**AIR and DD Question Bank with answer on AIR and DD 2011:**

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) ?R2F  
(c) 2?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)103  
(b) 104  
(c)102  
(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)10-18m  
(b) 10-14m  
(c)10-10m  
(d) 10-6m  
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