BRAINWARE UNIVERSITY

Term End Examination 2020 - 21

Programme – Diploma in Civil Engineering

Course Name – Physics I

Course Code - DCE102

Semester / Year - Semester I

Time allotted : 75 Minutes | Full Marks : 60

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question) 1 x 60=60

1. *(Answer any Sixty)*

(i)

$[ML^{-1}T^{-2}]$ is the dimensional formula of

a) Force
b) coefficient of friction
c) modulus of elasticity
d) energy

(ii) One nanometre is equal to

a) 10^{-6} m
b) 10^{-3} m
c) 10^{-9} m
d) 10^{-10} m

(iii) Which of the following physical quantities is fundamental?

a) Viscosity
b) Velocity
c) Force
d) Time

(iv) Which unit of physical quantity remains same for all unit systems?

a) Meter
b) Second
c) Ampere
d) Kilogram

(v) The number of significant figures in 0.06900 is

a) 5 b) 4

c) 2 d) 3

(vi) Which of the following is derived quantity?

a) Mass b) Luminous intensity

c) Surface tension d) Thermodynamic temperature

(vii) The dimensions of Kinetic energy is same as that of

a) Force b) Pressure

c) Work d) Momentum

(viii) Chronometer measures

a) Area b) Times

c) Length d) Temperature

(ix) Which of the following have highest elasticity?

a) Steel b) Copper

c) Rubber d) Aluminum

(x) Up to proportional limit, stress strain graph is

a) curved b) straight line

c) parabola d) ellipse

(xi) Dimensional formula of stress is same as that of

a) pressure b) impulse

c) strain d) force

(xii) Rain drops are spherical in shape because of

a) Surface tension b) Capillary

c) Acceleration due to gravity
d) Downward motion

(xiii) The rise of a liquid in a capillary tube does not depend upon

a) Angle of contact
b) Density of the liquid
c) Radius of the capillary tube
d) Atmospheric pressure

(xiv) The surface of water in contact with glass wall is

a) Plane
b) concave
c) convex
d) Both ‘b’ and ‘c’

(xv) According to Archimedes’s principle, if a body is immersed partially or fully in a fluid then the buoyancy force is _____ the weight of fluid displaced by the body

a) equal to
b) less than
c) more than
d) unpredictable

(xvi) Relative density of mercury is

a) 1
b) 13.6
c) 9.8
d) 1000

(xvii) If the Reynolds number is less than 2000, the flow in a pipe is

a) Turbulent
b) Laminar
c) Transition
d) None of the above

(xviii) Centre of buoyancy always

a) coincides with the centre of gravity
b) coincides with the centroid of the volume of fluid displaced
c) remains above the centre of gravity
d) remains below the centre of gravity

(xix) Equation of continuity is based on the principle of conservation of

a) mass
b) energy

c) momentum
d) none of these

(xx) if a is coefficient of Linear expansion, b coefficient of areal expansion, c coefficient of Volume expansion. Which of the following is true

a) b=a
b) c=3a
c) b=5a
d) a=2b

(xxi) Two wires have the same material and length, but their masses are in the ration of 4:3. If they are stretched by the same force, their elongations will be in the ratio of

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

(xxii) Which one of the following does not affect the elasticity of a substance?

a) Hammering
b) Adding impurity in the substance
c) Changing the dimensions
d) Change of temperature

(xxiii) The bulk modulus of a fluid is inversely proportional to the

a) Change in pressure
b) Volume of the fluid
c) Density of the fluid
d) Change in its volume

(xxiv) The materials which have the same elastic properties in all directions are called

a) Isotropic
b) Brittle
c) Homogenous
d) Hard

(xxv) When a soap bubble is charged

a) It contracts
b) It expands
c) It does not undergo any change in size
d) None of these

(xxvi) The pressure just below the meniscus of water

a) Is greater than just above it
b) Is less than just above it
c) Is same as just above it
d) Is always equal to atmospheric pressure

(xxvii) Potential energy of a molecule on the surface of a liquid is as compare to another molecule inside of the liquid is

a) More
b) Less
c) Both ‘a’ and ‘b’
d) None of these

(xxviii) Two drops of a liquid are merged to form a single drop. In this process

a) Energy is released
b) Energy is absorbed
c) Energy is remains constant
d) First ‘B’ then ‘C’

(xxix) The highest point of syphon is called as

a) syphon top
b) summit
c) reservoir
d) none of these

(xxx) The materials which have low thermal conductivity are called as

a) thermal conductors
b) thermal resistors
c) thermal insulators
d) none of these

(xxxi) In which mode, does the heat energy transfer between two bodies when they are separated by some distance and there is no medium between them?

