BRAINWARE UNIVERSITY

Term End Examination 2021 - 22
Programme – Diploma in Mechanical Engineering
Course Name – Physics II
Course Code - DME202
(Semester II)

Time allotted : 1 Hrs.15 Min. **Full Marks : 60**

[The figure in the margin indicates full marks.]

Group-A

(Multiple Choice Type Question) 1 x 60=60

Choose the correct alternative from the following :

(1) A pendulum of length L supporting mass M swings back and forth with time period P . If the mass is doubled, the new time period is

a) $\frac{1}{\sqrt{2}}P$ b) P

c) $\sqrt{2}P$ d) 2P

(2) Relation between force and acceleration was first introduced by

a) Issac Newton b) Carl Friedrich Gauss

c) Albert Einstein d) Plank

(3) A particle is thrown vertically upward with a velocity 40 ms^{-1} from the ground. It will reach the ground after

a) 8 s b) 4 s

c) 20 s d) 16 s

(4) At a particular instant, acceleration of a body is called

a) instantaneous acceleration b) instantaneous velocity

c) instantaneous displacement d) instantaneous speed

(5) Magnitude of displacement from initial position to final position is

a) straight line b) curved line

c) circle d) none of these

(6) Displacement is a

a) scalar quantity b) vector quantity

c) Derived quantity d) none of these

(7) A boy of mass 50 kg runs with a force of 100 N, his acceleration would be

a) b)

$5000\ m\ s^{-2}$ $50\ m\ s^{-2}$

c) $150\ m\ s^{-2}$ d) $2\ m\ s^{-2}$

(8) SI unit for force is

a) Kilograms b) Newton

c) Joules d) Acceleration

(9) Speed of truck is $40\ m\ s^{-1}$, after 10 seconds its speed decreases to $20\ m\ s^{-1}$, its acceleration is

a) $-1\ m\ s^{-2}$ b) $-2\ m\ s^{-2}$

c) $-4\ m\ s^{-2}$ d) $-5\ m\ s^{-2}$

(10) "Energy can neither be created nor be destroyed, but it can be changed from one form to another", this law is known as

a) kinetic energy b) potential energy

c) conservation of energy d) conservation principle

(11) A heavy truck has more momentum than a passenger car moving at the same speed because the truck

a) has greater mass b) has greater speed

c) is not streamlined d) has a large wheelbase

(12) Momentum is conserved in

a) an elastic collision of two balls b) an inelastic collision of two balls

c) the absence of an external force d) all of these

(13) A gun recoiling when it is fired is an example of

a) conservation of momentum b) conservation of angular momentum

c) conservation of energy d) none of these

(14) A car traveling at a speed of 40 km/hr increases its speed to 80 km/hr. As a result its kinetic energy increases

a) 2 times b) 4 times

c) 8 times d) none of these

(15) A thin uniform ring of mass M and radius R passing through its centre and perpendicular to its plane. Then its Moment of Inertia is

a) $\frac{1}{2} MR^2$ b) MR^2

c) $3/2\ MR^2$ d) $2\ MR^2$

(16) The energy possessed by a body due to its position is called

a) kinetic Energy b) potential Energy

c) mechanical Energy d) electrical Energy

(17) Joule is a unit of

a) work b) power

c) momentum d) velocity

(18) When an object falls freely towards the ground, then its total energy

a) increases b) decreases

c) remains constant d) first increases then decreases

(19) What happens to the body on which work is done

a) it loses energy b) it gains energy

c) no change in the energy
d) first it loses then it gain

(20) A radio set of 60 watts runs for 50 hours. How many units of electrical energy are consumed in kWh

a) 2 kWh
b) 3 kWh
c) 4 kWh
d) 6 kWh

(21) What is the smallest unit of power

a) Watt
b) Kilowatt
c) Horse power
d) none of these

(22) A mass is revolving in a circle which is in the plane of the paper. The direction of angular acceleration

a) upward to the radius
b) towards the radius
c) tangential
d) at right angle to angular velocity

