CET MOCK TEST PAPER – 4

1. Light year is
   a) Light emitted by the sun in a year
   b) Time taken by light to travel from sun to earth
   c) The distance traveled by light in free space in one year
   d) Time taken by earth to go once around the sun.

2. A body starts from rest and moves with a uniform acceleration. If 't' is the time taken to cover a distance 'S', then 'S' is proportional to
   a) t   b) t^2 c) $\sqrt{t}$ d)   1 / t

3. Four forces, each of magnitude 10N, act on four bodies A, B, C and D of masses 10kg, 20kg, 30kg and 40kg respectively. The acceleration is maximum for
   a) A   b) B   c) C   d)   D

4. A body revolves in a circular path of radius 0.4 m, at a speed of 1200 rpm. The acceleration of the body is about
   a) 1600 m/s^2 b) 4740 m/s^2 c) 6318 m/s^2 d) 5055 m/s^2

5. A force of 4N is applied on a box at an angle of 60^0. The box speed is 3 m/s at certain instant. Then the instantaneous power on the box is
   a) 6 $\sqrt{3}$ W   b) 12W   c) 6W   d) $12\sqrt{3}$ W

6. The kinetic energy of a body becomes four times its initial value. The new linear momentum will be
   a) Thrice the initial value   b) four times the initial value
   c) Same as the initial value   d) twice the initial value

7. A particle of mass 100 g is thrown vertically upwards with a speed of 5 m/s. The work done by the force of gravity during the time the particle goes up is
   a) – 1.25 J   b) 1.25J   c) 0.5J   d)   - 0.5J

8. A bomb of mass 16 kg at rest explodes into two pieces of masses 4kg and 12kg. The velocity of the 12kg mass is 4m/s. The kinetic energy of the other mass is
   a) 288 J   b) 192J   c) 96J   d)   144J

9. The lateral shift produced by a parallel sided glass slab
   a) varies directly as its thickness
   b) varies inversely as its thickness
   c) is independent of thickness
   d) varies directly as the square of its thickness

10. Lateral shift produced by a glass slab is X. When the slab is immersed in a liquid for the same incident ray lateral shift produced will be
    a) X   b) greater than X   c) less than X   d) zero

11. The condition for dispersion without deviation is
    a) A/A^1 = - (n^1-1) / $(n-1)$
    b) A^1/A = - (n^1-1) / $(n-1)$
    c) A/A^1 = $(n-1)$ / (n^1-1)
    d) A/A^1 = $(n^1-1$ / $(n-1)$

12. Focal length of a lens in air is 0.8m. What would be   its focal length of it is immersed in water?
    a)0.32m   b)3.2m   c)32m   d) none of these

