Sample test paper EA Engineering Assistants in AIR and DD

1. Which one of the following physical quantities, is not defined in the terms of force per unit area:
(a) pressure
(b) strain
(c) stress
(d) Young's modulus

Ans:b

2. The distance moved by a moving body is equal to:
(a) area between the distance-time graph and distance axis
(b) area between the speed-time graph and time axis
(c) area between the distance-time graph and time axis
(d) area between the speed-time graph and distance axis.
Ans:b

3. A beaker containing water weighs 100 gm. It is placed on the pan of a balance and a piece of metal weighing 70 gm. and having a volume of 10cc. is placed inside the water in the beaker. The weight of the beaker and the metal would be :
(a) 170gm.
(c) 100gm.
(b)160gm.
(d)30gm.
Ans:a

4. For the same kinetic energy, the momentum shall be maximum for:
(a) electron
(b) proton
(c) deuteron
(d) alpha particle
Ans:d

5. The common balance works on the principle of equality of:
(a) forces
(b) moments of forces
(c) masses
(d) masses of pans
Ans:b

6. A particle moves in a circle of radius R with a constant speed under a centripetal force F. The work done in completing a full circle is:

(a) 2RF
(b) $\Pi R^2 F$
(c) $2\Pi RF$
(d)Zero

Ans:d
7. When two quantities are plotted on the graph paper against each other and the result so obtained is a st. line, then
(a) Both the quantities are equal
(b) The quantities are inversely proportional to each other
(c) Sum of both is zero
(d) The quantities are proportional to each other
Ans:d
8. What is the order of magnitude of 260°?
(a)10^3
(b) 10^4
(c)10^2
(d) 10
Ans:c
9. The maximum value of g is:
(a) At the poles
(b) At the top of the Mount Everest
(c) At the equator
(d) Below the sea level
Ans:a

10. A fixed volume of gas at 27°C exerts a pressure of 750 mm. If the gas is heated to a pressure of 1500mm., temperature must be:
(a) 600°C
(b) 327°C
(c) 54°C
(d) 13.5°C
Ans:b

11. A body of mass 2 kg acted upon by a constant force, travels a distance of 3 metres in the first second and a further distance of meter in the next second. The force acting on the body is?
(a) 12 Newtons
(b) 8 Newtons
(c) 4 Newtons
(d) 1 Newton

Ans:c

12. Two forces each equal to P acting at a point have no resultant. The angle between the two forces must be equal to:
(a)180°
(b) 90°
(c)0°
(d) 120°

Ans:a

13. A jet engine works on the principle of:
(a) conservation of energy
(b) conservation of momentum
(c) conservation of mass
(d) conservation of temperature

Ans:b

14. A sharp knife cuts much better than a blunt one because?
(a) Area of sharp knife is much less than the area of the blunt one
(b) sharp knife is brighter
(c) sharp knife is colder
(d) sharp knife is costly
Ans:a

15. A man carries a heavy box on his head on a horizontal plane from one place to another.
In this he does?
(a) maximum work
(b) no work
(c) negative work
(d) minimum work
Ans:b

16. The bob of a second's pendulum is replaced by another bob of double mass. The new time period will be:
(a) 4 sec.
(c) 2 sec.
(b) 1 sec
(d) 3 sec.

Ans:c

17.A device for measuring temperatures at a distance is
(a) gas thermometer
(b) mercury thermometer
(c) radiation
(d) maximum-minimum thermometer

Ans:c

18. A piece of ice is floating in a concentrated solution of common salt (in water) in a pot. When ice melts completely, the level of solution will:
(a) go up
(b) remain the same
(c) go down
(d) first go up then go down

Ans:a

19. A radioactive source has a half-life of 30 days. During a period of 90 days the fraction of atoms that have decayed would be
(a)100%
(b) 87.5%
(c)64%
(d) 50%

Ans:b

20. A black body emits:
(a) radiations of all wavelengths
(b) no radiations
(c) radiations of only one wavelength
(d) radiations of selected wavelengths

