PLUMBING DESIGN QUESTION BANK I

NAME_____

PUMP

1. The amount of real horsepower going to the pump.
   a. Motor Hp b.Brake Hp c. Hydraulic Hp d. None of the above

2. Motor Horsepower is always greater than Brake hp.
   a. False b. True c. Maybe d. None of the Above

3. Hydraulic Hp is always greater than Brake horsepower..
   a. False b. True c. Maybe d. None of the Above

4. Water is being pumped from a reservoir to a storage tank on a hill. The elevation difference between water levels is 1200 feet. Find the pump size required to fill the tank at a rate of 120 gpm. Express your answer in horsepower.
   a. 36.4 b. 35.4 c. 37.4 d. None of the Above

A pump station is used to lift water 50 feet above the pump station to a storage tank. The pump rate is 500 gpm. If the pump has an efficiency of 85% and the motor has an efficiency of 90%, find each of the following:

5. Water Horsepower
   a. 7.42 hp b. 6.31 hp c. 8.25 hp d. None of the Above

6.Brake Horsepower
   a. 7.42 hp b. 6.31 hp c. 8.25 hp d. None of the Above

7.Motor Horsepower
   a. 7.42 hp b. 6.31 hp c. 8.25 hp d. None of the Above

8. Wire-to-Water Efficiency.
   a. 85% b. 76.5 % c.90% d. 75.5%

9. Refers to reductions in flow due to turbulence as water passes through hoses, pipes, fittings and elbows.
a. Friction loss b,. Head loss c. Pressure loss d. None of the above

10.The resistance to flow of a liquid at a given temperature.
   a. Laminar b. Viscosity c. Turbulence d. None of the Above

11. A disk with multiple vanes. It is attached to the pump engine or motor and is used to create the centrifugal force necessary for moving water through the pump casing.
   a. Shaft b. Impeller c. Ilet pipe d. Casing

12. Find the total head, in feet, for a pump with a total static head of 19 ft and a head loss of 3.7 ft.
   a. 15.3 ft b. 22.7 ft c. 5.1 ft d. 70.3 ft

13. A 480v AC pump motor draws 22 amps. What is the horsepower output of the motor if the power factor is .78 and the pump efficiency is 89%?
   a. 11.04 HP b. 9.83 HP c. 7.33 HP d. 12.41 HP

PLUMBING DESIGN QUESTION BANK I

14. Given the following data, calculate the total kilowatts needed to operate the following small facility when everything is running: Raw water pump = 300 hp, Flocculators = 60 hp, Filter pump for backwashing = 100 hp, Chlorination = 25 hp, Clear water pump = 100 hp, Lighting = 11 hp, Instrumentation = 4 hp
a. 1,386 KW b. 260 KW c. 600 KW d. 448 KW

15. A circular tank is 6ft. 6 inches in diameter and 25' deep. If the tank is completely full and a 300 GPM pump is supplied, how long will it take to remove 36" of water from the tank?
a. 2.5 min b. 33 min c. 25 min d. 248 min

16. Cavitation in a centrifugal pump _____.
A. is the violent collapsing of bubbles as they pass through the impeller
B. is caused by voids in the pump discharge
C. is caused by worn pump bearings
D. is an indication of a bent impeller blade

17. Total dynamic head (TDH) represents the _____ though the system.
A. total resistance to flow
B. suction gradient
C. friction loss
D. fluid velocity increases

18. The function of a pump is to _____.
A. convert static head into fluid pressure
B. pressurize a container
C. convert fluid pressure into fluid velocity
D. transfer fluid through a system

19. The two main categories of pumps are _____.
A. dynamic and positive displacement
B. rotary pumps and gear pumps
C. jet pumps and turbine
D. volute and involute

20. The centrifugal pump develops a high liquid velocity using a(n) _____.
A. piston
B. gear
C. impeller
D. propeller

21. The minimum pressure required at the suction port of the pump to keep the pump from cavitating.
a. Net Positive Suction Head (NPSH) required b. Net Positive Suction Head (NPSH) available
b. Net Positive Suction Head (NPSH) d. None of the above

22. _____ is a function of your system and must be calculated
a. Net Positive Suction Head (NPSH) required b. Net Positive Suction Head (NPSH) available
b. Net Positive Suction Head (NPSH) d. None of the above

PLUMBING DESIGN QUESTION BANK I

WATER HEATER

23.It is the amount of energy needed to cool or heat one pound of water by one degree Fahrenheit .
a. Calories b.BTU c. Pascal d. None of the Above

