GRADUATE MARINE ENGINEERS

(G.M.E.)

Entrance Exam

Marine Republic

Content:

Fluid Mechanics & Pumps:

Ques 1. One litre of water occupies a volume of

A. 100 cm3
B. 250 cm3
C. 500 cm3
D. 1000 cm3

Answer: Option D

Ques 2. The value of bulk modulus of a fluid is required to determine

A. Reynold's number
B. Froude's number
C. Mach number
D. Euler's number

Answer: Option C

Ques 3. In a depressed nappe

A. the pressure below the nappe is atmospheric
B. the pressure below the nappe is negative
C. the pressure above the nappe is atmospheric
D. the pressure above the nappe is negative

Answer: Option B

Ques 4. In one dimensional flow, the flow

A. is steady and uniform
B. takes place in straight line
C. takes place in curve
D. takes place in one direction

Answer: Option B

Ques 5. The kinematic viscosity is the

A. ratio of absolute viscosity to the density of the liquid
B. ratio of density of the liquid to the absolute viscosity
C. product of absolute viscosity and density of the liquid
D. product of absolute viscosity and mass of the liquid

Answer: Option A

Ques 6. A vertical wall is subjected to a pressure due to one kind of liquid, on one of its sides. The total pressure on the wall per unit length is (where w = Specific weight of liquid, and H = Height of liquid)

A. wH
B. wH/2
C. wH2/2
D. wH2/3

Answer: Option C

Ques 7. The length AB of a pipe ABC in which the liquid is flowing has diameter (d1) and is suddenly enlarged to diameter (d2) at B which is constant for the length BC. The loss of head due to sudden enlargement is

A. $(v_1 - v_2)^2/g$

B. $(v_1^2 - v_2^2)/g$

C. $(v_1 - v_2)^2/2g$

D. $(v_1^2 - v_2^2)/2g$

Answer: Option C

Ques 8. The Reynold's number of a ship is _____ to its velocity and length.

A. directly proportional
B. inversely proportional

Answer: Option A

Ques 9. When a tube of smaller diameter is dipped in water, the water rises in the tube due to viscosity of water.

A. True
B. False

Answer: Option B

Ques 10. According to equation of continuity,

A. w1a1 = w2a2
B. w1v1 = w2v2
C. a1v1 = a2v2

D. a1/v1 = a2/v2

Answer: Option C

Ques 11. In a venturimeter, the velocity of liquid at throat is _____ than at inlet.

A. higher
B. lower

Answer: Option A

Ques 12. The loss of head due to friction in a pipe of uniform diameter in which a viscous flow is taking place, is (where RN = Reynold number)

A. 1/RN
B. 4/RN
C. 16/RN
D. 64/RN

Answer: Option C

Ques 13. Which of the following is an example of laminar flow?

A. Under ground flow
B. Flow past tiny bodies
C. Flow of oil in measuring instruments
D. all of these

Answer: Option D

Ques 14. The pressure less than atmospheric pressure is known as

A. suction pressure
B. vacuum pressure
C. negative gauge pressure
D. all of these

Answer: Option D

Ques 15. The maximum efficiency of transmission through a pipe is

A. 50%
B. 56.7%
C. 66.67%
D. 76.66%

Answer: Option C

Ques 16. An ideal fluid is frictionless and incompressible.

A. Correct
B. Incorrect

Answer: Option A

Ques 17. The centre of gravity of the volume of the liquid displaced is called

A. centre of pressure
B. centre of buoyancy
C. metacentre
D. none of these

Answer: Option B

Ques 18. A tank of uniform cross-sectional area (A) containing liquid upto height (H1) has an orifice of cross-sectional area (a) at its bottom. The time required to empty the tank completely will be

A. $(2A\sqrt{H_1})/(C_d \times a\sqrt{2g})$
B. $(2AH_1)/(C_d \times a\sqrt{2g})$
C. $(2AH_1^{3/2})/(C_d \times a\sqrt{2g})$
D. $(2A\sqrt{H_1^{2}})/(C_d \times a\sqrt{2g})$

Answer: Option A

Ques 19. A siphon is used to connect two reservoirs at different levels intervened by a high ridge.

A. True
B. False

Answer: Option A

Ques 20. If a body floating in a liquid returns back to its original position, when given a small angular displacement, the body is said to be in

A. neutral equilibrium
B. stable equilibrium
C. unstable equilibrium
D. none of these

Answer: Option B

Ques 21. The power transmitted through a pipe is (where w = Specific weight in N/m3, and Q = Discharge in m3/s)

A. w x Q x H
B. w x Q x hf

C. w x Q (H - hf)
D. w x Q (H + hf)

Answer: Option C

Ques 22. The weight per unit volume of a liquid at a standard temperature and pressure is called
A. specific weight
B. mass density
C. specific gravity
D. none of these

Answer: Option A

Ques 23. The metacentric heights of two floating bodies A and B are 1 m and 1.5 m respectively. Select the correct statement.
A. The bodies A and B have equal stability
B. The body A is more stable than body B
C. The body B is more stable than body A
D. The bodies A and B are unstable

Answer: Option C

Ques 24. The Bernoulli's equation is based on the assumption that
A. there is no loss of energy of the liquid flowing
B. the velocity of flow is uniform across any cross-section of the pipe
C. no force except gravity acts on the fluid
D. all of the above

Answer: Option D

Ques 25. The velocity corresponding to Reynold number of 2800, is called
A. sub-sonic velocity
B. super-sonic velocity
C. lower critical velocity
D. higher critical velocity

Answer: Option D

Ques 26. The efficiency of power transmission through pipe is (where H = Total supply head, and hf = Head lost due to friction in the pipe)
A. $(H-h_f) / H$

B. $(H)/ (H-h_f)$

C. $(H + h_f) / H$

D. $(H)/ (H + h_f)$

Answer: Option A

Ques 27. A flow in which _____ force is dominating over the viscosity is called turbulent flow.

A. elastic
B. surface tension
C. viscous
D. inertia

Answer: Option D

Ques 28. The atmospheric pressure at sea level is

A. 103 kN/m2
B. 10.3 m of water
C. 760 mm of mercury
D. all of these

Answer: Option D

Ques 29. Reynold's number is the ratio of inertia force to

A. pressure force
B. elastic force
C. gravity force
D. viscous force

Answer: Option D

Ques 30. The unit of dynamic viscosity in S.I. units is

A. N-m/s2
B. N-s/m2
C. poise
D. stoke

Answer: Option B

Ques 31. Bulk modulus of a fluid _____ as the pressure increases.

A. remains same

B. decreases
C. increases

Answer: Option C

Ques 32. A water tank contains 1.3 m deep water. The pressure exerted by the water per metre length of the tank is

A. 2.89 kN
B. 8.29 kN
C. 9.28 kN
D. 28.9 kN

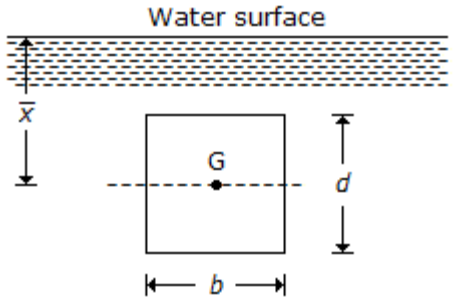
Answer: Option B

Ques 33. Which of the following statement is wrong?

A. A flow whose streamline is represented by a curve, is called two dimensional flow.
B. The total energy of a liquid particle is the sum of potential energy, kinetic energy and pressure energy.
C. The length of divergent portion in a venturimeter is equal to the convergent portion.
D. A pitot tube is used to measure the velocity of flow at the required point in a pipe.

Answer: Option C

Ques 34. A vertically immersed surface is shown in the below figure. The distance of its centre of pressure from the water surface is



A. $bd^2/12 + x$

B. $d^2/12x + x$

C. $b^2/12 + x$

D. $d^2/12 + x$

Answer: Option B

Ques 35. The Francis formula for the discharge over Cippoletti weir is

A. 1.84 LH1/2
B. 1.84 LH
C. 1.84 LH3/2
D. 1.84 LH5/2

Answer: Option C

Ques 36. The loss of pressure head in case of laminar flow is proportional to

A. Velocity
B. (velocity)2
C. (velocity)3
D. (velocity)4

Answer: Option A

Ques 37. The flow of water through the hole in the bottom of a wash basin is an example of

A. steady flow
B. uniform flow
C. free vortex
D. forced vortex

Answer: Option C

Ques 38. A compound pipe is required to be replaced by a new pipe. The two pipes are said to be equivalent, if

A. length of both the pipes is same
B. diameter of both the pipes is same
C. loss of head and discharge of both the pipes is same
D. loss of head and velocity of flow in both the pipes is same

Answer: Option C

Ques 39. A body floating in a liquid is said to be in a stable equilibrium, if its metacentre coincides with its centre of gravity.