13. The concept of ether medium was given by
    a) Newton   b) Maxwell   c) Huygens   d) Maxplanck

14. Two light beams of intensities I_1 and I_2 overlap to produce an interference pattern. The contrast between the fringes is best when
   a) $I_1=I_2$ b) $I_1=I_2/2$ c) $I_1=I_2/3$ d) $I_1=I_2/4$
15. The wave front used in Fresnel's diffraction is
   a) spherical   b) plane
   c) Cylindrical   d) either spherical or cylindrical
16. A diffraction pattern is observed on a screen using red light. If it is replaced by blue light, then
   a) there will be no change in the intensity pattern
   b) diffraction bands become broader and farther apart
   c) diffraction bands become narrower and closer
   d) diffraction bands disappear.
17. A beam of unpolarised light is incident along the axis of a nicol prism then
   a) ordinary ray has greater refractive index
   b) extra-ordinary ray has greater refractive index
   c) both   ordinary ray and extra-ordinary ray has same refractive index
   d) some times ordinary ,some times extra-ordinary ray have greater refractive index
18. A ray of light is incident on a glass plate at the polarizing angle gets deviated by 24^0 on entering the glass. The polarizing angle is
   a) 40^0 b) 57^0 c) 64^0 d) 68^0
19. An electron is accelerated   through a p.d of 45.5 V, the velocity acquired by it is (in ms^{-1})
   a) zero   b) 10^6 c) 4×10^4 d) 4×10^6
20. The electric potential at a point inside a charged spherical conductor
   a) is constant   b) is zero
   c) decreases with distance from the centre
   d) increases with distance from the centre
21. 125 water drops of equal radius and equal capacitance C coalesce to form a single   drop of capacitance C'. The relation between   C and C' is
   a) C' = 5 C   b) C' = C/ 125
   c) C' = C   d) C' = 125 C
22. Two capacitors of capacitances C_1 = 2µF and C_2 = 3µF are connected in series across 10 V. The potential difference across the plates of the capacitor will be
   a) 3 V   b) 6V   c) 4 V   d) 2 V
23. Two identical forces are acting on a body. The magnitude of each force is equal to the magnitude of their resultant. The angle between the two forces is
   a) 60^0 b) 120^0 c) 90^0 d) 0^0
24. An application of Bernouli's equation for fluid is found in
   a) Dynamic lift of an aero plane   b) Viscosity meter   c) capillary rise d) hydraulic press
25. Absolute zero (0^oK) is that temperature at which
   a) Matter ceases to exist
   b) Ice melts and water freezes
   c) Volume and pressure of a gas becomes zero
   d) none of the above
26. Mode of transfer of heat in which heat is carried by moving particle is
   a) Radiation   b) wave motion   c) convection   d) conduction

27. A carnot heat engine working between the temperature limits 400 K and 800 K has a work input of 1000 J per cycle. The heat energy supplied by the source to the engine per cycle is
    a) 1500J   b) 1000J   c) 2460J   d) 2000J
28. The ozone layer present in
    a) Troposphere   b) Stratosphere   c) thermosphere   d) mesosphere
29. The frequency of wave represented by the equation $Y = 1.5 \sin(314\,t - 12.56\,x)$ is
    a) 150Hz   b) 50 Hz   c) 30 Hz   d) 10 Hz
30. Sound waves in air cannot be polarized because they are
    a) transverse   b) longitudinal   c) progressive   d) stationary
 31. The ratio of the overtones in an open pipe is
    a) 1:2:3:4:…   b) 1:3:5:7:9;..   c) 2:4:6;….. d) 1:5:9:13:…..
32. The lowest two frequencies of a 0.5 m long organ pipe closed at one are approximately (speed of sound = 340 m/s)
    a) 170 Hz and 510 Hz   b) 170 Hz and 340 Hz
    c) 55 Hz and 110 Hz   d) 150 Hz and 300 Hz
33. A conductor carries a current of 50 µA. If the   area of cross section of the conductor is 50 mm^2, then the current density in Am^{-2} is
    a) 0.5   b) 1   c)10^{-3} d)10^{-6}
34. The work done in driving a charge of 5C between two points in a circuit is 15J. The potential difference across the two points is
    a) 20V   b) 10V   c) 3V   d) 1/3 V
35. In a balanced network the resistance in the arms Q and S are interchanged. As a result,
    a) the galvanometer shows zero deflection
    b) the galvanometer and the cell must be interchanged for balance
    c) The network is still balanced
    d) the network is not balanced
36. In a typical wheat stone's network, resistance P, Q, R and S are 16 Ω, 12 Ω, 8V and 3V. Then the resistance to be connected in series with S to balance the network is
    a) 4 Ω   b) 5 Ω   c) 3 Ω   d) 1 Ω
37. Magnetic field inside an ideal solenoid of 1000turns/m carrying a current of 2A at its centre is (in T)
    a) 20 μ_0 b) 2000 μ_0 c) Zero   d) 200 μ_0
38. Magnetic dip at the place where $B_H = \sqrt{3}\, B_V$ is
    a) 90^0 b) 30^0 c) 60^0 d) 45^0
39. The resistance of an ideal ammeter is
    a) Infinite   b) very high   c) small   d) zero
40. A milliammeter of range 10 mA has a coil of resistance 1 Ω. To use it as a voltmeter of range 10 V, the resistance that must be connected in series with it is
     a) 9 Ω   b) 99 Ω   c) 999 Ω   d) 1000 Ω
41. A transformer is used to light 140 Watt 24 Volt lamps from 240 Volt AC mains, the current in the main cable is 0.7 amps. The efficiency of the transformer is
    a) 63.8 %   b) 84 %   c) 83.3 %   d) 48%
42. A circuit has a self inductance of 1 Henry and carries a current of 2A. To prevent sparking when the circuit is switched off, a capacitor which can withstand 400 V is used. The least capacitance of the capacitor connected across the switch must be equal to
    a) 50 µF   b) 25 µF   c) 100 µF   d) 12.5 µF