24. The temperature at which a liquid changes into vapour.
b. Saturation point b. Boiling point c. Critcal point d. None of the Above

25. The temperature at which the liquid start to boil when the external pressure is one atmosphere.
b. Normal Boiling Temperature b. Critical Boiling Temperature c. Critical Boiling Temperature

26. Find the number of BTU necessary to heat 100 pounds of water by 40 degrees Fahrenheit
a. 40 b. 4000 c. 400 d. None of the Above

27. Sizing of gas system begin with..
a. nearest equipment from the delivery point of a heater.
b. Farthest equipment from the delivery point of a heater
c. middle equipment from the delivery point of a heater. d. None of the above

28. The following are type of Hot Water Distribution System except
a. Up-feed and Gravity Return System b. Overhead Feed and Gravity Return System
c. Direct feed and Gravity Return System d. a & b

29. Hot Water Distribution System commonly used in Residential Houses
a. Up-feed and Gravity Return System b. Overhead Feed and Gravity Return System
c. Direct feed and Gravity Return System d. a & b

30. Hot Water Distribution System commonly used in buildings with Extreme heights
a. Up-feed and Gravity Return System b. Overhead Feed and Gravity Return System
c. Direct feed and Gravity Return System d. a & b

31.. The small hot water tanks is called_____.
a. Storage Boiler b. Range Boiler c. None of the Above

32.The large hot water tanks is called_____.
a. Storage Boiler b. Range Boiler c. None of the Above

33. Basis on Sizing Hot Water Tank.
a. The kind of Building served b. Expected number of users
c. Heating Capacity of the supply device d. All of the above.

34. Hot Water Consumption for Residential Building in gallons per person per hour
a. 8 b. 9 c. 10 d. 12

35. Hot Water Consumption for Apartmentl Building in gallons per person per hour
a. 8 b. 9 c. 10 d. 12

36. Average working load of hot water for Hotels and Restaurant
a. 25% b. 35% c.50 % d. 75%

PLUMBING DESIGN QUESTION BANK I

37. Average working load of hot water for School and offices
a. 25% b. 35% c.50 % d. 75%

38. A 100 capacity 3 star hotel needs how many gallons for sizing of Hot water tank?
a. 100 b. 1000 c. 5000 d. 500

39. How many member of a family can a 1.0 mts high and 32 cm diameter hot water tank served?
a. 8 b .10 c. 6 d. 4

40. What valve be used in protection for Hot Water Tank against excessive pressure and temperature?
a. Temperature Relief Valve b. Pressure Relief Valve c. Temperature-Pressure Relief Valve

41.Usual material being used in Range Boiler Hot Water tank.
a. Stainless Steel Sheet. b. Aluminum coated Steel Sheet c. a & b d. None of the Above.

42. Tapping point for Range Boiler Hot Water Tank.
a. 1" b.2" c. ½" d.1 ½" e. a & d

43. Number of tapping point for Hot Water Storage Tank.
a. 5 b. 6 c. 8 d. 4

44. Average temperature needed for canteen and kitchen to satisfy hygiene requirement.
a. 55 deg Fahrenheit b. 65 deg Fahrenheit c. 75 deg Fahrenheit d. 85 deg Fahrenheit

45. How many storeys zoning of Hot Water line be most economical?
a. 30 b. 20 c. 10 d. 40

46. To protect the hot water space heating system what relief valve to be installed?
a. Pressure Relif Valve b. Steam Relief Valve c. Temperature Relief Valve d. None of the Above

FIRE PROTECTION

47. Fire Code of the Philippines of 2008".
a. RA 9275 b. RA 9514 c. RA 1378 d. RA 1364

48. _____ A building unsafe in case of fire because it will burn easily or because it lacks adequate exits or fire escapes.
c. Fire Hazard b. Fire Trap c. Fire level d. None of the Above

49. _____ – Any condition or act which increases or may cause an increase in the probability of the occurrence of fire, or which may obstruct, delay, hinder or interfere with fire fighting operations and the safeguarding of life and property
a. Fire Hazard b. Fire Trap c. Fire level d. None of the Above

50. _____ – The minimum temperature at which any material gives off vapor in sufficient concentration to form an ignitable mixture with air.
a. Melting 'point b. Boiling point c.Flash point d. None of the above.