A. True
B. False

Answer: Option B

Ques 40. Water is _____ liquid.

A. a compressible

B. an incompressible

Answer: Option B

Ques 41. The specific weight of water in S.I. units is taken as

A. 9.81 kN/m3
B. 9.81 x 103 N/m3
C. 9.81 x 10-6 N/mm3
D. any one of these

Answer: Option D

Ques 42. The specific weight of sea water is _____ that of pure water.

A. same as
B. less than
C. more than

Answer: Option C

Ques 43. According to Pascal's law, the intensity of pressure at any point in a fluid at rest is the same in all directions.

A. Agree
B. Disagree

Answer: Option A

Ques 44. The buoyancy depends upon the

A. weight of the liquid displaced
B. pressure with which the liquid is displaced
C. viscosity of the liquid
D. compressibility of the liquid

Answer: Option A

Ques 45. Stoke is the unit of

A. kinematic viscosity in C. G. S. units
B. kinematic viscosity in M. K. S. units
C. dynamic viscosity in M. K. S. units
D. dynamic viscosity in S. I. units

Answer: Option A

Ques 46. When the pressure intensity at a point is more than the local atmospheric pressure, then the difference of these two pressures is called

A. gauge pressure
B. absolute pressure
C. positive gauge pressure
D. vacuum pressure

Answer: Option C

Ques 47. The hammer blow in pipes occurs when
A. there is excessive leakage in the pipe
B. the pipe bursts under high pressure of fluid
C. the flow of fluid through the pipe is suddenly brought to rest by closing of the valve
D. the flow of fluid through the pipe is gradually brought to rest by closing of the valve

Answer: Option C

Ques 48. When a body is placed over a liquid, it will sink down if
A. gravitational force is equal to the upthrust of the liquid
B. gravitational force is less than the upthrust of the liquid
C. gravitational force is more than the upthrust of the liquid
D. none of the above

Answer: Option C

Ques 49. The intensity of pressure at any point, in a liquid, is
A. directly proportional to the area of the vessel containing liquid
B. directly proportional to the depth of liquid from the surface
C. directly proportional to the length of the vessel containing liquid
D. inversely proportional to the depth of liquid from the surface

Answer: Option B

Ques 50. A uniform body 3 m long, 2 m wide and 1 m deep floats in water. If the depth of immersion is 0.6 m, then the weight of the body is
A. 3.53 kN
B. 33.3 kN
C. 35.3 kN
D. none of these

Answer: Option C

Ques 51. The total pressure on an immersed surface inclined at an angle θ with the liquid surface is
A. wA
B. wx

C. wAx
D. wAx/sin θ

Answer: Option C

Ques 52. When a plate is immersed in a liquid parallel to the flow, it will be subjected to a pressure _____ that if the same plate is immersed perpendicular to the flow.
A. less than
B. more than

Answer: Option A

Ques 53. The pressure measured with the help of a pressure gauge is called
A. atmospheric pressure
B. gauge pressure
C. absolute pressure
D. mean pressure

Answer: Option B

Ques 54. The metacentric height is the distance between the
A. centre of gravity of the floating body and the centre of buoyancy
B. centre of gravity of the floating body and the metacentre
C. metacentre and centre of buoyancy
D. original centre of buoyancy and new centre of buoyancy

Answer: Option B

Ques 55. A vertical wall is subjected to a pressure due to one kind of liquid, on one of its sides. Which of the following statement is correct?
A. The pressure on the wall at the liquid level is minimum.
B. The pressure on the bottom of the wall is maximum.
C. The pressure on the wall at the liquid level is zero, and on the bottom of the wall is maximum
D. The pressure on the bottom of the wall is zero.

Answer: Option C

Ques 56. Water is a _____ fluid.
A. real
B. ideal
C. newtonian
D. non-newtonian

Answer: Option C

Ques 57. The pressure intensity in kN/m2 (or kPa) at any point in a liquid is (where w = Specific weight of liquid, and h = Depth of liquid from the surface)

A. w
B. wh
C. w/h
D. h/w

Answer: Option B

Ques 58. When a vertical wall is subjected to pressures due to liquid on both sides, the resultant pressure is the _____ of the two pressures.

A. sum
B. difference
C. arithmatic mean
D. geometric mean

Answer: Option B

Ques 59. The height of a water column equivalent to a pressure of 0.15 MPa is

A. 15.3 m
B. 25.3 m
C. 35.3 m
D. 45.3 m

Answer: Option A

Ques 60. The metacentric height of a ship is 0.6 m and the radius of gyration is 4 m. The time of rolling of a ship is

A. 4.1 s
B. 5.2 s
C. 10.4 s
D. 14.1 s

Answer: Option C

Ques 61. The point at which the resultant pressure on an immersed surface acts, is known as

A. centre of gravity
B. centre of depth
C. centre of pressure
D. centre of immersed surface

Answer: Option C

Ques 62. The magnitude of water hammer depends upon the

A. elastic properties of the pipe material
B. elastic properties of the liquid flowing through the pipe
C. speed at which the valve is closed
D. all of the above

Answer: Option D

Ques 63. Bernoulli's equation is applied to

A. venturimeter
B. orifice meter
C. pitot tube
D. all of these

Answer: Option D

Ques 64. A fluid having no viscosity is known as

A. real fluid
B. ideal fluid
C. newtonian fluid
D. non-newtonian fluid

Answer: Option B

Ques 65. In a lockgate, the reaction between two gates is (where P = Resultant pressure on the lock gate, and a = Inclination of the gate with the normal to the side of the lock)

A. P / sin a
B. 2p / sin a
C. P / 2 sin a
D. 2p / (sin a/2)

Answer: Option C

Ques 66. The ratio of specific weight of a liquid to the specific weight of pure water at a standard temperature is called

A. density of liquid
B. specific gravity of liquid
C. compressibility of liquid
D. surface tension of liquid

Answer: Option B

Ques 67. The force of buoyancy is always _____ the weight of the liquid displaced by the body.

A. equal to
B. less than
C. more than

Answer: Option A

Ques 68. When a body is immersed wholly or partially in a liquid, it is lifted up by a force equal to the weight of liquid displaced by the body. This statement is called

A. Pascal's law
B. Archimedes's principle
C. principle of floatation
D. Bernoulli's theorem

Answer: Option B

Ques 69. According to Archimede's principle, if a body is immersed partially or fully in a fluid then the buoyancy force is _____ the weight of fluid displaced by the body.

A. equal to
B. less than
C. more than
D. unpredictable

Answer: Option A

Ques 70. One litre of a certain fluid weighs 8N. What is its specific volume?

A. 2.03×10^{-3} m^3/kg
B. 20.3×10^{-3} m^3/kg
C. 12.3×10^{-3} m^3/kg
D. 1.23×10^{-3} m^3/kg

Answer: Option D

Ques 71. The sum of components of shear forces in the direction of flow of fluid is called as

A. shear drag
B. friction drag
C. skin drag
D. all of the above

Answer: Option D

Ques 72. Which of the following devices does not use Bernoulli's equation as its working principle?

A. Venturimeter
B. Orifice-meter
C. Pitot tube
D. None of the above

Answer: Option D

Ques 73. Which of the following sentences are true for Bernoulli's equation?

1. Bernoulli's principle is applicable to ideal incompressible fluid
2. The gravity force and pressure forces are only considered in Bernoulli's principle
3. The flow of fluid is rotational for Bernoulli's principle
4. The heat transfer into or out of fluid should be zero to apply Bernoulli's principle

A. (1), (2) and (3)
B. (1), (3) and (4)
C. (1), (2) and (4)
D. (1), (2), (3) and (4

Answer: Option C

Ques 74. When the angle between surface tension with the liquid (θ) is greater than 90^{o}, the liquid becomes

A. flat
B. concave upward
C. convex upward
D. unpredictable

Answer: Option B

Ques 75. The fluid will rise in capillary when the capillary is placed in fluid, if

A. the adhesion force between molecules of fluid and tube is less than the cohesion between liquid molecules
B. the adhesion force between molecules of fluid and tube is more than the cohesion between liquid molecules
C. the adhesion force between molecules of fluid and tube is equal to the cohesion between liquid molecules
D. cannot say

Answer: Option B

Ques 76. What is an ideal fluid?

