BHEL RECRUITMENT PAPER 2

1)Unit of Entropy (J/kg K or kJ/kg K)
2)A mass of 100kg is falling from a height of 1 m and penetrates the sand into for 1 m. What is the resistance force given by sand.
3)Ratio of specific heats of air. (1.41)
4)A body weighs 3 kg in air. If it is submerged in a liquid, it weighs 2.5 kg. What is the specific gravity of the liquid.
5)Two cars travell in same direction at 40 km/hr at a regular distance. A car comes in a opposite direction in 60km/hr. It meets each car in a gap of 8 seconds. What is the distance between them?
6)A simple problem involing in hoops stress. For sphere: M= [3/2]*p*V*[density of pressure vessel material/Maximum working stress it can tolerate] For Thin walled pressure walls: Hoops stress or stress in the radial direction =p*r/2t
7)A problem in force calculation in a body moving in a inclined surface.
8)Composition of bronze. (Copper+zinc)
9)Compostion of stainless steel.(iron+chromium+nickel+carbon)
10)CI is manifactured in which process. (cupola process)
11)What percentage of carbon is preset in pig iron. (4.5 to 6%)
12)Water is available at 10m height. What is the pressure available? (pressure=density*g*height; p=1000*9.81*10; p=98100N/m2)
13)What will happen if the speed of the centrifugal pump doubles.
14)The unit eV is widely used in ? (Nuclear and atomic physics)
15)What will happen to the resistance, when the diameter of the conductor is doubled?
16)The power comsumed by a electrical device is 1000W at 250V, What is the resistance in the device? (Power= Voltage*current; Current=Power/Voltage, Current,I=1000/250=4
amps. V=IR, Therefore R=250/4=62.5 ohms)
17)Why DC current is not used in transformer.
18)On what principle the sonar/ radar(I dont remember) works?
19)Bending moment diagram for the UDL is in what shape?
20)Function of the distributor in petrol vehicles? (Spark timing)
21)Which is not present in CI engines? (carburrettor)
22)What will happen if one cylinder recieves more amount of fuel spray from injectors than other injectors?
23)Purpose of draft tube in hydraulic turbines? (The purpose of a draft tube is toconvert some of the kinetic energy of the flow from the runner (the rotating part of the turbine) intopressure energy and thereby increase the efficiency ofthe hydro power turbine.)
24)What is the effect or reheater in the gas turbine? (The advantage of reheater is significantly increased thrust; the disadvantage is it has very high fuel consumption and inefficiency)
25)Problems in involving with fricition coefficient.
26)Factor of safety = Yeild stress/Working stress.
27)Which is the example of non parallel power transmission (Universal coupling)
28)For perpendicular shafts worm gear is used.
29)A planet gear with 25 teeth is meshed with a sun gear of 100 teeth. Both are connected using a arm. How many rotations are needed for planet gear to complete one rotation around the sun gear?
30)What is equivalent spring constant for spring in parallel?
31) Some questions was asked related to boundry layer and vortex flow.

32) 5 questions were asked in PERT, Process planning, Product planning, Break even analysis.
33)How are tungsten and sintered composite materials are machined? (Electro Discharge Machining, EDM)

BHEL Placement Papers (2008)

1. The ratio of two specific heats of air is equal to. = 1.41

2. A perfect gas at 270C is heated at constant pressure till its volume is double. The final temperature is = 3270C

3. An engine operates between temperature of 9000K and T2 and another engine between T2 and 8000K. For both to do equal work, value of T2 will be. = 6500K

4. Internal energy of a substance depends on = Temperature

5. Work done in compressing 1kg of gas adiabatically from p1,V1,T1 to p2, V2, T2 is equal to = Cv(T2-T1)

6. The unit of entropy is = J/kg 0K

7. Indicated power of a 4-stroke engine is equal to = pLAN/2

8. Which of the following is not an internal combustion engine : a) 2 stroke petrol engine b)4 stroke petrol engine c) Diesel engine d) steam engine e) Gas turbine. = (d)

9. If one cylinder of a diesel engine receives more fuel than the others, then for that cylinder the: a) exhaust will be smoky b) piston rings would stick into piston grooves c) exhaust temperature will be high d) engine starts overheating e) all of the above. = (e)

10. The spark plug gap is normally maintained at: = 0.45 to 0.6mm

11. A distributor in spark ignition engines performs the function of : = Providing the correct firing order in engine

12. Which of the following does not relate to C.I. engine:: a) fuel pump b) fuel injector c) governor d) carburetor e) flywheel = (d)

13. Air fuel ratio in a jet engine is = 60:1

14. What is the value of Prandtl No.?

15. In domestic refrigerator, the tubes at the back of the refrigerator are: a) evaporator b) condenser c) capillary tubes d).....