51. _____ An integrated network of hydraulically designed piping installed in a building, structure or area with outlets arranged in a systematic pattern which automatically discharges water when activated by heat or combustion products from a fire .
a. Sprinkler System b. Wet standpipe system c. Dry Stand Pipe System d. None of the above.

PLUMBING DESIGN QUESTION BANK I

52.. Fires in cooking appliances that involve combustible cooking media (vegetable or animal oils and fats).
a. Class A b. Class B c. Class C d. Class D e . Class k

53. Fires involving ordinary combustible materials such as wood, cloth, rubber and plastics.
a. Class A b. Class B c. Class C d. Class D e . Class k

54. Fires involving combustible materials, such as sodium, magnesium, potassium, and other similar materials.
a. Class A b. Class B c. Class C d. Class D e . Class k

55.. Fires involving flammable liquids and gases.
a. Class A b. Class B c. Class C d. Class D e . Class k

56.. Fires involving energized electrical equipment.
a. Class A b. Class B c. Class C d. Class D e . Class k

57. Automatic fire department notification through central station accredited by the BFP shall be mandatory to the following types of occupancy:
a. All high rise buildings &. All hospitals;
b All educational institutions, hotels and apartment buildings (condominium) of at least four (4) storey in height;
c.All highly hazardous occupancies & All mall buildings.
d. All of the above

SECTION 10.2.6.6 STANDPIPES

58. The design, installation and maintenance of Standpipe Systems shall be in accordance with
a. NFPA 11 b. NFPA 12 c. NFPA 13 d. NFPA 14

Standard for the Installation of Standpipe,
Private Hydrant and Hose Systems.

59. Hose diameter needed for Class 1 Standpipe system.
a. 64 mm dia(2 ½") b.38 mm dia(1 ½") c. 25mm (1") d. None of the above

60. Hose diameter needed for Class II Standpipe system.
a. 64 mm dia(2 ½") b.38 mm dia(1 ½") c. 25mm (1") d. None of the above

61. A_____ is used store air under pressure that will balance out surge from two domestic pumps.
a. Hydropneumatic Tank b. Overhead tank c. Cistern d. None of the Above.

62. What pumping system to be use in order to prevent continous flow of water from becoming stagnant and rancid in Fire Sprinkler system?
a. Direct feed b.Up feed c. Down feed d. None of the Above.

PLUMBING DESIGN QUESTION BANK I

63. Which sensing units that regulates the supply for pressure tank of Up feed Pumping System of Fire Sprinkler system?
a. Bubble Control Units b. Dual Control Unit c. a & b d. None of the Above

64. Which sensing units that atteached each two reservoirs in of Up feed Pumping System of Fire Sprinkler system?
a. Bubble Control Units b. Dual Control Unit c. a & b d. None of the Above

65. Spacing of Fire Sprinkler heads shall depend on the following except.
a. Fire rating of the Building b. Construction of the ceiling
c. Types of Occupancy d. Total area e. All of the above.

66. Spacing of Fire Sprinkler heads shall depend on the following except.
a. Fire rating of the Building b. Construction of the ceiling
c. Types of Occupancy d. Total area e. All of the above.

67. For light hazard occupancy, one sprinkler head coverage is equal to____sq mts.
a. 15 b.20 c.25 d. 10

68. Minimum spacing for one sprinkler head on the supply pipes.
a. 2.4 mts b. 3.6 mts c. 2.0 mts d. None of the Above.

69. Minimum temperature for Automatic Sprinkler System to emit fine water spray.
a. 200deg Fahrenheit b. 174 deg Fahrenheit c. 155 deg Fahrenheit d. 135 deg Fahrenheit

70. Color of the fluid for the sprinkle bulb fluid for temperature rating of 57 deg celcius.
a. Red b. Yellow c. Orange d.Black

PLUMBING FIXTURE PIPE CLERANCES

71. Water supply height clearance from finish floor line for a Siphon Action Wash Down Water closet.
a. 152 mm b. 150 mm c. 200 mm d. 202 mm

72. Drainage pipe clearance from wall to center of pipe for a Siphon Action Wash Down Water closet.
a. 283 mm b. 300mm c. 275 mm d. 202 mm

73. Water supply height clearance from finish floor line for a Reversed Trap Water closet.
a. 152 mm b. 150 mm c. 200 mm d. 202 mm

74. Drainage pipe clearance from wall to center of pipe for a Reversed Trap Water closet
a. 283 mm b. 300mm c. 275 mm d. 259mm