A. A fluid which has no viscosity
B. A fluid which is incompressible
C. A fluid which has no surface tension
D. All of the above

Answer: Option D

Ques 77. Minor losses do not make any serious effect in

A. short pipes
B. long pipes
C. both the short as well as long pipes
D. cannot say

Answer: Option B

Ques 78. Minor losses occur due to

A. sudden enlargement in pipe
B. sudden contraction in pipe
C. bends in pipe
D. all of the above

Answer: Option D

Ques 79. The head loss through fluid flowing pipe due to friction is

A. the minor loss
B. the major loss
C. both a. and b.
D. none of the above

Answer: Option B

Ques 80. The flow of fluid will be laminar when,

A. Reynold's number is less than 2000
B. the density of the fluid is low
C. both a. and b.
D. none of the above

Answer: Option C

Ques 81. Which of the following forces generally act on fluid while considering fluid dynamics?

1. Viscous force
2. Pressure force
3. Gravity force
4. Turbulent force
5. Compressibility force

A. (1), (3), (4) and (5)
B. (1), (2), (3) and (5)
C. (1), (2), (3) and (4)
D. (1), (2), (3), (4) and (5)

Answer: Option D

Ques 82. The specific weight of the fluid depends upon

A. gravitational acceleration
B. mass density of the fluid
C. both a. and b.
D. none of the above

Answer: Option C

Ques 83. For an incompressible fluid does density vary with temperature and pressure?

A. It varies for all temperature and pressure range
B. It remains constant
C. It varies only for lower values of temperature and pressure
D. It varies only for higher values of temperature and pressure

Answer: Option A

Ques 84. If there is bucket full of oil and bucket full of water and you are asked to lift them, which one of the two will require more effort given that volume of buckets remains same?

A. Oil bucket
B. Water bucket
C. Equal effort will be required to lift both of them
D. None of the mentioned

Answer: Option B

Ques 85. Density of water is maximum at

A. 0°C
B. 0°K
C. 4°C
D. 100°C
E. 20°C.

Answer: Option C

Ques 86. Property of a fluid by which its own molecules are attracted is called

A. adhesion

B. cohesion
C. viscosity
D. compressibility
E. surface tension.

Answer: Option B

Ques 87. Mercury does not wet glass. This is due to property of liquid known as

A. adhesion
B. cohesion
C. surface tension
D. viscosity
E. compressibility

Answer: Option C

Ques 88. The tendency of a liquid surface to contract is due to the following property

A. cohesion
B. adhesion
C. viscosity
D. surface tension
E. elasticity.

Answer: Option D

Ques 89. A balloon lifting in air follows the following principle

A. law of gravitation
B. Archimedes principle
C. principle of buoyancy
D. all of the above
E. continuity equation.

Answer: Option D

Ques 90. Surface tension

A. acts in the plane of the interface normal to any line in the surface
B. is also known as capillarity
C. is a function of the curvature of the interface
D. decreases with fall in temperature
E. has no units.

Answer: Option A

Ques 91. The units of viscosity are

A. metres2 per sec
B. kg sec/metre
C. newton-sec per metre2
D. newton-sec per meter
E. none of the above.

Answer: Option B

Ques 92. Kinematic viscosity is dependent upon

A. pressure
B. distance
C. level
D. flow
E. density.

Answer: Option E

Ques 93. If mercury in a barometer is replaced by water, the height of 3.75 cm of mercury will be following cm of water

A. 51 cm
B. 50 cm
C. 52 cm
D. 52.2 cm
E. 51.7 cm.

Answer: Option A

Ques 94. Kinematic viscosity is equal to

A. dynamic viscosity/density
B. dynamicviscosity x density
C. density/dynamic viscosity
D. 1/dynamicviscosity x density
E. same as dynamic viscosity.

Answer: Option A

Ques 95. A pressure of 25 m of head of water is equal to

A. 25 kN/m2
B. 245 kN/m2
C. 2500 kN/m2
D. 2.5kN/m2
E. 12.5 kN/m2.

Answer: Option B

Ques 96. Specific weight of sea water is more that of pure water because it contains

A. dissolved air
B. dissolved salt
C. suspended matter
D. all of the above

E. heavy water.

Answer: Option D

Ques 97. If 850 kg liquid occupies volume of one cubic meter, men 0.85 represents its

A. specific weight
B. specific mass
C. specific gravity
D. specific density
E. none of the above.

Answer: Option C

Ques 98. A bucket of water is hanging from a spring balance. An iron piece is suspended into water without touching sides of bucket from another support. The spring balance reading will

A. increase
B. decrease
C. remain same
D. increase/decrease depending on depth of immersion
E. unpredictable.

Answer: Option C

Ques 99. Falling drops of water become spheres due to the property of

A. adhesion
B. cohesion
C. surface tension
D. viscosity
E. compressibility.

Answer: Option C

Ques 100. The point in the immersed body through which the resultant pressure of the liquid may be taken to act is known as

A. meta center
B. center of pressure
C. center of buoyancy
D. center of gravity
E. none of the above.

Answer: Option B

Ques 101. The resultant upward pressure of a fluid on a floating body is equal to the weight of the fluid displaced by the body. This definition is according to

A. Buoyancy
B. Equilibrium of a floating body
C. Archimedes' principle
D. Bernoulli's theorem
E. Metacentric principle.

Answer: Option C

Ques 102. The resultant upward pressure of the fluid on an immersed body is called

A. upthrust
B. buoyancy
C. center of pressure
D. all the above are correct
E. none of above is correct.

Answer: Option B

Ques 103. The conditions for the stable equilibrium of a floating body are

A. the meta-center should lie above the center of gravity
B. the center of buoyancy and the center of gravity must lie on the same vertical line
C. a righting couple should be formed
D. all the above are correct
E. none of the above is correct.

Answer: Option B

Ques 104. Metacentric height is given as the distance between

A. the center of gravity of the body and the meta center
B. the center of gravity of the body and the center of buoyancy
C. the center of gravity of the body and the center of pressure
D. center of buoyancy and metacentre
E. none of the above.

Answer: Option A

Ques 105. The buoyancy depends on

A. mass of liquid displaced
B. viscosity of the liquid
C. pressure of the liquid displaced
D. depth of immersion
E. none of the above.

Answer: Option A

Ques 106. The center of gravity of the volume of the liquid displaced by an immersed body is called

A. meta-center
B. center of pressure
C. center of buoyancy

D. center of gravity

E. none of the above.

Answer: Option C

Ques 107. The property by virtue of which a liquid opposes relative motion between its different layers is called

A. surface tension

B. co-efficient of viscosity

C. viscosity

D. osmosis

E. cohesion.

Answer: Option C

Ques 108. Capillary action is due to the

A. surface tension

B. cohesion of the liquid

C. adhesion of the liquid molecules and the molecules on the surface of a solid

D. all of the above

E. none of the above.

Answer: Option D

Ques 109. A metal with specific gravity of o floating in a fluid of same specific gravity a will

A. sink to bottom

B. float over fluid

C. partly immersed

D. be fully immersed with top surface at fluid surface

E. none of the above.

Answer: Option D

Ques 110. Manometer is used to measure

A. pressure in pipes, channels etc.
B. atmospheric pressure
C. very low pressure
D. difference of pressure between two points
E. velocity.

Answer: Option A

Ques 111. Which of the following manometer has highest sensitivity

A. U-tube with water
B. inclined U-tube
C. U-tube with mercury
D. micro-manometer with water
E. displacement type.

Answer: Option D

Ques 112. Metacentric height is the distance between the metacentre and

A. water surface
B. center of pressure
C. center of gravity
D. center of buoyancy
E. none of the above.

Answer: Option C

Ques 113. The resultant upward pressure of the fluid on an immersed body due to its tendency to uplift the sub-merged body is called

A. upthrust
B. reaction

C. buoyancy

D. metacentre

E. center of pressure.

Answer: C

Ques 114. The center of pressure of a surface subjected to fluid pressure is the point

A. on the surface at which resultant pres-sure acts

B. on the surface at which gravitational force acis

C. at which all hydraulic forces meet

D. similar to metacentre

E. where pressure equivalent to hydraulic thrust will act.

Answer: Option A

Ques 115. Buoyant force is

A. the resultant force acting on a floating body

B. the resultant force on a body due to the fluid surrounding it

C. equal to the volume of liquid dis-placed

D. the force necessary to maintain equilibrium of a submerged body

E. none of the above.

Answer: Option B

Ques 116. The line of action of the buoyant force acts through the

A. centroid of the volume of fluid vertically above the body

B. centre of the volume of floating body

C. center of gravity of any submerged body

D. centriod of the displaced volume of fluid

E. none of the above.

Answer: Option D

Ques 117. Center of buoyancy is the

A. centroid of the displaced volume of fluid
B. center of pressure of displaced volume
C. e.g. of floating 'body
D. does not exist
E. none of the above.