43. The magnetic flux through a coil changes from 1000 Wb to 100 Wb in 1 min. The induced emf is
    a) 150 V   b) 50V   c) 15 V   d) 5V
44. Sunlight produces
    a) Line spectrum b) continuous spectrum   c) Band spectrum d) line absorption spectrum
45. Maximum velocity of photoelectrons emitted by a photo emitter is 1.8×10^6 m /s . Taking $e/m = 1.8 \times 10^{11}$ for electrons, the stopping potential of the emitter is
    a) 9 V   b) 11.8 V   c) 1.8 V   d) 10 V
46. Maximum velocity of photoelectric is 3.5×10^6 m/s. If the specific charge of an electron is 1.75×10^{11} C/Kg. Stopping potential of the electron is
    a) 7 V   b) 3.5 V   c) 10.5 V   d) 35 V
47. The radius of the first Bohrs orbit of hydrogen is 0.05nm the radius of the 10th orbit is
    a) 0.5nm   b) 5nm   c) 50nm   d) 0.1nm
48. Energy of electron in first orbit in H_2 atom is -13.6ev, its energy in fourth orbit is
    a) -1.51ev   b)-0.85ev   c) 4ev   d) 2.17ev
49. The sky appears black from the surface of the moon because
    a) sun is blocked by earth   b) sky absorbs sun light
    c) moon has no atmosphere   d) moon absorbs all sun light
50. The concept of stimulated emission was proposed by
    a) Max Planck   b) Neil's Bohr
    c) T.H.Maiman   d) Albert Einstein
51. Number of electrons, protons and neutrons present in 92 U^{238} are respectively
    a) 92, 92,238   b) 92, 92,146
    c) 92,146,146   d) 146, 146, 92
52. Radius of an atom with A = 64 is
    a) 4.4fermi b) 8.8fermi c) 2.2fermi d) 2.1fermi
53. In a reaction
    $_1 H^2 + _1 H^2 \rightarrow _2 He^4 + X;$ X = ?
    a) Alpha b) beta c) photon(gamma) d) neutron
54. The SI unit of radioactivity is
    a) Curie   b) Becquerel   c) Rutherford   d) Neil's Bohr
55. The ratio of average life to half life of a radioactive sample is
    a) 1   b) 1.44   c) 0.693   d) 1/e
56. The half life of a radioactive sample is 2 years. The time taken for the complete decay of the sample is
    a) 10 years   b) 20 years   c) infinity   d) 40 years
57. The conductivity of p-n junction increases when it is
    a) forward biased   b) reversed biased
    c) either forward or reversed biased   d) none of these
58. In a transistor, the conventional current flows from base to emitter. The transistor is
    a) p-n-p transistor   b) n-p-n transistor
    c) field effect transistor   d) uni junction transistor
59. The output of a rectifier consist of
    a) pure dc   b) pure ac
    c) both dc and ac components   d) neither dc or ac
60. Planck's constant has the same dimensions as
    a) Energy   b) force
    c) Linear momentum   d) angular momentum