75. Water supply height clearance from finish floor line for a Siphon Jet Water closet.
a. 152 mm b. 150 mm c. 200 mm d. 202 mm

76. Water supply height clearance from finish floor line for a Siphon Vortex Water closet.
a. 110 mm b. 114mm c. 100 mm d. 120 mm

77. Drainage pipe clearance from wall to center of pipe for a Siphon Vortex Water closet
a. 305 mm b. 310 mm c. 300 mm d. 320 mm

78. Water supply height clearance from finish floor line for a Lavatory.
a. 576 mm b. 566mm c. 546 mm d. 556 mm

PLUMBING DESIGN QUESTION BANK I

79. Drainage pipe clearance from wall to center of pipe for a a Lavatory
a. 95 mm b. 85 mm c. 100 mm d. 76 mm

80. Drainage pipe height clearance from finish floor line for a Lavatory.
a. 510 mm b. 501mm c. 546 mm d. 556 mm

81.Cold Water supply height clearance from finish floor line for a Bidet.
a. 190 mm b. 158mm c. 150 mm d. 181mm

82. Hot Water supply height clearance from finish floor line for a Bidet.
a. 190 mm b. 158mm c. 150 mm d. 181mm

83. Drainage pipe height clearance from finish floor line for a Bidet.
a. 210 mm b. 240mm c. 246 mm d. 256 mm

84. Drainage pipe height clearance from finish floor line for a Uniral.
a. 576 mm b. 566mm c. 546 mm d. 528 mm

85. Water supply height clearance from finish floor line for a shower head.
a. 1500 mm b. 1800mm c. 2500 mm d. 2100 mm
.86. Water supply height clearance from finish floor line for a shower control valve.
a. 1500 mm b. 1000mm c. 1200 mm d. 900 mm

COMMERCIAL OR INDUSTRIALSPECIAL WASTE DISPOSAL

86. What is the retention time to be use in sizing Grease Interceptor for commercial kitchen using dishwasher . a. 2.5 hrs b. 1.5 hrs c. 1.0 hr d. 2.0 hrs

87.What is the retention time to be use in sizing Grease Interceptor for Single Service Kitchen
. a. 2.5 hrs b. 1.5 hrs c. 1.0 hr d. 2.0 hrs

88.What is the retention time to be use in sizing Grease Interceptor for Sand-silt-oil?
. a. 2.5 hrs b. 1.5 hrs c. 1.0 hr d. 2.0 hrs

89.What is the retention time to be use in sizing Grease Interceptor for Lint-silt laundry.
. a. 2.5 hrs b. 1.5 hrs c. 1.0 hr d. 2.0 hrs

90.What is the storage factor to be use in sizing Grease Interceptor for fully equipped commercial kitchen having 8 hours operation.
. a. 1 b. 1.5 c. 2 d. 2.5

91.What is the storage factor to be use in sizing Grease Interceptor for fully equipped commercial kitchen having 16 hours operation.
. a. 1 b. 1.5 c. 2 d. 2.5

92.What is the storage factor to be use in sizing Grease Interceptor for fully equipped commercial kitchen having 24 hours operation.
. a. 1 b. 1.5 c. 2 d. 3.0

93.What is the storage factor to be use in sizing Grease Interceptor for Single Service Kitchen
. a. 1 b. 1.5 c. 2 d. 2.5

PLUMBING DESIGN QUESTION BANK I

94.What is the storage factor to be use in sizing Grease Interceptor for self served auto washer
. a. 1 b. 1.5 c. 2 d. 2.5

95.What is the storage factor to be use in sizing Grease Interceptor for employee served auto washer
. a. 1 b. 1.5 c. 2 d. 2.5

96.What is the storage factor to be use in sizing Grease Interceptor for laundries.
. a. 1 b. 1.5 c. 2 d. 2.5

97. What is the minimum capacity of a grease interceptor?
a. 2 b. 3 c.4 d. 5

98. What multiplier factor to be use in sizing septic tank if sewage flow is less than 5677.5 L/day?
a. 1 b. 1.5 c. 2 d. 0.75

99. What multiplier factor to be use in sizing septic tank if sewage flow is more than 5677.5 L/day?
a. 1 b. 1.5 c. 2 d 0.75

100. Retention time to be use in sizing secondary compartment of Septic Tank.
a. 6 hrs b. 12 hrs c. 16 hrs d. 24 hrs

"Intellect is not found in the answer, but in the question. Those who can question things themselves are those who will be able to find answers"