Answer: Option A

Ques 118. A body floats in stable equilibrium

A. when its meatcentric height is zero
B. when the metancentre is above e.g.
C. when its e.g. is below it's center of buoyancy
D. metacentre has nothing to do with position of e.g. for determining stability
E. none of the above.

Answer: Option B

Ques 119. A piece weighing 3 kg in air was found to weigh 2.5 kg when submerged in water. Its specific gravity is

A. 1
B. 5
C. 7
D. 6

Answer: Option D

Ques 120. The depth of the center of pressure on a vertical rectangular gate 8 m wide and 6 m high, when the water surface coincides with the top of the gate, is

A. 2.4 m
B. 3.0 m

C. 4.0 m

D. 2.5 m

E. 5.0 m.

Answer: Option B

Ques 121. If the atmospheric pressure on the surface of an oil tank (sp. gr. 0.8) is 0.2 kg/cm", the pressure at a depth of 50 m below the oil surface will be

A. 2 meters of water column

B. 3 meters of water column

C. 5 meters of water column

D. 6 meters of water Column

E. 7 meters of water column.

Answer: Option D

Ques 122. Metacentre is the point of intersection of

A. vertical upward force through e.g. of body and center line of body

B. buoyant force and the center line of body

C. mid point between e.g. and center of buoyancy

D. all of the above

E. none of the above.

Answer: Option B

Ques 123. According to the principle of buoyancy a body totally or partially immersed in a fluid will be lifted up by a force equal to

A. the weight of the body

B. more than the weight of the body

C. less than the weight of the body

D. weight of the fluid displaced by the body

E. weight of body plus the weight of the fluid displaced hy the body.

Answer: Option D

Ques 124. When a body floating in a liquid, is displaced slightly, it oscillates about

(a) e.g. of body

(b) center of pressure

(c) center of buoyancy

(d) metacentre

(e) liquid surface.

Answer: D

Ques 125. Buoyant force is

(a) resultant force acting on a floating body

(b) equal to the volume of liquid displaced

(c) force necessary to keep a body in equilibrium

(d) the resultant force on a body due to the fluid surrounding it

(e) none of the above.

Answer: D

Ques 126. A ship whose hull length is 100 m is to travel at 10 m/sec. For dynamic similarity, at what velocity should a 1:25 model be towed through water ?

(a) 10 m/sec

(b) 25 m/sec

(c) 2 m/sec

(d) 50 m/sec

(e) 250 m/sec.

Answer: C

Ques 127. For a floating body to be in stable equilibrium, its metacentre should be

(a) below the center of gravity

(b) below the center of buoyancy

(c) above the center of buoyancy

(d) between e.g. and center of pressure

(e) above the center of gravity.

Answer: E

Ques 128. For a floating body to be in equilibrium

(a) meta centre should be above e.g.

(b) centre of buoyancy and e.g. must lie on same vertical plane

(c) a righting couple should be formed

(d) all of the above

(e) none of the above.

Answer: D

Ques 129. The two important forces for a floating body are

(a) buoyancy, gravity

(b) buoyancy, pressure

(c) buoyancy, inertial

(d) inertial, gravity

(e) gravity, pressure.

Answer: A

Ques 130. Choose the wrong statement

(a) The center of buoyancy is located at the center of gravity of the displaced liquid

(b) For stability of a submerged body, the center of gravity of body must lie directly below the center of buoyancy

(c) If e.g. and center of buoyancy coincide, the submerged body must lie at neutral equilibrium for all positions

(d) For stability of floating cylinders or spheres, the e.g. of body must lie below the center of buoyancy

(e) All floating bodies are stable.

Answer: A

Ques 131. Center of pressure on an inclined plane is

(a) at the centroid

(b) above the centroid

(c) below the centroid

(d) at metacentre

(e) at center of pressure.

Answer: C

Ques 132. An open vessel of water is accelerated up an inclined plane. The free water surface will

(a) be horizontal

(b) make an angle in direction of inclination of inclined plane

(c) make an angle in opposite direction to inclination of inclined plane

(d) any one of above is possible

(e) none of the above.

Answer: C

Ques 133. The line of action of the buoyant force acts through the centroid of the

(a) submerged body

(b) volume of the floating body

(c) volume of the fluid vertically above the body

(d) displaced volume of the fluid

(e) none of the above.

Answer: D

Ques 134. Resultant pressure of the liquid in the case of an immersed body acts through

(a) centre of gravity

(b) centre of pressure

(c) metacentre

(d) centre of buoyancy

(e) in between e.g. and centre of pressure.

Answer: B

Ques 135. The centre of gravity of the volume of the liquid displaced by an immersed body is called

(a) centre of gravity

(b) centre of pressure

(c) metacentre

(d) centre of buoyancy

(e) centroid.

Answer: D

Ques 136. The time oscillation of a floating body with increase in metacentric height will be

(a) same

(b) higher

(c) lower

(d) lower/higher depending on weight of body

(e) unpredictable.

Answer: C

Ques 137. Head developed by centrifugal pump depends on

A. Impeller diameter
B. speed
C. fluid density
D. type of casing
E. Both (a) & (b)

Answer : E

Ques 138. In an immersed body, centre of pressure is

(a) at the centre of gravity

(b) above the centre of gravity

(c) below be centre of gravity

(d) could be above or below e.g. depend¬ing on density of body and liquid

(e) unpredictable.

Answer: C

Ques 139. Non uniform flow occurs when

(a) the direction and magnitude of the velocity at all points are identical

(b) the velocity of successive fluid particles, at any point, is the same at successive periods of time

(c) the magnitude aricf direction of the velocity do not change from point to point in the fluid

(d) the fluid particles move in plane or parallel planes and the streamline pat-terns are identical in each plane

(e) velocity, depth, pressure, etc. change from point to point in the fluid flow.

Answer: E

Ques 140. During the opening of a valve in a pipe line, the flow is

(a) steady

(b) unsteady

(c) uniform

(d) laminar

(e) free vortex type.

Answer: B

Ques 141. Uniform flow occurs when

(a) the flow is steady

(b) the flow is streamline

(c) size and shape of the cross section in a particular length remain constant

(d) size and cross section change uniformly along length

(e) flow occurs at constant fate.

Answer: C

Ques 142. A streamline is defined as the line

(a) parallel to central axis flow

(b) parallel to outer surface of pipe

(c) of equal yelocity in a flow

(d) along which the pressure drop is uniform

(e) which occurs in all flows.

Answer: C

Ques 143. A piece of metal of specific gravity 7 floats in mercury of specific gravity 13.6. What fraction of its volume is under mercury ?

(a) 0.5

(b) 0.4

(c) 0.515

(d) 0.5

(e) none of the above.

Answer: C

Ques 144. A piece of wood having weight 5 kg floats in water with 60% of its volume under the liquid. The specific gravity of wood is

(a) 0.83

(b) 0.6

(c) 0.4

(d) 0.3

(e) none of the above.

Answer: B

Ques 145. The velocity of jet of water travelling out of opening in a tank filled with water is proportional to

(a) head of water (h)

(b) h2

(c) V/T

(d) h2

(e) h3/1.

Answer: C

Ques 146. Pitot tube is used for measurement of

(a) pressure

(b) flow

(c) velocity

(d) dsscharge

(e) viscosity.

Answer: C

Ques 147. Hydrometer is used to determine

(a) specific gravity of liquids

(b) specific gravity of solids

(c) specific gravity of gases

(d) relative humidity

(e) density.

Answer: A

Ques 148. According to Bernoulli's equation for steady ideal fluid flow

(a) principle of conservation of mass holds

(b) velocity and pressure are inversely proportional

(c) total energy is constant throughout

(d) the energy is constant along a stream-line but may vary across streamlines

(e) none of the above.

Answer: D

Ques 149. A large Roynold number is indication of

(a) smooth and streamline flow

(b) laminar flow

(c) steady flow

(d) turbulent flow

(e) highly turbulent flow.

