PSC Vocational Instructor In Mechanical Servicing - Agro Machinery - Vhse Examination Previous Year Question Paper

Exam Name: ***Vocational Instructor In Mechanical Servicing - Agro Machinery - Vhse***

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Medium of Questions: English

077/2016

Maximum : 100 marks

Time : 1 hour and 15 minutes

1. The ratio of mass to volume is known as :
   (A) Specific weight
   (B) Density
   (C) Specific volume
   (D) None of the above

2. Density of mercury is 13.6 g/cc and density of water is 1 gr/cc, then specific gravity of mercury is :
   (A) 13.6 gr/cc
   (B) 1 gr/cc
   (C) 13.6
   (D) 1

3. The pressure acting at the bottom of a 1 m deep tank having fresh water with density 1000 kg/m^3 :
   (A) 1000 Pa
   (B) 1 Pa
   (C) 981 Pa
   (D) 9810 Pa

4. The spherical shape of droplets of Mercury is due to :
   (A) High surface tension
   (B) High density
   (C) High adhesion
   (D) Low vapour pressure

5. The capillary rise or dipression in a small diameter tube is :
   (A) Directly proportional to the diameter
   (B) Inversely proportional to surface tension
   (C) Directly proportional to the surface tension
   (D) Inversely proportional to diameter

6. Gauge pressure in flow systems are measured by :
   (A) Manometer
   (B) Aneroid barometer
   (C) Vacuum Gauge
   (D) Bourdon Gauge

7. Standard atmospheric pressure in terms of water column is :
   (A) 9.81 m
   (B) 8.75 m
   (C) 12.35 m
   (D) 10.33 m

8. The velocity head representing the kinetic energy per unit weight of fluid is denoted by :

(A) v^2 (B) $\frac{v^2}{2g}$

(C) $\frac{v^2}{2}$ (D) $\sqrt{2gh}$

9. A Pitot tube is an instrument for measuring :

(A) Pressure of flow (B) Discharge of fluid

(C) Velocity of flow (D) Total energy

10. Venturi meter is a device used for measuring :

(A) Flow rate (B) Piezo metric head

(C) Velocity head (D) Pressure

11. The laminar flow is characterized by :

(A) Irregular motion of fluid particle

(B) Fluid particles moving in layers parellal to the boundary surface

(C) Existance of eddies

(D) High Renold's number of flow

12. The essential feature of turbulent flow :

(A) Large discharge

(B) High discharge

(C) Velocity at a point remains constant with time

(D) Velocity and pressure at a point exhibits irregular fluctuations of high frequency

13. The energy loss in a pipe line is due to :

(A) Viscous action only

(B) Surface roughness only

(C) Friction offered by pipe wall as well as by the viscous action

(D) Turbulent shear stress alone

14. Head loss due to sudden expansion is given by :

(A) $\frac{(v_1 - v_2)^2}{2g}$ (B) $\frac{(v_1 - v_2)^3}{2g}$

(C) $\frac{v_1^2 - v_2^2}{2g}$ (D) $\frac{2(v_1^2 - v_2^2)}{g}$

15. The coefficient of discharge C_d in terms of C_v and C_c:

(A) $C_d = \frac{C_v}{C_c}$ (B) $C_d = C_v \times C_c$

(C) $C_d = \frac{C_c}{C_v}$ (D) None of the above

16. The discharge through a rectangular notch is given by :

(A) $Q = \frac{2}{3} Cd\, L \sqrt{2g}\, H^{5/2}$ (B) $Q = \frac{8}{15} Cd \sqrt{2g}\, LH^{3/2}$

(C) $Q = \frac{8}{15} Cd \sqrt{2g}\, LH^{5/2}$ (D) $Q = \frac{2}{3} Cd \sqrt{2g}\, LH^{3/2}$

17. The loss of pressure head for laminar flow through pipe varies :

(A) As the square of velocity (B) Directly as the velocity

(C) As the inverse of velocity (D) None of the above

18. Stoke is the unit of :

(A) Surface tension (B) Viscosity

(C) Kinematic viscosity (D) Capillarity

19. Gauge pressure at a point is equal to :

(A) Absolute pressure minus atmospheric pressure

(B) Absolute pressure plus atmospheric pressure

(C) Vacuum pressure plus absolute pressure

(D) Vacuum pressure minus atmospheric pressure

20. Bernoulli's theorem deals with the law of conservation of :

(A) Mass (B) Momentum

(C) Density (D) Energy

21. The unit of frequency of an alternating quantity :

(A) Watt (B) Hertz

(C) Seconds (D) rpm

22. rms value of symmetrical sinusoidal current is :

(A) 0.707 max : value (B) 0.637 max : value

(C) 0.5 max : value (D) 0.75 max : value

23. The power factor of an R-L series circuit is :

(A) Zero (B) Between 0 and 1

(C) Between 0 and –1 (D) 1

24. The power taken by a 3ϕ load is given by :

(A) $3V_L I_L \cos\phi$ (B) $3V_L I_L \sin\phi$

(C) $\sqrt{3}V_L I_L \sin\phi$ (D) $\sqrt{3}V_L I_L \cos\phi$

25. The function of a commutator in a d.c. generator is to :

(A) Convert induced a.c. into d.c. (B) Convert induced d.c. into a.c.

