**Q81.** A string of a pendulum of length l is displaced through 90o vertical and released. Then the minimum strenght of the string needed to withstand the tension as, the pendulum passes through its mean position is

1. mg
2. 3mg
3. 5 mg
4. 6mg

**Q82.** Pressure of a gas constant volume at 20o  is 90 cm of Hg. At what temperature the pressure would change to 75 cm of Hg.

1. 233.3 o C
2. -28.8 o C
3. -24.2 o C
4. 28.8 o C

**Q83.** The binding energy of a nucleus is equivalent to

1. The mass of nucleus
2. The mass of proton
3. The mass of neutron
4. The mass defect of nucleus

**Q84.** In the given figure, an ammetre reads 5A and voltmeter reads 40V.The actural value of resistance R is

1. 8Ω
2. Greater than 8Ω
3. Less than 8Ω
4. 200Ω

**Q85.** In a series LCR circuit \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. The voltage leads the current if XL < XC
2. The voltage leads the current if XL  > XC
3. The voltage and current are in phase
4. The current leads the voltage if XL > XC

**Q86.** A metal surface is illuminated by a light of given intensity and frequency to cause photoemission. If the intensity of illumination is reduced to one-fourth of its original value, then the maximum kinetic energy of the emitted photoelectrons would become\_\_\_\_\_\_\_\_\_\_\_\_

1. Unchanged
2. Half of the original value
3. Twice of the original value
4. Four times of the original value

**Q87.** The Len’s law gives

1. The direction of induced current
2. The quantity of charge flowing
3. The magnitude of the induced emf
4. Motional emf in the circuit

**Q88.** The external diameter of 5 m long hollow tube is 0.1 m and thickness of its wall is 0.005m. If ρ=1.7 x10-8 Ω m, its resistance will be \_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. 5.7 x 10-5 Ω
2. 2.7 x 10-5 Ω
3. 2 x 10-5 Ω
4. 5 x 10-5 Ω

**Q89.** Two cars A and B are going around concentric circular paths of radii RA and RB. If the two cars complete the circular paths in the same time then the ratio of angular speeds of A and B is:

1. 1:1
2. RA:RB
3. RB:RA
4. 1:2

**Q90.** If the dipole moment of a short bar magnet is 1.25 A – m2.find the magnetic field on its axis at a distance of 0.5 m from the center of the magnet

1. 1.0 x 10-4 N.A-1.m-1
2. 4.0 x 10-2 N.A-1.m-1
3. 2.0 x 10-6N.A-1.m-1

**Q91.** A steel ball of radius 2cm is at rest on frictionless surface. Another steel ball of radius 4cm moving with velocity of 81 cm.s-1 collides elastically with the ball which is at rest.After collision the ball with radius of 2cm moves with speed of \_\_\_\_\_\_\_\_\_\_

1. 144 cm .s-1
2. 72 cm.s-1
3. 216 cm .s-1
4. 36 cm .s-1

**Q92.**  An electrical refrigerator with β = 5 extracts 5000 J from the contents of the refrigerator. During this process, find the electrical energy utilized by its motor.

1. 1 kJ
2. 0.5 kJ
3. 0.8 kJ
4. 1.2 kJ

**Q93.** When a body is heated , then maximum rise will be in its

1. Length
2. Surface area
3. Volume
4. Density

**Q94.** Potential difference between the points P and Q in the circuit shown is

1. 4.5 V
2. 1.2 V
3. 2.4 V
4. 2.88 V

**Q95.** A travelling microscope is focused on an ink dot marked on a piece of paper. When a glass slab (μ = 15) of thickness 0.12 m is placed on the ink dot .Travelling microscope has to be moved \_\_\_\_\_\_\_\_ in order to restore the focus

1. 0.04 m downwards
2. 0.04 m upwards
3. 0.06 m downwards
4. 0.06 m upwards

**Q96.**Consider the situation shown in the figure. The wire AB is sliding on the fixed rails with a constant velocity. If the wire AB is replaced by semicircular wire, the magnitude of the induced current wity \_\_\_\_\_\_\_\_\_

1. Increase
2. Remains the same
3. Decrease
4. Increase or decrease depending whether the semicircle bulges towards the resistance or away from it

**Q97.** A Carnot engine takes 3 x 106  calories of heat from reservoir at 627 0C and gives it to a sink at 27 0 C. The work done by the engine is

1. Zero
2. 8.4 x 106  J
3. 4.2 x 106  J
4. 16.8 x 106  J

**Q98.** The displacement y (in cm ) in case of a simple harmonic wave is given by y = . The period and maximum velocity of the particles in the medium will respectively be \_\_\_\_\_\_\_\_\_\_

1. 10-3 s, 330 m.s-1
2. 10-4 s, 20 m.s-1
3. 10-3 s, 200 m.s-1
4. 10-2 s, 2000 m.s-1

**Q99.** A bullet of mass ‘m’ and velocity ‘v’ when fired at a sand bag of mass ‘M’ , suspended by a string , gets embedded into the bag. The loss of kinetic energy in this process is