Answer: E

Ques 150. For pipes, laminar flow occurs when Roynolds number is

(a) less than 2000

(b) between 2000 and 4000

(c) more than 4000

(d) less than 4000

(e) none of the above.

Answer: A

Ques 151. Bernoulli equation deals with the law of conservation of

(a) mass

(b) momentum

(c) energy

(d) work

(e) force.

Answer: C

Ques 152. A hydraulic press has a ram of 15 cm diameter and plunger of 1.5 cm. It is required to lift a weight of 1 tonne. The force required on plunger is equal to

(a) 10 kg

(b) 100 kg

(c) 1000 kg

(d) 1 kg

(e) 10,000 kg.

Answer: A

Ques 153. Cavitation is caused by

(a) high velocity

(b) high pressure

(c) weak material

(d) low pressure

(e) low viscosity.

Answer: D

Ques 154. Cavitation will begin when

(a) the pressure at any location reaches an absolute pressure equal to the saturated vapour pressure of the liquid

(b) pressure becomes more than critical pressure

(c) flow is increased

(d) pressure is increased

(e) none of the above.

Answer: A

Ques 155. Which of the following is NOT a type of positive displacement pumps?

a. Reciprocating pump

b. Rotary displacement pump

c. Centrifugal pump

d. None of the above

ANSWER: C

Ques 156. Rotary displacement pumps are suitable for handling _____.

a. oils

b. gritty liquids

c. both oils as well as gritty liquids

d. None of the above

ANSWER: A

Ques 157. Which pump is more suitable for an application where very high pressure is required to be developed at moderate discharge?

a. Reciprocating pump

b. Centrifugal pump

c. Turbine

d. None of the above

ANSWER: A

Ques 158. The process of filling the liquid into the suction pipe and pump casing upto the level of delivery valve is called as _____.

a. filling

b. pumping

c. priming

d. leveling

ANSWER: C

Ques 159. The fluid coming into the centrifugal pump is accelerated by _____

a) Throttle

b) Impeller

c) Nozzle

d) Governor

Answer: B

Ques 160. The specific gravity of water is taken as

A. 0.001
B. 0.01
C. 0.1
D. 1

Thermodynamics:

Ques 1. The amount of heat required to raise the temperature of the unit mass of gas through one degree at constant volume, is called

A. specific heat at constant volume
B. specific heat at constant pressure
C. kilo Joule
D. none of these

Answer: Option A

Ques 2. There is a loss of heat in an irreversible process.

A. True
B. False

Answer: Option A

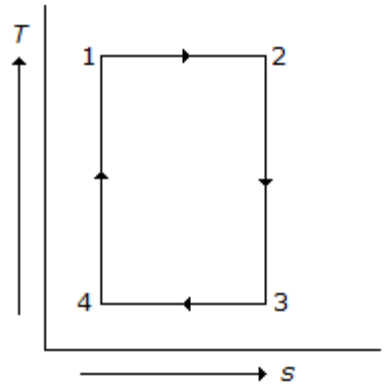
Ques 3. An adiabatic process is one in which

A. no heat enters or leaves the gas
B. the temperature of the gas changes
C. the change in internal energy is equal to the mechanical workdone
D. all of the above

Answer: Option D

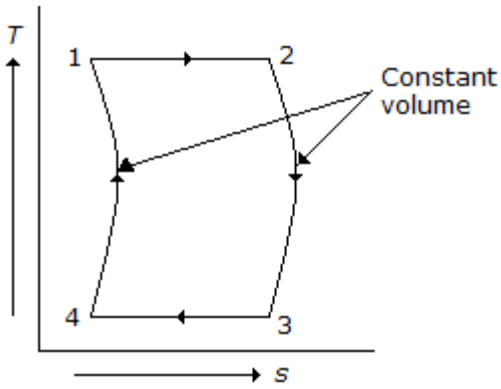
Ques 4. Which of the following represents Otto cycle on temperature - entropy (T - s) diagram?

A.

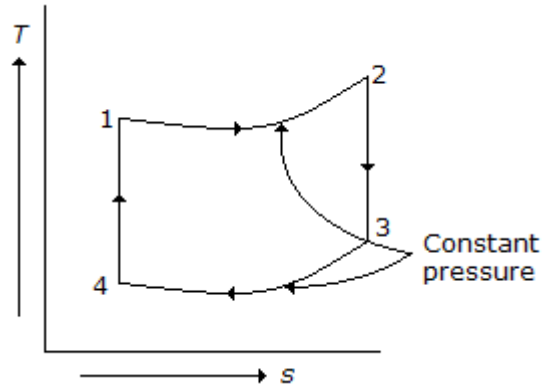


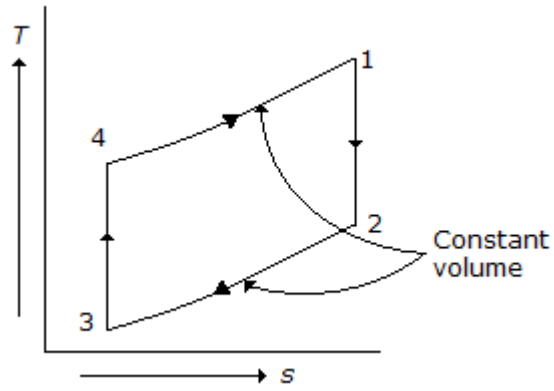
B.

C.



D.





Answer: Option C

Ques 5. Which of the following is the lightest and most volatile liquid fuel?

A. Gasoline
B. Kerosene
C. Fuel oil

Answer: Option A

Ques 6. Workdone in a free expansion process is

A. zero

B. minimum
C. maximum
D. positive

Answer: Option A

Ques 7. The pressure exerted by an ideal gas is _____ of the kinetic energy of all the molecules contained in a unit volume of gas.
A. one-half
B. one-third
C. two-third
D. three-fourth

Answer: Option C

Ques 8. The compression ratio for petrol engines is
A. 3 to 6
B. 5 to 8
C. 15 to 20
D. 20 to 30

Answer: Option B

Ques 9. The efficiency of Diesel cycle approaches to Otto cycle efficiency when
A. cut-off is increased
B. cut-off is decreased
C. cut-off is zero
D. cut-off is constant

Answer: Option C

Ques 10. The entropy _____ in an irreversible cyclic process.
A. remains constant
B. decreases
C. increases

Answer: Option C

Ques 11. According to Gay-Lussac law for a perfect gas, p/T = constant, if v is kept constant.
A. True
B. False

Answer: Option A

Ques 12. There is no change in internal energy in an isothermal process.

A. Correct
B. Incorrect

Answer: Option A

Ques 13. If the value of n = 0 in the equation pvn = C, then the process is called

A. constant volume process
B. adiabatic process
C. constant pressure process
D. isothermal process

Answer: Option C

Ques 14. The efficiency of Diesel cycle increases with

A. decrease in cut-off
B. increase in cut-off
C. constant cut-off
D. none of these

Answer: Option A

Ques 15. According to Avogadro's law, the density of any two gases is _____ their molecular masses, if the gases are at the same temperature and pressure.

A. equal to
B. directly proportional to
C. inversely proportional to

Answer: Option B

Ques 16. When cut-off ratio is _____ the efficiency of Diesel cycle approaches to Otto cycle efficiency.

A. zero
B. 1/5
C. 4/5
D. 1

Answer: Option A

Ques 17. An isothermal process is governed by

A. Boyle's law
B. Charles' law
C. Gay-Lussac law
D. Avogadro's law

Answer: Option A

Ques 18. Which is the incorrect statement about Carnot cycle?

A. It is used as the alternate standard of comparison of all heat engines.
B. All the heat engines are based on Carnot cycle.
C. It provides concept of maximising work output between the two temperature limits.
D. all of the above

Answer: Option B

Ques 19. The area under the temperature-entropy curve (T - s curve) of any thermodynamic process represents

A. heat absorbed
B. heat rejected
C. either (a) or (b)
D. none of these

Answer: Option C

Ques 20. The compression ratio for Diesel engines is

A. 3 to 6
B. 5 to 8
C. 15 to 20
D. 20 to 30

Answer: Option C

Ques 21. In an isothermal process,

A. there is no change in temperature
B. there is no change in enthalpy
C. there is no change in internal energy
D. all of these

Answer: Option D

Ques 22. Which of the following is the correct statement of the second law of thermodynamics?