(C) Reduce spark at brushes (D) Reduce the power factor

26. The best suited motor for cranes and hoists :

(A) d.c. shunt motor (B) d.c. compound motor

(C) d.c. series motor (D) cumulative-compound motor

27. During charging of lead acid cell :

(A) Its cathode become dark chocolate brown in colour

(B) Its voltage increases

(C) It gives out energy

(D) Specific gravity of H_2SO_4 is decreased

28. The ratio of Ah efficiency to Wh efficiency of lead acid cell is :

(A) Always less than 1 (B) Equal to 1

(C) Equal to 0.5 (D) Always greater than 1

29. The capacity of a cell is measured in :

(A) Watt hour (B) Watts

(C) Ampere hour (D) Ampere

30. The sulphation in a lead acid battery occurs due to :

(A) Trickle charging (B) Incomplete charging

(C) Heavy discharging (D) Fast discharging

31. The working cycle of a petrol engine :

(A) Otto cycle (B) Rankine cycle

(C) Carnot cycle (D) Diesel cycle

32. Which engine is suitable for heavy load?

(A) Diesel engine (B) Petrol engine

(C) Duel combustion engine (D) LPG engine

33. How many number of working stroke per minute will take place for a 1600 rpm single cylinder 4 stroke engine?
(A) 1600
(B) 3200
(C) 400
(D) 800

34. Cooling system used for two stroke petrol engine :
(A) Water cooled
(B) Air cooled
(C) Oil cooled
(D) Regenerative cooled

35. The function of carburettor in petrol engine :
(A) To distribute fuel to different cylinders
(B) To inject the fuel into engine cylinder
(C) To mix air and petrol into correct proportion
(D) To give spark at correct time

36. The brake power is 7.5 kw and frictional power is 2.5 kw, then the indicated power is :
(A) 2.5 kw
(B) 5 kw
(C) 7.5 kw
(D) 10 kw

37. The Heat addition process in a diesel engine takes place at :
(A) Constant pressure
(B) Partially constant : pressure and partially constant volume
(C) Constant volume
(D) Constant temperature

38. In a 4 stroke, each cylinder has :
(A) Four valve
(B) Three valve
(C) Two valve
(D) One valve

39. The component that atomise fuel into fine spray to cylinder :
(A) Injection pump
(B) fuel feed pump
(C) Carburettor
(D) Injection nozzle

40. Stoichio metric air fuel ratio :
(A) 20:1
(B) 15:1
(C) 12:1
(D) 8:1

41. When pressing the clutch pedal?
(A) Pressure plate comes to rest
(B) Connect the fly wheel with gear box permanently
(C) Pressure plate moves away from fly wheel
(D) Pressure plate moves towards the fly wheel

42. The device which permits the vehicle reverse direction :
(A) Clutch (B) Gear box
(C) Fly wheel (D) Differential

43. Which type of rear axle is used for heavy commercial vehicle?
(A) Quarter floating (B) Semi floating
(C) Three quarter floating (D) Full floating

44. In air brake system air compressor is driven by :
(A) Engine itself (B) Electric motor
(C) Hand operated (D) Battery

45. The principle used for making hydraulic brakes :
(A) Darcy's Law (B) Bernoulli's Law
(C) Chezy's Law (D) Pascals' Law

46. One tonne of refrigeration is equal to :
(A) 21 KJ/min (B) 210 KJ/min
(C) 420 KJ/min (D) 620 KJ/min

47. C.O.P is always ———— one.
(A) Equal to (B) Less than
(C) Greater than (D) None of the above

48. In a refrigerating machine, heat rejected is ———— heat absorbed.
(A) Greater than (B) Equal to
(C) Less than (D) None of the above

49. Heat is rejected by the refrigerant in ———— during refrigerating cycle.
(A) Expansion valve (B) Compressor
(C) Condenser (D) Evaporator

50. Commonly used refrigerant in a domestic vapour compression refrigerator :
(A) CO_2 (B) Freon – 12
(C) Ammonia (D) SO_2

51. In a vapour compression refrigeration system, the condition for refrigerant before entering the compressor :
(A) Super heated vapour (B) Wet vapour
(C) Saturated liquid (D) Subcoded liquid

