
 d) Flatten into a disk-like shape

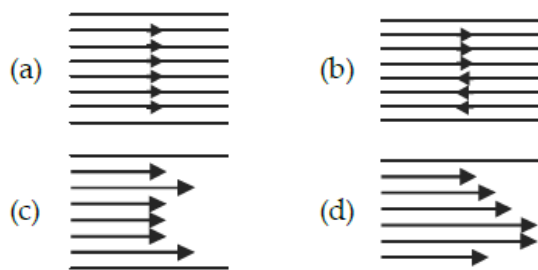
77. When a mirror is rotated by an angle of 6° , the reflected ray will rotate by: [1996]

- a) 0° degree b) 30° degree
 c) 12° degree d) 20° degree

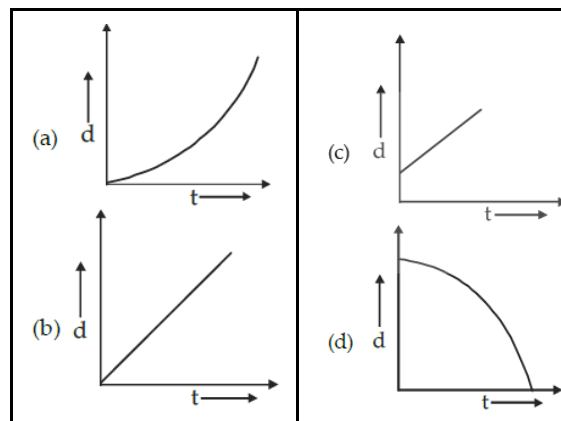
78. A truck, a car and a motor cycle have equal kinetic energies. If equal stopping forces are applied, and they stop after travelling a distance of x , y , z respectively, then : [1996]

- a) $x > y > z$
 b) $x < y < z$
 c) $x = y = z$
 d) $x = 4y = 8z$

79. A liquid is flowing in a streamlined manner through a cylindrical pipe. Along a section containing the axis of the pipe, the flow profile will be: [1996]



80. The variation of displacement (d) with time (t) in the case of a particle falling freely under gravity from rest is correctly: [1996]



81. Total internal reflection can take place when light travels from: [1996]

- a) Diamond to glass
 b) Water to glass
 c) Air to water
 d) Air to glass

82. Assertion (A): Transformer is useful for stepping up or stepping down voltages.: [1996]

Reason (R): Transformer is a device used in D.C. circuits. In the context of the above two statements, which one of the following is correct?

- a) Both A and R are true and R is the correct explanation of A.
 b) Both A and R are true but R is not a correct explanation of A.
 c) A is true but R is false.
 d) A is false but R is true.

83. Domestic electrical wiring is basically a: [1996]

- a) Series connection
 b) Parallel connection
 c) Combination of series and parallel connections
 d) Series connection within each room and parallel connection elsewhere

84. Consider the following statements: At the present level of technology available in India, solar energy can be conveniently used to: [1996]

- I. Supply hot water to residential buildings.
- II. Supply water for minor irrigation projects.
- III. Provide street lighting.
- IV. Electrify a cluster of villages and small towns.

Of these statements

- a) I, II, III and IV are correct.
- b) II and IV are correct
- c) I and III are correct
- d) I, II and III are correct

85. A simple machine helps a person doing: [1996]

- a) Less work.
- b) The same amount of work with lesser force.
- c) The same amount of work.
- d) The same amount of work much faster.

86. Consider the following statements: A person in a spaceship located half way between the earth and the sun will notice that the: [1996]

- I. Sky is jet black.
- II. Stars do not twinkle.
- III. Temperature outside the spaceship is much higher than that on the surface of the earth.

Of these statements

- a) Only III is correct
- b) I and II are correct
- c) I and III are correct
- d) I, II and III are correct

87. 'Diamond Ring' is a phenomenon observed: [1996]

- a) At the start of a total solar eclipse

- b) At the end of a total solar eclipse
- c) Only along the peripheral regions of the totality trail
- d) Only in the central regions of the totality trail

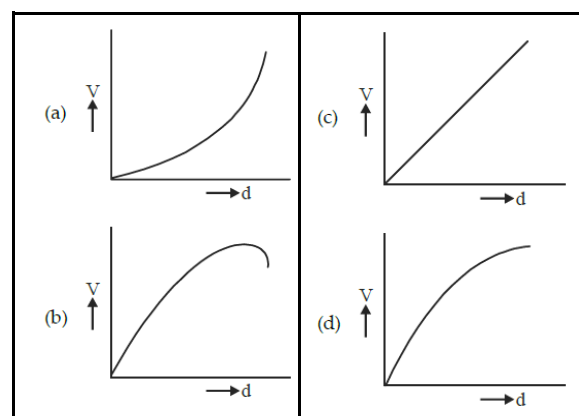
88. The alpha-particle carries two positive charges. Its mass is very nearly equal to that of: [1996]