A. It is impossible to construct an engine working on a cyclic process, whose sole purpose is to convert heat energy into work.
B. It is impossible to transfer heat from a body at a lower temperature to a higher temperature, without the aid of an external source.
C. There is a definite amount of mechanical energy, which can be obtained from a given quantity of heat energy.

D. all of the above

Answer: Option D

Ques 23. The diesel engines are also known as _____ engines.

A. compression ignition
B. spark ignition

Answer: Option A

Ques 24. In a four stroke cycle, the minimum temperature inside the engine cylinder occurs at the

A. beginning of suction stroke
B. end of suction stroke
C. beginning of exhaust stroke
D. end of exhaust stroke

Answer: Option A

Ques 25. The gas law PV/T = Constant, is true for….

A. Isothermal changes only
B. Adiabatic changes only
C. Both Isothermal and Adiabatic changes
D. Neither Isothermal not Adiabatic changes

Answer: Option C

Ques 26. The temperature at which the volume of a gas becomes zero is called….

A. Absolute scale temperature
B. Absolute zero temperature
C. Absolute temperature
D. None of the above

Answer: Option B

Ques 27. The specific volume of water when heated at 0^0 C ……

A. First increases then decreases
B. First decreases and then increases
C. Increases steadily
D. Decreases steadily

Answer: Option B

Ques 28. Internal energy of a perfect gas depends on….

A. Temperature, specific heat and pressure
B. Temperature, specific heat and enthalpy
C. Temperature, specific heat and entropy
D. Temperature only

Answer: Option D

Ques 29. An isentropic process is always…..

A. Irreversible and adiabatic
B. Reversible and isothermal
C. Frictionless
D. Reversible and adiabatic

Answer: Option D

Ques 30. Second law of thermodynamics defines……

A. Heat
B. Work
C. Enthalpy
D. Entropy

Answer: Option D

Ques 31. A chemical fuel is a substance which releases ……. on combustion.

A. Chemical Energy
B. Heat Energy
C. Sound Energy
D. Magnetic Energy

Answer: Option B

Ques 32. The relative humidity during cooling and dehumidification of moist air…..

A. Increases
B. Decreases
C. Can increase or decrease
D. Remains constant

Answer: Option C

Ques 33. The reversible engines are …….

A. Least efficient
B. Most efficient
C. Having same efficiency as irreversible engines
D. None of the above

Answer: Option B

Ques 34. Exhaust gases from and engine posses which of the following energies?

A. Chemical Energy
B. Potential energy
C. Solar Energy
D. Kinetic energy

Answer: Option D

Ques 35. ……. Cycle has maximum efficiency?

A. Brayton
B. Carnot
C. Rankine
D. Stirling

Answer: Option B

Ques 36. Carnot cycle is a …….cycle.

A. Quasi-static
B. Semi-reversible
C. Reversible
D. Irreversible

Answer: Option C

Ques 37. A frictionless heat engine can be 100% efficient if its exhaust temperature is

A. 0^{o} C
B. 0^{o} K
C. Equal to internal temperature

D. None of the above

Answer: Option B

Ques 38. Internal energy of a perfect gas is a function of……..

A. Temperature only
B. Temperature and pressure
C. Pressure only
D. Volume only

Answer: Option A

Ques 39. Work done will be zero in case of……..

A. Isothermal process
B. Adiabatic process
C. Free expansion
D. None of the above

Answer: Option C

Ques 40. A refrigeration system works on…….

A. Second law of thermodynamics
B. First law of thermodynamics
C. Zeroth law of thermodynamics
D. None of the above

Answer: Option A

Ques 41. Which of the following cycle has the highest efficiency?

A. Otto cycle
B. Carnot cycle
C. Stirling cycle
D. Joule cycle

Answer: Option B

Ques 42. Bomb calorimeter is used for determining ……

A. Specific gravity of fuel
B. Calorific value of fuel

C. Specific heat of fuel
D. Viscosity of fuel

Answer: Option B

Ques 43. Atmospheric pressure is equal to…….

A. 1.013 bar
B. 760 mm of Hg
C. 101.3 kN/m^2
D. All of these

Answer: Option D

Ques 44. Which of the following is not a thermodynamic property?

A. Pressure
B. Temperature
C. Heat
D. Specific volume

Answer: Option C

Ques 45. The efficiency of Diesel cycle approaches to otto cycle efficiency when….

A. Cut off is increased
B. Cut off is decreased
C. Cut off is zero
D. Cut off is constant

Answer: Option B

Ques 46. The thermal efficiency of a standard Otto cycle for a compression ratio of 5.5 will be

A. 25%
B. 50%
C. 70%
D. 100%

Answer: Option B

Internal Combustion Engines:

Ques 1. Which of the following is an S.I. Engine?

A. Diesel Engine
B. Petrol Engine
C. Gas Engine
D. None of the above

Answer: Option B

Ques 2. Which of the following is an C.I. Engine?

A. Diesel Engine
B. Petrol Engine
C. Gas Engine
D. None of the above

Answer: Option A

Ques 3. In a four stroke cycle petrol engine, during suction stroke…

A. Only air is sucked in
B. Only petrol is sucked in
C. Mixture of petrol and air is sucked in
D. None of the above

Answer: Option C

Ques 4. In a four stroke cycle diesel engine, during suction stroke…

E. Only air is sucked in
F. Only fuel is sucked in
G. Mixture of fuel and air is sucked in
H. None of the above

Answer: Option A

Ques 5. Carburetor is used in…….

A. SI Engine
B. Gas Engine

C. CI Engine
D. None of the above

Answer: Option A

Ques 6. Fuel Injector is used in……..

A. SI Engine
B. Gas Engine
C. CI Engine
D. None of the above

Answer: Option C

Ques 7. Cetane number is the measure of…….

A. Viscosity of fuel
B. Ignition quality
C. Calorific value of fuel
D. None of the above

Answer: Option B

Ques 8. In 4 stroke engine the camshaft rotates at……. the crank shaft speed?

A. Half
B. Three fourth
C. Equal
D. Double

Answer: Option A

Ques 9. The top ring nearest to piston crown is know as……

A. Compression ring
B. Oil ring
C. Scrapper ring
D. Groove ring

Answer: Option A

Ques 10. A diesel engine as compared to petrol engine is…

A. Less efficient

B. More efficient
C. Equal efficient
D. None of the above

Answer: Option B

Ques 11. The term bore in IC Engine is used for….

A. Inside diameter of cylinder
B. Diameter of Piston
C. Diameter of Piston Ring
D. None of the above

Answer: Option C

Ques 12. The main bearings of the engine support……..

A. Crank shaft
B. Cam shaft
C. Both
D. None of the above

Answer: Option A

Ques 13. The flywheel is located on the ……..

A. Rocker arm shaft
B. Crank shaft
C. Cam shaft
D. All of the above

Answer: Option B

Ques 14. An engine indicator is used to find out…..

A. BHP
B. FHP
C. Piston speed
D. Mean Effective Pressure

Answer: Option D

Ques 15. The exhaust valve in a four stroke cycle petrol engine

A. opens at 50° before bottom dead centre and closes at 15° after top dead centre

B. opens at bottom dead centre and closes at top dead centre
C. opens at 50° after bottom dead centre and closes at 15° before top dead centre
D. may open and close anywhere

Answer: Option A

Ques 16. The brake power of a diesel engine, keeping other parameters constant, can be increased by
A. decreasing the density of intake air
B. increasing the temperature of intake air
C. increasing the pressure of intake air
D. decreasing the pressure of intake air

Answer: Option C

Ques 17. In diesel engines, the fuel is injected in the form of very fine spray, into the engine cylinder, which gets ignited due to high temperature of the compressed air.
A. Agree
B. Disagree

Answer: Option A

Ques 18. The expansion of fuel in a four stroke cycle diesel engine
A. starts at 15° before top dead centre and ends at 30° after top dead centre
B. starts at top dead centre and ends at 30° after top dead centre
C. starts at 15° after top dead centre and ends at 30° before bottom dead centre
D. may start and end anywhere

Answer: Option C

Ques 19. The object of supercharging the engine is
A. to reduce mass ofthe engine per brake power
B. to reduce space occupied by the engine
C. to increase the power output of an engine when greater power is required
D. all ofthe above

Answer: Option D

Ques 20. a governor in an Ic engine controls the
A. mean speed variation
B. cyclic speed variation
C. load fluctuations

D. exhaust gas temperature

Answer: Option C

Ques 21. In a diesel engine, the duration between the time of injection and ignition, is known as