52. The refrigerant commonly used in vapour absorption system is :
(A) Water
(B) Freon 12
(C) SO_2
(D) Aqua-ammonia

53. A electrolux refrigerator is called :
(A) Single fluid absorption system
(B) Two fluid absorption system
(C) Three fluid absorption system
(D) Four fluid absorption system

54. Identify the azeotrope refrigerant from the following :
(A) R-11
(B) R-40
(C) R114
(D) R502

55. Highly toxic and flammable refrigerant :
(A) Carbon dioxide
(B) Ammonia
(C) Air
(D) R-12

56. Environmental protection agencies advice against the use of chloro-fluro carbon refrigerant because :
(A) These react with water and cause acid rain
(B) These reacts with plants and cause green house effect
(C) These reacts with oxygen and cause its depletion
(D) These reacts with ozone layer

57. The expansion device used in domestic refrigerator :
(A) Capillary tube
(B) Float valve
(C) Hand operated expansion valve
(D) Automatic expansion valve

58. In summer A/C, the air is :
(A) Cooled and humidified
(B) Heated and humidified
(C) Cooled and dehumidified
(D) Heated and dehumidified

59. When heat is absorbed by a gas, change in entropy is considered to be :
(A) Positive
(B) Zero
(C) Negative
(D) One

60. The COP of a Bell-Coleman cycle refrigerators having same compression ratio and expansion ratio (γ_p = compression ratio = expansion ratio)

(A) $\left(\frac{1}{\gamma_p}\right)^{\frac{r-1}{r}}$ (B) $\frac{1}{\gamma_p^{\frac{r-1}{r}} - 1}$

(C) $\gamma_p^{\frac{r-1}{r}} - 1$ (D) $(\gamma_p - 1)^{\frac{r-1}{r}}$

61. The tail stock set over for a job having D = 35 mm d = 27 mm l = 75 mm and L = 225 mm would be equal to :

(A) 4 mm (B) 10 mm

(C) 12 mm (D) 15 mm

62. The cutting tool in a milling machine is held in position by :

(A) Arbor (B) Spindle

(C) Column (D) Knee

63. Which of the following operation is required for making a chamfer on the edge of a hole?

(A) Spot facing (B) Facing

(C) Reaming (D) Counter sunking

64. Which of the following welding processes used consumable electrode?

(A) Submerged welding (B) MIG welding

(C) TIG welding (D) CIG welding

65. The heat generated in resistance welding is given by :

(A) $H = \frac{I^2R}{T}$ (B) $H = \frac{I^2T}{R}$

(C) $H = I^2RT$ (D) $H = \frac{RT}{I^2}$

66. The process of joining two pieces in which a nonferrous alloy is introduced in liquid state between the pieces of metals and allowed to solidity, is known as :

(A) welding (B) Riveting

(C) lancing (D) Brazing

67. In MIG welding process, the gas used for welding steel :

(A) Pure argon gas (B) CO_2

(C) Argon Oxygen mixture (D) Nitrogen

68. Oxidising flame is a flame which is obtained by supplying :
(A) Less volume of acetylene and more volume of oxygen
(B) More volume of acetylene and less volume of oxygen
(C) Equal volume of acetylene and oxygen
(D) None of the above

69. The drill spindles are provided with standard taper known as :
(A) Seller's taper
(B) Sharp taper
(C) Morse taper
(D) Acme taper

70. The cutting tool in a milling machine is having :
(A) Longitudinal motion
(B) Rotational motion
(C) Vertical motion
(D) Inclined motion

71. The length of belt used in a cross belt drive is ———— than that used in open belt drive.
(A) Double
(B) Equal
(C) Less
(D) Greater

72. Idle gear wheels are used in compound gear train for :
(A) To change the direction
(B) To increase the velocity
(C) To doubling the velocity
(D) To reduce the velocity

73. A machine is said to be self locking if efficiency of machine is :
(A) Equal to 100%
(B) Equal to 50%
(C) More than 50%
(D) Less than 50%

74. Maximum efficiency of a screw jack is a function of :
(A) Effort
(B) Angle of friction
(C) Load lifted
(D) Helix angle

75. Diametral pitch of a gear wheel is defined as the ratio of :
(A) Number of teeth to pitch circle diameter
(B) Pitch circle diameter to number of teeth
(C) Circumference of pitch circle to number of teeth
(D) Number of teeth to circumference of pitch circle diameter

76. The smallest circle drawn to the cam profile from the cam centre is known as :
(A) Prime circle
(B) Pitch circle
(C) Base circle
(D) Pitch curve