(23) How much time will be required to perform 520 J of work at the rate of 20 W

a) 24s
b) 16s
c) 20s
d) 26s

(24) The commercial unit of Energy is

a) Watt
b) Watt-hour
c) Kilowatt-hour
d) Kilowatt

(25) When an object falls freely towards the ground, then its total energy

a) increases
b) decreases
c) remains constant
d) first increases then decreases

(26) 1 Horse Power (HP) = _____ Watt

a) 446
b) 766
c) 746
d) 674

(27) Joule/second is related to

a) Watt
b) Newton
c) Pascal
d) Torr

(28) In order to do work, energy is

a) transferred or converted
b) used up
c) lost
d) lost or transferred

(29) What are the units of work

a) kg x m/s
b) J
c) m/s
d) Watt

(30) What are the units of power

a) Horsepower
b) Joules per second
c) Watts
d) all the choices are correct

(31) Unit of electric charge is

a) Coulomb
b) Coulomb/sec
c) Volt
d) None of these

(32) Wheatstone bridge principle is generally applied to

a) Resistance
b) charge
c) Voltage
d) current

(33) A wire of resistance 4Ω is stretched to twice its original length, its new resistance is

a) 8Ω b) 1Ω

c) 16Ω d) 12Ω

(34) The resistance of two lamps connected in a series across a battery is in the ratio 4:5. Their power will be in the ratio

a) 4:5 b) 5:4

c) 16:25 d) 25:16

(35) A 100W bulb and a 200W bulb are designed to operate at 110V and 220V respectively. The ratio of their resistances is

a) 1:1 b) 1:2

c) 1:3 d) 1:4

(36) Ampere second could be the unit of

a) power b) conductance

c) energy d) charge

(37) A galvanometer in series with a high resistance is called

a) an ammeter b) a voltmeter

c) a watt-meter d) none of these

(38) In order to increase range of ammeter, value of shunt resistance is

a) increased b) decreased

c) unchanged d) zero

(39) An ammeter should have …….. resistance

a) infinite b) very large

c) very low d) none of these

(40) Heating effect produced by current is due to the

a) collision of electrons b) movement of electrons

c) resistance in electrons d) lose of energy

(41) Product of voltage and current is known as

a) work done b) power

c) velocity d) acceleration

(42) Electromotive force of a battery can be defined with formula of

a) E = IR b) E = IR + I

c) E = IR + r d) E = IR + Ir

(43) Current produces magnetic effect due to its

a) mechanical energy b) magnetic field

c) electrical field d) chemical energy

(44) Devices that do not obey Ohm's law are called

a) ohmic devices b) non-ohmic devices

c) electric devices d) resistive devices

(45) Voltage of a device having resistance 5 Ω and current 4 A will be

a) 10 V b) 15V

c) 20V d) 25V

(46) Power can be represented in variety of ways as

a) $V \times I$ b) I^2R
c) V^2/R d) all of these

(47) Sunlight is directly converted into electrical energy by using
a) cells b) solar cells
c) electric generator d) electrical energy

(48) A conductor moves in a magnetic field. The direction of the induced current obtained from
a) Laplace's law b) Fleming's left hand rule
c) Biot savart's law d) None of these

(49) Which instrument is used for converting electrical energy into mechanical energy
a) Electric generator b) Electric motor
c) Electric iron d) Electric oven

(50) What is the unit of magnetic field
a) Tesla b) Faraday
c) Newton d) Newton / meter

(51) Lenz's law is based on
a) charge b) mass
c) momentum d) energy

(52) The resistance of two lamps is in the ratio 4:5. Their power will be in the ratio
a) 4:5 b) 5:4
c) 16:25 d) 25:16

(53) What is the unit of magnetic field?
a) Tesla b) Faraday
c) Newton d) Newton / meter

(54) A semiconductor in its purest form is called.....
a) Insulator b) Superconductor
c) Intrinsic semiconductor d) Extrinsic semiconductor

(55) A semiconductor has.... temperature co-efficient of resistance.
a) Zero b) Positive
c) Negative d) None of these

(56) Bridge rectifier is an alternative for
a) Full wave rectifier b) Peak rectifier
c) Half wave rectifier d) None of the mentioned

(57) The depletion region with in a p-n junction is reduced when the junction has
a) Zero bias b) Forward bias
c) Reverse bias d) All of these

(58) A silicon p-n junction diode in forward biased condition has a voltage drop closer to
a) 0.1 V b) 0.7 V
c) 1.7 V d) 2.1 V

(59) When the diode is forward biased, it is equivalent to
a) An off switch b) An on switch
c) A high resistance d) None of these

(60) In He-Ne laser neon atoms get energy
a) on collision with He atoms b) from chemical reactions
c) from electrical pumping d) from optical pumping