a) conduction mode of heat transfer
b) convection mode of heat transfer
c) radiation mode of heat transfer
d) heat transfer cannot takes place with above condition

(xxxii) Heat transfer takes place according to

a) First Law of Thermodynamics
b) Second Law of Thermodynamic
c) Third Law of Thermodynamics
d) Zeroth Law of Thermodynamics

(xxxiii) Units for thermal conductivity

a) J/kg.K
b) J/mol.K
c)
d) W/m.K

J.ohm/sec.K^2

(xxxiv) Which of the following has least value of conductivity

a) glass
b) water
c) plastic
d) air

(xxxv) A perfect black body is one which

a) is black in colour
b) reflects all heat
c) transmits all heat radiations
d) absorbs heat radiations of all wave lengths falling on it

(xxxvi) Candela is the unit of

a) Wavelength
b) Luminous intensity
c) Luminous flux
d) Frequency

(xxxvii) A 200 candle power lamp is hung 4 m above the centre of circular area of 5 m diameter. The illumination at centre of the area is

a) 13.5 lux
b) 17.5 lux
c) 12.5 lux
d) 10.5 lux

(xxxviii) Lumen/watt is the unit of

a) Light flux
b) Luminous intensity
c) Luminous efficiency
d) Brightness

(xxxix) The nature of the wave front due to a point source of light is

a) Spherical
b) Plane
c) Cylindrical
d) None of these

(xl) Two waves having intensities in the ratio of 9:1 produce interference. The ratio of maximum to minimum intensity is equal to

a) 10 : 8
b) 3:1
c) 4 : 1
d) 2 : 1

(xli) For constructive interference, the phase difference is an even multiple of

a) $\frac{\pi}{2}$
b) $\frac{\pi}{4}$
c) π
d) none of these

(xlii) The bending of a beam of light when it passes obliquely from one medium to another is known as _____

a) reflection
b) refraction
c) dispersion
d) deviation

(xliii) A convex lens is called _____.

a) converging lens
b) diverging lens
c) both converging and diverging lens
d) refracting lens

(xliv) A positive magnification greater than unity indicates _____

a) real image
b) virtual image
c) neither real not virtual image
d) distorted image

(xlv) Which of the following is a true statement?

a) The power of a lens is always positive
b) The power of a lens is always negative
c) The power of a convex lens is positive.
d) The power of a concave lens is positive

(xlvi) Which of the following has the highest refractive index?

a) Glass
b) Water
c) Pearl
d) Diamond

(xlvii) According to the sign convention, the distance of object...

a) is always positive
b) is always negative
c) may be positive or negative
d) is equal to object height

(xlviii) In physics terms, light is considered to be which of the following?

a) Both a wave and a particle
b) Only a wave
c) Only a particle
d) Neither a wave, nor a particle

(xlix) By corpuscular theory of light, the phenomenon which can be explained is

a) Refraction
b) Interference
c) Diffraction
d) Polarisation

(l) Two coherent sources of light can be obtained by

a) Two different lamps
b) Two different lamps but of the same power
c) Two different lamps but of the same power
d) None of these

(li) When the interference of light takes place at the region the light energy is

a) created
b) destroyed
c) redistributed
d) none of these

(lii) Focal length of plane mirror is

a) at infinity
b) zero
c) negative
d) none of these

(liii) Power of the lens is -40, its focal length is

a) 4 m
b) -40 m
c) -0.25 m
d) -25 m

(liv) Which one of the following materials cannot he used to make a lens?

a) Glass
b) Plastic
c) Clay
d) Water

(lv) In a photoelectric effect experiment the stopping potential is

a) the energy required to remove an electron from the sample
b) the kinetic energy of the most energetic electron ejected
c) the electric potential that causes the electron current to vanish
d) the photon energy

(lvi) Which of the following electromagnetic radiations has photons with the greatest energy?

a) blue light
b) yellow light
c) radio waves
d) microwaves

(lvii) Which of the following statement is incorrect

a) Photoelectric emission does not occur below the threshold frequency
b) The photoelectric current increases with the frequency of incident light
c) Threshold frequency does not depend on the metal used
d) The emission of photoelectrons is an instantaneous process

(lviii) The photoelectric current depends upon

a) the frequency of incident photon only
b) the intensity and the frequency of incident radiation
c) the intensity of incident radiation only
d) the temperature of cathode

(lix) During Einstein’s Photoelectric Experiment, what changes are observed when the frequency of the incident radiation is increased?

a) The value of saturation current increases b) No effect

c) The value of stopping potential increases d) The value of stopping potential decreases

(lx) The energy of photon of wavelength 450 nm is

a) b)

2.5×10^{-17} J 4.4×10^{-19} J

c) d)

4×10^{-17} J 6.4×10^{-19} J