16. Which refrigerants has the highest critical point temperature. = Freon-11

17. Wet bulb temperature is. = indication of amount of moisture in air

18. On psychrometric chart, dry bulb temperature lines are. = Vertical

19. Surface tension has the units. = newtons/m

20. The line of action of the buoyant force acts through the. = centroid of the displaced volume of fluid

21. A pressure of 25m of head of water is equal to. =245kN/m2

22. For a submerged body to be in stable equilibrium, the centre of gravity should be. =Below the centre of buoyancy.

23. The actual velocity at vena contracta for flow through an orifice from a reservoir of height H=?. =Cvv2gH

24. A body weighing 2kg in air weights 2.5kg when submerged in water. Its specific gravity is. = 6

25. In a free vortex motion: = each particle moves in a circular path with a speed varying inversely as the distance from the centre.

26. A centrifugal pump has speed-1000rpm, Flow-1200l.p.m, Head-20m, Power-5H.P. If its speed is increased to 1500rpm, new flow will be.: = 1800l.p.m

27. Runaway speed of a hydraulic turbine is: = the speed if the turbine runner is allowed to revolve freely without load and with the wicket gates wide open.

28. 10m of water column is equal to = 100kN/m2

29. M.I. of a circular area about an axis perpendicular to the area is: = pr4/2

30. A projectile is fired at an angle ? to the vertical. Its horizontal range will be maximum when ? is . =450

31. An elevator weighing 1000kg attains an upward velocity of 4m/sec in two seconds with uniform acceleration. The tension in the supporting cables will be = 1200kg.

32. A 13m ladder is placed against a smooth vertical wall with its lower end 5m from the wall. What should be the co-efficient of friction between ladder and floor so that it remains in equilibrium. = 0.21

33. A car is moving with a velocity of 60km/hr and possesses energy of 5×105 joules. The mass of the car will be. =3000kg.

34. If l is the span of a light suspension bridge whose each cable carries total weight (w) and the central diop is y, the horizontal pull at each support is: = wl/y OR

35. A beam of length l, having uniform load w kg/unit length is supported freely at the ends. The moments at mid span will be: = wl2/8.

36. A boiler shell 200cm dia and plate thickness 1.5cm is subjected to internal pressure of 1.5MN/m2, then the hoop stress will be. = 100N/m2

37. 100KW is to be transmitted by each of two separate shafts. A is turning at 250rpm and B at 300rpm. Which shaft must have greater diameter.: = B

38. Two identical leaf springs of spring constant k are arranged like cantilevers in parallel and attached at free end by a spring of spring constant k. The equivalent spring constant of combination is; = 1.5k.

39. Automobile steering gear is an example of: = lower pair.

40. The type of coupling used to join two shafts whose axes are neither in same straight line nor parallel, but intersect is. = Universal coupling.

41. To transmit power from one rotation shaft to another whose axes are neither parallel nor intersecting, use: = Spiral gear.

42. A gear having 100 teeth is fixed and another gear having 25 teeth revolves around it, the centre lines of both gears being joined by an arm. How many revolutions will be made by gear of 25 teeth for one revolution of arm. = 5 rev.

43. The secondary critical speed of a shaft occurs at: = twice the speed of primary critical speed.

44. Brittle coating technique is used for: = experimental stress analysis.

45. Factor of safety is the ratio of: = yield stress/working stress.

46. Type of gear used for non-intersection perpendicular shafts: = Hypoid gears.

47. Corrosion resistance of steel is increased by adding: = Chromium & Nickel

48. The product of Cupola is called: = cast iron

49. Brinell tester uses a hardness steel ball of size: = 10mm

50. Sintered and tungsten carbides can be machined by: = EDM

51. What kind of abrasive cut off wheel should be used to cut concrete, stone and masonry? =Diamond grit.

52. In break-even analysis, total cost consists of: = Fixed cost + Variable cost.

53. The amount deducted from the salary of workers towards employees provident fund is : =deposited in the account of worker with Provident Fund Commissioner.

54. PERT is: = event oriented technique

55. Bar charts are suitable for: = minor works.

56. ? on a PERT/CPM chart represents: = a significant event representing some mile-stone

57. Electron volt is the unit of : = Energy.

58. Seamless tubes are made by?

59. Reheating in gas turbine results in: = increase of work ratio and decrease of thermal efficiency.

60. Why DC current is not used in transformer?

61. What is the purpose of draft tube in hydraulic turbines: = to convert the kinetic energy into pressure energy.

62. A mass of 100kg is falling from a height of 1m and penetrates the sand to 1m. what is the resistance force of the sand?

63. Two cars travel in the same direction at 40km/hr at a regular distance. A car comes in the opposite direction at 60km/hr. It meets each car in a gap of 8 seconds. What is the distance between the two cars?