77. In cam and follower, the period of dwell is the period :
(A) During which the cam rotates
(B) During which the follower remains stationary during some finite rotation of cam
(C) During which the follower moves from lower position to highest position
(D) During which the followers moves from its higher position to lowest position

78. In the case of pivot bearing, the rubbing velocity is :
(A) Zero at centre and maximum at the outer radius
(B) Maximum at the centre of the conduct area
(C) Uniform throughout the conduct area
(D) None of the above

79. The frictional torque transmitted in the case of flat pivot bearing for uniform pressure is equal to :
(A) μWR (B) $\frac{1}{3}\mu WR$
(C) $\frac{1}{2}\mu WR$ (D) $\frac{2}{3}\mu WR$

80. The maximum efficiency of a Screw jack is given by (ϕ-angle of friction) :
(A) $\frac{1+\cos\phi}{1-\cos\phi}$ (B) $\frac{1-\cos\phi}{1+\cos\phi}$
(C) $\frac{1-\sin\phi}{1+\sin\phi}$ (D) $\frac{1-\tan\phi}{1+\tan\phi}$

81. If T_1 and T_2 are the tensions on the tight side and slack side of belt drive and θ is the angle of conduct, then the ratio of tension is given by :
(A) $\frac{T_1}{T_2}=\mu\theta$ (B) $\frac{T_1}{T_2}=e^{\mu\theta}$
(C) $\frac{T_1}{T_2}=1/e^{\mu\theta}$ (D) $\frac{T_1}{T_2}=\mu e^{\theta}$

82. The torque required to produce a twist of 1 radian per unit length of shaft is known as :
(A) Max : Twisting moment (B) Polar modulus
(C) Flexural rigidity (D) Torsional rigidity

83. The cross section of most commonly used key is :
(A) Rectangular (B) Square
(C) Circular (D) Conical

84. Which one of the following coupling is used to connect two shafts when the shafts are having relative speed?
(A) Compression coupling
(B) Muff coupling
(C) Fluid coupling
(D) Flange coupling

85. Two shafts, one solid and other hollow, are made of same material and are having same length and weight. The hollow shaft as compared to solid shaft will be :
(A) Equal strength
(B) More strong
(C) Less strong
(D) None of the above

86. Specific speed of a pump is the speed at which a pump runs when :
(A) Head developed is unity and discharge is one cubic metre
(B) Head developed is unity and shaft power is unity
(C) Discharge is one cubic metre and shaft power is unity
(D) Discharge is one cubic metre and shaft speed is 1 rpm

87. The discharge through a single acting reciprocating pump when pump rotates at N rpm :
(A) $Q = 2ALN$
(B) $Q = ALN$
(C) $Q = \frac{ALN}{60}$
(D) $Q = \frac{2ALN}{60}$

88. The position of filter in a hydraulic system is in between :
(A) Control value and actuator
(B) Pump and pressure regulation valve
(C) Pressure regulation valve and direction control valve
(D) Reservoir and pump

89. The valve which route the fluid to the desired direction is called :
(A) Gate valve
(B) Relief valve
(C) Directional control valve
(D) Non return valve

90. The device that convert hydraulic into mechanical energy :
(A) Non return valve
(B) Pump
(C) Control valve
(D) Actuator

91. Which of the following valve controls the flow rate in hydraulic system?
(A) Poppet valve
(B) Gate valve
(C) Sliding spool valve
(D) Solenoid valve

92. Which of the following is a static seal?
(A) U.ring seal
(B) Cup seal
(C) Piston ring
(D) O-ring

93. The function of an intensifier is to :
(A) Increase the pressure above the pump discharge pressure
(B) Lowering the pressure below the pump discharge pressure
(C) Increase the flow rate of fluid
(D) Decrease the flow rate of fluid

94. The device that store potential energy of incompressible fluid is called :
(A) Intensifier (B) Accumulator
(C) Check valve (D) Gaskets

95. The component that condense and remove the water vapour in air in a pneumatic system is :
(A) Air filter (B) Muffler
(C) Air lubricator (D) Air relief valve

96. The drive used to convert hydraulic energy to rotating mechanical energy is called :
(A) Hydraulic cylinder (B) Hydraulic intensifier
(C) Hydraulic motor (D) Hydraulic accumulator

97. An example for axial positive displacement pump (linear type) :
(A) Gear pump (B) Lobe pump
(C) Screw pump (D) Swash plate piston pump

98. Control valve which operates with electric current :
(A) Poppet valve (B) Solenoid valve
(C) Spool valve (D) Sequence valve

99. In a pneumatic circuit, the component which form a mist of oil and air :
(A) Muffler (B) Air filter
(C) Gear pump (D) Air lubricator

100. An example for air motor :
(A) Tandum air cylinder (B) Gear motor
(C) Gerotor (D) None of the above