Ans:a

21. A near sighted person cannot see distinctly beyond 50 cm. from his eye. The power in diopter of spectacle lenses which will enable him to see distant objects clearly is
(a) +50
(b) —50
(c) +2
(d) —2
Ans:c

22. Size of a nucleus is of the order of?
(a)10^{-18}m
(b) 10^{-14}m
(c)10^{-10}m
(d) 10^{-6}m
Ans:b

23. The freezing point on a thermometer is marked as 20° and the boiling point as 150°C. A temperature of 60°C on this thermometer will be read as:
(a)40°

(b) 65°
(c)98°
(d) 110°
Ans:c

24. In isothermal expansion of an ideal gas:
(a) heat content remains constant
(b) temperature remains constant
(c) both heat content and temperature remain constant
(d) pressure and temperature of the gas remain constant
Ans:b

25. A man standing between two cliffs hears the first echo of a sound after 2 sec. and the second echo 3 sec. after the initial sound. If the speed of sound be 330 m/sec. the distance between the two cliffs should be
(a)1650 m.
(b)990 m.
(c)825 m
(d) 660 m.
Ans:c

26. In a resonance tube experiment the first resonance is obtained for 10 cm. of air column and the second for 32 cm. The end correction for this apparatus is equal to?
(a)0.5 cm
(b)1.0 cm
(c)1.5 cm
(d) 2 cm
Ans:b

27. The ratio of the specific heat of air at constant pressure to its specific heat at constant volume is?
(a) zero
(b) greater than one
(c) less than one
(d) equal to one

Ans:b

28. A convex lens has a focal length of 10 cm. When it is immersed in water it will behave as?
(a) a convex tens of 10 cm. focal length
(b) a concave lens of 10 cm. focal length
(c) a convex lens of focal length greater than 10cm.
(d) a convex lens of focal length less than 10 cm.
Ans:c
29. Two particles having charges q1 and q2 when kept at a certain distance exert a force F on

each other. If the distance between the two particles is reduced to half and the charge on each particle is doubled the force between the particles would be ?
(a)2F
(b)4F
(c)8F
(d)16F
Ans:d

30. A small magnet is placed perpendicular to a constant magnetic field. The forces acting on the magnet will result in?
(a) rotation
(b) translation
(c) no motion at all
(d) rotation as well as translation
Ans:a

31. A hollow metallic sphere is charged. Inside the sphere?
(a) the potential is zero but the electric field is finite
(b) the electric field is zero but the potential is finite
(c) both the electric field and the potential are finite
(d) both the electric field and the potential are zero
Ans:b

32. Two electric lamps each of 100 watts 220 V are connected in series to a supply of 220 volts. The power consumed would be:
(a)100 Watts
(b) 200 Watts
(c)25 Watts
(d) 50 Watts
Ans:d

33. A transformer is:
(a) a device for stepping up D.C.
(b) a generator of current
(c) device for converting direct current into alternating current
(d) a device for stepping up or down the voltage of A.C. supply
Ans:d

34. Transistor act as a?
(a) conductor
(b) semi-conductor
(c) insulator
(d) thermionic valve

Ans:d

35. The sky is blue because:
(a) there is more blue light in the sunlight
(b) of scattering of sunlight by air molecules in the atmosphere
(c) of scattering of sunlight by dust particles in the atmosphere
(d) other colours are absorbed by heavenly bodies
Ans:b

36. A cyclonic storm is indicated by a change in the atmospheric pressure. In atmospheric pressure there is a:
(a)sudden rise
(b) gradual rise
(c)sudden fall
(d) gradual fall
Ans:c

37. The electric field inside a hollow conducting sphere will ?
(a) increases towards the centre
(b) decreases towards the centre
(c) is finite and constant throughout
(d) is zero
Ans:d

38. Imperfect gases are those:
(a) which contain impurities
(b) which do not obey Charle's and Boyle's laws
(c) whose molecules are not spherical
(d) whose molecules cannot be regarded as point masses
Ans:b

39. Sonar is a device for:
(a) location and ranging of aircraft's
(b) location and ranging submarines
(c) producing a musical note of high quality
(d) measuring frequency of musical notes
Ans:b