A. pre-ignition period
B. delay period
C. period of ignition
D. burning period

Answer: Option B

Ques 22. The thermal efficiency of diesel engines is about

A. 15%
B. 30%
C. 50%
D. 70%

Ques 23. A diesel engine has

A. one valve
B. two valves
C. three valves
D. four valves

Answer: Option C

Ques 24. A carburettor is used to supply

A. petrol, air and lubricating oil
B. air and diesel
C. petrol and lubricating oil
D. petrol and air

Answer: Option D

Ques 25. Morse test can be conducted for

A. petrol engines
B. diesel engines
C. multi-cylinder engines
D. all of these

Answer: Option C

Ques 26. In a four stroke cycle petrol engine, the charge is compressed when both the valves (i.e. inlet valve and exit valve) are closed,

A. Agree
B. Disagree

Answer: Option A

Ques 27. The injection pressure in a diesel engine is about
A. 10 bar
B. 100 bar
C. 150 bar
D. 500 bar

Answer: Option B

Ques 28. High speed compression engines operate on
A. Otto cycle
B. Diesel cycle
C. Dual-combustion cycle
D. all of these

Answer: Option C

Ques 29. A two stroke cycle engine gives _____ mechanical efficiency than a four stroke cycle engine.
A. higher
B. lower

Answer: Option A

Ques 30. Lubrication in I.C. engines dissipates the heat generated from the moving parts due to friction.
A. True
B. False

Answer: Option A

Ques 31. The ratio of the heat equivalent to one kW hour to the heat in fuel per B.P. hour is termed as brake thermal efficiency.
A. Yes
B. No

Answer: Option A

Ques 32. The theoretically correct mixture of air and petrol is
A. 10:1

B. 15:1
C. 20:1
D. 25:1

Answer: Option B

Ques 33. A supercharged engine as compared to an ordinary engine
A. requires smaller foundation
B. is lighter
C. consumes less lubricating oil
D. all of these

Answer: Option D

Ques 34. Which of the following does not relate to a compression ignition engine?
A. Fuel pump
B. Fuel injector
C. Governor
D. Carburettor

Answer: Option D

Ques 35. Supercharging _____ the power developed by the engine.
A. has no effect on
B. increases
C. decreases

Answer: Option B

Ques 36. The colour of exhaust from diesel engine is generally
A. white
B. bluish
C. black
D. violent

Answer: Option C

Ques 37. Which of the following statement is wrong ?
A. In compression ignition engines, detonation occurs near the beginning of combustion.
B. Since the fuel, in compression ignition engines, is injected at the end of compression stroke, therefore, there will be no pre-ignition.
C. To eliminate knock in compression ignition engines, we want to achieve auto-ignition not early and desire a long delay period.

D. In compression ignition engines, because of hetrogeneous mixture, the rate of pressure rise is comparatively lower.

Answer: Option C

Ques 38. The advancing of spark timing in spark ignition engines will _____ knocking tendency.

A. increase
B. reduce
C. not effect

Answer: Option A

Ques 39. The knocking in spark ignition engines can be reduced by

A. retarding the spark
B. increasing the engine speed
C. both (a) and (b)
D. none of these

Answer: Option C

Ques 40. The ratio of the brake power to the indicated power is called

A. mechanical efficiency
B. overall efficiency
C. indicated thermal efficiency
D. volumetric efficiency

Answer: Option A

Ques 41. The two stroke cycle engines have lighter flywheel.

A. Agree
B. Disagree

Answer: Option A

Ques 42. The scavenging efficiency of a four stroke cycle diesel engine is

A. below 50%
B. between 50 and 85%
C. between 85 and 95%
D. between 95 and 100%

Answer: Option D

Ques 43. The voltage required to produce a spark across the gap, between the sparking points is

A. 2000 to 4000 volts
B. 4000 to 6000 volts
C. 6000 to 10 000 volts
D. 10 000 to 12 000 volts

Answer: Option C

Ques 44. If the speed of the engine is increased, the indicated power will

A. increase
B. decrease
C. remain same

Answer: Option A

Ques 45. The petrol engines are also known as _____ engines.

A. compression ignition
B. spark ignition

Answer: Option B

Ques 46. The specific fuel consumption per B.P. hour for a petrol engine is about

A. 0.2 kg
B. 0.25 kg
C. 0.3 kg
D. 0.35 kg

Answer: Option B

Ques 47. Number of working strokes per min. for a two stroke cycle engine are _____ the speed of the engine in r.p.m.

A. equal to
B. one-half
C. twice
D. four-times

Answer: Option A

Ques 48. The injector nozzle of a compression ignition engine is required to inject fuel at a sufficiently high pressure in order to

A. inject fuel in a chamber of high pressure at the end of compression stroke
B. inject fuel at a high velocity to facilitate atomisation
C. ensure that penetration is not high

D. all of the above

Answer: Option D

Ques 49. The indicated mean effective pressure of an engine is obtained from the indicator diagram drawn with the help of an engine indicator.

A. True
B. False

Answer: Option A

Ques 50. Which of the following statement is wrong ?

A. A four stroke cycle engine develops twice the power as that of a two stroke cycle engine.
B. For the same power developed, a four stroke cycle engine is lighter, less bulky and occupies less floor area.
C. The petrol engines are costly than diesel engines.
D. all of the above

Answer: Option D

Ques 51. Which of the following statement is correct ?

A. Compression ratio for petrol engines varies from 6 to 10.
B. Higher compression ratio in diesel engines results in higher pressures.
C. Petrol engines work on Otto cycle.
D. all of the above

Answer: Option D

Ques 52. A 4 cylinder 4 stroke diesel engine has 3000 power strokes per minute; its speed in RPM is

A. 3000
B. 6000
C. 750
D. 1500

Answer: Option B

Ques 53. Indicated thermal efficiency of an engine is

A. Brake power/Indicated power
B. Indicated power/Mechanical efficiency
C. Brake thermal efficiency/Mechanical efficiency

D. Brake power/Mechanical efficiency

Answer: Option C

Ques 54. The thermo dynamic cycle used in a petrol engine is the

A. constant pressure cycle
B. Carnot cycle
C. Rankine cycle
D. constant volume cycle

Answer: Option D

Ques 55. The gudgeion pin connects the

A. connecting rod and the crank
B. piston and crank
C. crank and connecting rod
D. piston and the connecting rod

Answer: Option D

Ques 56. The inlet valve in a 4 stroke IC engine opens

A. after TDC
B. before BDC
C. before TDC
D. after BDC

Answer: Option C

Ques 57. In a six cylinder 4 stroke petrol engine running at 2000 RPM, the cam shaft runs at

A. 1000 RPM
B. 2000 RPM
C. 6000 RPM
D. 500 RPM

Answer: Option A

Refrigeration & Air Conditioning:

Ques 1. In a refrigeration cycle the heat is rejected by refrigerant at….

A. Condenser
B. Evaporator
C. Compressor
D. Expansion valve

Answer: Option A

Ques 2. In a refrigeration cycle the flow of refrigerant is controlled by…

A. Compressor
B. Evaporator
C. Expansion valve
D. Condenser

Answer: Option C

Ques 3. Which part of the vapor compression refrigeration cycle produces refrigeration effect?

A. Compressor
B. Condenser
C. Evaporator
D. None of these

Answer: Option C

Ques 4. In a refrigeration cycle oil separator is installed between …….

A. Condenser and TEV
B. Compressor and condenser
C. Condenser and evaporator
D. None of these

Answer: Option B

Ques 5. What removes moisture from a refrigerant?

A. Dehumidifier

B. Solenoid
C. TEV
D. Drier

Answer: Option D

Ques 6. In VCRS the condition of refrigerant before entering the compressor is……

A. Wet vapor
B. Saturated liquid
C. Dry saturated liquid
D. Superheated vapor

Answer: Option D

Ques 7. The highest temperature during the VCRS cycle occurs after……

A. Condensation
B. Expansion
C. Evaporation
D. Compression

Answer: Option D

Ques 8. The formation of frost on cooling coils in a refrigerator
A. increases heat transfer
B. improves C.O.P. of the system
C. increases power consumption
D. reduces power consumption

Answer: Option C

Ques 9. The difference between dry bulb temperature and wet bulb temperature, is called
A. dry bulb depression
B. wet bulb depression
C. dew point depression
D. degree of saturation

Answer: Option B

Ques 10. Defrosting of a refrigerator may be done by stopping the compressor for a short period.