- a) Two protons
- b) An atom of helium
- c) Sum of masses of two positrons and two neutrons
- d) Two positrons as each positron carries a single positive charge

89. The technique used to transmit audio signals in television broadcasts is: [1995]

- a) Amplitude Modulation
- b) Frequency Modulation
- c) Pulse Code Modulation
- d) Time Division Multiplexing

90. A parachutist jumps from a height of 5000 metres. The relationship between his falling speed 'v' and the distance fallen through 'd' is best represented as: [1995]



91. Which one of the following can be used to confirm whether drinking water contains a gamma emitting isotope or not? [1995]

- a) Microscope
- b) Lead plate
- c) Scintillation counter
- d) Spectrophotometer

92. The normal temperature of human body on the Kelvin scale is: [1995]

- a) 280 b) 290
- c) 300 d) 310

93. When the same note is played on a sitar and a flute, the sound produced can be distinguished from each other because of the difference in: [1995]

- a) Pitch, loudness and quality
- b) Pitch and loudness
- c) Quality only
- d) Loudness only

94. Assertion (A): A diamond sparkles more than a glass imitation cut to the same shape.: [1995]

Reason (R): The refractive index of diamond is less than that of glass.

- a) Both A and R are true, and R is the correct explanation of A
- b) Both A and R are true, but R is not a correct explanation of A
- c) A is true, but R is false
- d) A is false, but R is true

95. Who among the following anticipated Newton by declaring that all things gravitate to the earth? [1995]

- a) Aryabhata b) Varahamihira
- c) Buddhagupta d) Brahmagupta

96. Optical fibre works on the principle of: [1995]

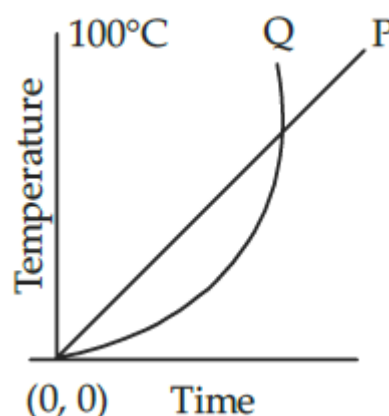
- a) Total internal reflection
- b) Refraction
- c) Scattering

d) Interference

97. Suppose a rocket ship is receding from the earth at a speed of $2/10$ th the velocity of light. A light in the rocket ship appears blue to the passengers on the ship. What colour would it appear to an observer on the earth? [1995]

- a) Blue b) Orange
- c) Yellow d) Yellow-orange

98. The variations in temperatures from 0°C to 100°C with respect to time of two liquids P, Q are shown in the graph given below. Which one of the following statements is correct? [1995]



- a) During heating, liquid P remained hotter than liquid Q throughout
- b) At no point of time during heating did the two liquids have the same temperature
- c) P attained the temperature of 100°C faster than Q
- d) Q attained the temperature of 100°C faster than P

99. An air bubble in water will act like a: [1995]

- a) Convex mirror b) Convex lens
- c) Concave mirror d) Concave lens

100. Graphene is frequently in news recently.**What is its importance? [2012]**

1. It is a two-dimensional material and has good electrical conductivity.
2. It is one of the thinnest but strongest materials tested so far.
3. It is entirely made of silicon and has high optical transparency.

4. It can be used as 'conducting electrodes' required for touch screens, LeOs and organic LEOs.

Which of the statements given above are correct?

- a) 1 and 2 only b) 3 and 4 only
c) 1, 2 and 4 only d) 1,2,3 & 4

Answers:

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

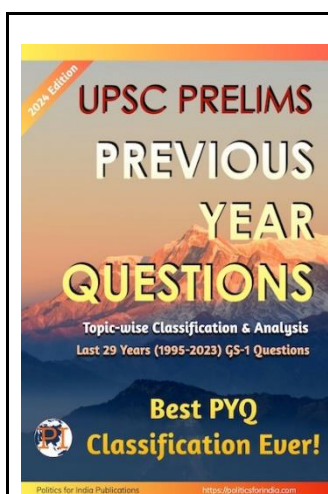
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
a	c	b	a	a	b	c	d	c	a	b	b	c	a	d	c	c	d

37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
d	c	b	c	a	c	c	d	a	c	c	a	c	a	a	d	b	a

55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
c	d	a	a	a	d	c	b	a	a	c	c	c	c	b	a	d	d

73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
a	c	b	a	c	c	a	a	a	c	b	a	b	d	c	b	b	d

91	92	93	94	95	96	97	98	99	100
c	d	c	c	d	a	c	d	d	c

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