40. Cyclotron is a device to produce:
(a) atomic energy
(b) high energy electrons
(c) high energy photons
(d) high energy protons
Ans:d

41. Which one of the following is not a vector?
(a) Velocity
(b) Acceleration

(c) Force
(d) Energy
Ans:d

42. Two steel balls of mass 1 kg. and 2kg. and a lead ball of 10kg. are released together from the top of tower 30 metres high. Assuming the path to be in vacuum
(a) the lead ball reaches the ground earlier
(b) the 1 kg. steel bail reaches the ground earlier
(c) all the balls reach the ground simultaneously
(d) the 2 kg. steel ball reaches the ground earlier
Ans:c

43. After a watch has been wound, it?
(a) has great energy stored in it
(b) possesses mechanical potential energy stored in it
(c) has eletrical energy stored in it
(d) has no energy in it
Ans:b

44. Two plane mirrors are set at right angles and a flower is placed in any position in between the mirrors. The number of images of the flower which will be seen is?
(b) two
(d) four
(a) one
(c) three
Ans:c

45. In which of the following cases total internal reflection cannot be obtained?
(a) ray going from water to glass
(b) a ray going from glass to water
(c) a ray going from glass to air
(d) a ray going from water to air.
Ans:a

46. When white light passes through a glass prism, we get a spectrum on the other side of the prism. In the emergent beam the ray which is deviated least is
(a) the violet ray
(b) the red ray
(c) the green ray
(d) the yellow ray
Ans:b

47. Magnetic storms are due to
(a) the rotation of the earth
(b) the revolution of the earth
(c) the rainy season

(d) the appearance off Sun spots
Ans:d

48. For dynamo which one of the following statements is correct ?
(a) It converts the electrical energy into light energy
(b) It converts the kinetic energy into heat energy
(c) It converts the mechanical energy into electrical energy
(d) Jt converts the electrical energy into mechanical energy.
Ans:c

49. In a transformer the immediate cause of the induced A. C. in the secondary coil is?
(a) a varying electric field
(b) a varying magnetic field
(e) a motion of the secondary coil
(d) efficiency of the operator
Ans:b

50.A dynamo actually acts as a?
(a) converter of energy
(b) source of electric charge
(c) source of magnetic charge
(d) source of energy
Ans:a

Few more ones from physics and engineering subject:-

1. A particle is moving uniformly with an angular velocity ω on the circumference of a circle of radius r. The linear velocity will be given by
(a) $r\omega$
(c) r/ω
(b) $2\Pi r\omega$
(d) ω/r

Ans:a

2. Line spectrum is obtained from the?
(a) Sun
(b) Filament of the bulb
(c) Mercury lamp
(d) Burning coal

Ans:c

3. A moving charge produces:
(a) neither electric field nor magnetic field
(b) electro-static field only
(c) magnetic field only
(d) both magnetic and electro-static fields

Ans:c

4. α, β and γrays emitted from a radioactive source are passed through a 0.5 cm. thick aluminum sheet. The out going radiations will consist of:
(a) α, β and γray
(b) β and γray
(c) γray
(d) αrays
Ans:b

5. Light year is a unit of
(a) time
(b) distance
(c) velocity
(d) acceleration

Ans:b
6. It is easier to draw up wooden block along an inclined plane than bang it up vertically principally because:
(a) the friction is reduced
(b) only a part of the weight has to be overcome
(c) the mass becomes smaller
(d) g becomes smaller
Ans:b

7. If a piece of ice floating on the surface of water in a beaker melts completely, the level of water
(a) rises
(b) remains the same
(c) falls
(d) initially rises and then falls
Ans:b

8. A Kelvin thermometer and a Fahrenheit thermometer used to record temperature of melting metal, read the same. What will a celcius thermometer read at that temperature?
(a) 301.25°
(b) 273°
(c) 457°
(d) 760°
Ans:a

9. A hydrogen-filled balloon expands as it rises and may even burst after rising very high in the atmosphere. This happens because:
(a) the temperature increases with height
(b) the temperature decreases with height
(c) the atmospheric pressure increases with height
(d) the atmospheric pressure decreases with height

Ans:d

10. if two substances of equal volumes but of different densities are dropped from the same height simultaneously, then
(a) the body of lower density will reach the earth earlier
(b) both the bodies will reach the earth simultaneously
(c) The body of higher density will reach earlier
(d) It depends upon the place
Ans:b

11. When the bob of a pendulum is at the mean position (minimum displacement) of its motion, its total energy is:
(a) all potential
(b) zero
(c) all kinetic
(d) partly kinetic partly potential
Ans:c

12. A red and a green pencil are taken in a room illuminated with green light. In the room:
(a) both pencils will appear dark
(b) pencils will appear as red and green respectively
(c) red pencil.will appear dark and green pencil as green
(d) red pencil will appear red and green pencil dark

Ans:c
13. The consumption of electrical energy in the household is measured in terms of:
(a) Kilowatt hour
(b) Kilowatts
(c) Joules
(d) Kilo Joules

Ans:a

14. A magnet is placed in earth's magnetic field with north pole of the magnet pointing north. At the neutral point:
(a) the earth's magnetic field is zero
(b) the magnet's magnetic field is zero
(c) the fields of the magnet and the earth are equal and in the same direction
(d) the fields of the magnet and the earth are equal and opposite

Ans:d

15. Sudden fall of a barometer reading indicates:
(a) storm
(b) dry weather
(c) fine weather
(d) cold weather

Ans:a

16. If a ball and a rectangular block of different metal when completely immersed in a liquid, have the same loss of weight, then
(a) ball and rectangular block have same density
(b) ball and rectangular block have Weight in air
(c) ball and rectangular block have same volume
(d) ball and rectangular block have immersed to the same depth

Ans:c

17. If the period of oscillation of a simple pendulum is 4 seconds and we want to convert it into a second pendulum, then we have to:
(a) make the length of the pendulum one fourth of the previous length
(b) double the length of the pendulum
(c) make the length of the pendulum half of the previous length
(d) double the mass of the bob

Ans:a

18. The escape velocity of a body from the earth depends upon:
(a) mass of the body
(b) radius of the earth as well as the value of g
(c) the radius of the earth only
(d) volume of the body

Ans:b

19. A cyclist taking a turn bends inside because:
(a) he feels pleasure in doing so
(b) he increases speed in doing so
(c) he obtains necessary Centripetal force
(d) he avoids accidents
Ans:c

20. If the surface of water in a lake is just going to freeze, then the temperature of water at the bottom is
(a) 0°C

(b) 4°C
(c) 3°C
(d) none of these
Ans:b

21. The tangent law is applicable only when:
(a) there are at least two magnetic fields
(b) there two uniform magnetic fields mutually perpendicular to each other
(c) one strong magnetic field and the other weak magnetic field
(d) in the present magnetic fields one should be horizontal component of the earth's magnetic field
Ans:b

22. A moving coil galvanometer is converted into an ammeter by putting:
(a) a high resistance in parallel
(b) a low resistance in series
(c) a low resistance in parallel
(d) a high resistance in series
Ans:c

23. Lenz's law is derived from the law of conservation of:
(a)momentum
(b) energy
(c)charge
(d) magnetism
Ans:b

24. On which one of the factors does the sensivity of a galvanometer depend?
(a) number of the turns of the coil
(b) the temperature of the room
(c) the current flowing in it
(d) the potential difference between the two ends.
Ans:a

25. The wavelength of X-rays is of the order of:
(a) 0.1 cm
(b) 10^2 cm
(c)10^{-4} cm
(d)$10\ 10^{-8}$ cm
Ans:d

26. Lamps used for street lighting are connected in
(a) parallel
(b) series and parallel both
(c) series

(d) none of the above
Ans:a

27. A. C. can be measured with the help of:
(a) moving coil galvanometer
(b) hot wire ammeter
(c) tangent galvanometer
(d) galvanometer

Ans:b