A. Correct
B. Incorrect

Answer: Option A

Ques 11. The optimum effective temperature for human comfort is
A. higher in winter than in summer
B. lower in winter than in summer
C. same in winter and summer
D. not dependent on season

Answer: Option B

Ques 12. During a refrigeration cycle, heat is rejected by the refrigerant in a
A. compressor
B. condenser
C. evaporator
D. expansion valve

Answer: Option B

Ques 13. A refrigeration system
A. removes heat from a low temperature body and delivers it to a high temperature body
B. removes heat from a high temperature body and delivers it to a low temperature body
C. rejects energy to a low temperature body
D. none of the above

Answer: Option A

Ques 14. A pressure gauge on the discharge side of a refrigerant compressor reads too high. The reasons will be
A. lack of cooling water
B. water temperature being high
C. dirty condenser surface
D. all of these

Answer: Option D

Ques 15. The freon group of refrigerants are
A. halo-carbon refrigerants
B. azeotrope refrigerants
C. inorganic refrigerants
D. hydro-carbon refrigerants

Answer: Option A

Ques 16. Which of the following refrigerant has the highest freezing point.

A. Ammonia
B. Carbon dioxide
C. Sulphur dioxide
D. R-12

Answer: Option B

Ques 17. Air conditioning means

A. cooling
B. heating
C. dehumidifying
D. all of these

Answer: Option D

Ques 18. Which of the following refrigerant has the maximum ozone depletion potential in the stratophere?

A. Ammonia
B. Carbon dioxide
C. Sulphur dioxide
D. Flourine

Answer: Option D

Ques 19. One tonne of refrigeration (1TR) means that the heat removing capacity is

A. 21 kJ/min
B. 210 kJ/min
C. 420 kJ/min
D. 620 kJ/min

Answer: Option B

Ques 20. The thermostatic expansion valve is used in _____ type of evaporators.

A. flooded
B. DX coil
C. dry

Answer: Option C

Ques 21. A good refrigerant should have

A. high latent heat of vaporisation and low freezing point
B. high operating pressures and low freezing point
C. high specific volume and high latent heat of vaporisation
D. low C.O.P. and low freezing point

Answer: Option A

Ques 22. The capillary tube is not used in large capacity refrigeration systems because
A. cost is too high
B. capacity control is not possible
C. it is made of copper
D. required pressure drop can not be achieved

Answer: Option B

Ques 23. The thermostatic expansion valve operates on the changes in the
A. degree of superheat at exit from the evaporator
B. temperature of the evaporator
C. pressure in the evaporator
D. none of the above

Answer: Option A

Ques 24. In a vapour compression system, the condition of refrigerant before entering the expansion or throttle valve is
A. high pressure saturated liquid
B. wet vapour
C. very wet vapour
D. dry vapour

Answer: Option A

Ques 25. The pressure at the outlet of a refrigerant compressor is called
A. suction pressure
B. discharge pressure
C. critical pressure
D. back pressure

Answer: Option B

Ques 26. A one tonne refrigerating machine means that
A. one tonne is the total mass of machine
B. one tonne refrigerant is used
C. one tonne of water can be converted into ice

D. one tonne of ice when melts from and at 0° C in 24 hours, the refrigeration effect is equivalent to 210 kJ/min

Answer: Option D

Ques 27. The expansion valve in a refrigerator controls the flow of refrigerant.

A. Correct
B. Incorrect

Answer: Option A

Ques 28. A thermostatic expansion valve in a refrigeration system

A. ensures the evaporator completely filled with refrigerant of the load
B. is suitable only for constant load systems
C. maintains different temperatures in evaporator in proportion to load
D. none of the above

Answer: Option A

Ques 29. R-12 is generally preferred over R-22 in deep freezers since

A. it has low operating pressures
B. it gives higher coefficient of performance
C. it is miscible with oil over large range of temperatures
D. all of the above

Answer: Option C

Ques 30. The colour of the flame of halide torch, in case of leakage of freon refrigerant, will change to

A. bright green
B. yellow
C. red
D. orange

Answer: Option A

Ques 31. For comfort air conditioning the conditions maintained are

A. 15 deg dbt to 20 deg Wbt
B. 25 deg dbt to 60 % RH
C. 40 deg dbt and 40 deg Wbt
D. 25 deg dbt and 80 % RH

Answer: Option B

Ques 32. In a mechanical refrigeration system, the highest temperature of refrigerant occurs

A. Between condenser and evaporator
B. In evaporator
C. Before expansion value
D. Between compressor and condenser

Answer: Option D

Ques 33. The evaporator changes the low pressure liquid refrigerant from the expansion valve into

A. high pressure liquid refrigerant
B. low pressure liquid and vapour refrigerant
C. low pressure vapour refrigerant
D. none of these

Answer: Option C

Compressors & Turbines:

Ques 1. With increase in clearance volume of air compressor, the ideal work of compressing of air……

A. Increases
B. Decreases
C. Remains same
D. None of these

Answer: Option C

Ques 2. Why is inter cooling in multistage compressor done?

A. To minimize the work of compressor
B. To cool the air at delivery
C. To cool the air during compression
D. None of these

Answer: Option C

Ques 3. Why is an after cooler used in air compressor?

A. To remove impurities from air
B. To reduce the volume of air
C. To cool the air
D. None of these

Answer: Option C

Ques 4. In a compressor the clearance volume should be…….

A. As small as possible
B. As large as possible
C. about 25% of swept volume
D. About 80% of swept volume

Answer: Option A

Ques 5. The volumetric efficiency of compressor……with ……..in compression ratio.

A. Decreases, Increases

B. Increases, Increases
C. Decreases, decreases
D. Increases, Decreases

Answer: Option D

Ques 6. Which of the following type of compressor is mostly used for supercharging I.C. Engines?

A. Reciprocating compressor
B. Axial flow compressor
C. Roots blower
D. Radial flow compressor

Answer: Option D

Ques 7. A turbine is said to have an axial discharge when the steam leaves the blade tip at _____ to the direction of the blade motion.

A. 60°
B. 90°
C. 180°
D. 270°

Answer: Option B

Ques 8. The flow through a nozzle is regarded as

A. constant volume flow
B. constant pressure flow
C. isothermal flow
D. isentropic flow

Answer: Option D

Ques 9. The discharge of steam in a convergent-divergent nozzle _____ after the throat (i.e. in the divergent portion of the nozzle)

A. remains constant
B. decreases
C. increases

Answer: Option A

Ques 10. In a nozzle, whole frictional loss is assumed to occur between

A. inlet and thoroat
B. inlet and outlet

C. throat and exit
D. all of these

Answer: Option C

Ques 11. The isentropic enthalpy drop in moving blade is two-third of the isentropic enthalpy drop in fixed blades of a turbine. The degree of reaction will be
A. 0.4
B. 0.56
C. 0.67
D. 1.67

Answer: Option A

Ques 12. The impulse reaction turbine has its driving force
A. as an impulsive force
B. as a reaction force
C. partly as an impulsive force and partly as a reaction force
D. none of the above

Answer: Option C

Ques 13. A regenerative steam cycle renders
A. increased work output per unit mass of steam
B. decreased work output per unit mass of steam
C. increased thermal efficiency
D. decreased work output per unit mass of steam as well as increased thermal efficiency

Answer: Option D

Ques 14. The turbine, in which the general direction of the steam flow is parallel to the turbine axis, is called axial flow turbines
A. True
B. False

Answer: Option A

Ques 15. The turbine blades do not change the direction of steam issuing from the nozzle.
A. True
B. False

Answer: Option B

Ques 16. When the back pressure of a nozzle is below the designed value of pressure at exit of nozzle, the nozzle is said to be

A. choked
B. underdamping
C. overdamping
D. none of these

Ques 17. The steam leaves the nozzle at a

A. high pressure and a low velocity
B. high pressure and a high velocity
C. low pressure and a low velocity
D. low pressure and a high velocity

Answer: Option D

Ques 18. The Parsons' reaction turbine has

A. only moving blades
B. only fixed blades
C. identical fixed and moving blades
D. fixed and moving blades of different shape

Answer: Option C

Ques 19. The turbine blades are

A. straight
B. circular
C. curved

Answer: Option C

Ques 20. The difference of supersaturated temperature and saturation temperature at that pressure is called

A. degree of supersaturation
B. degree of superheat
C. degree of undercooling
D. none of these

Answer: Option C

Ques 21. The efficiency of steam turbines may be improved by

A. reheating of steam
B. regenerative feed heating
C. binary vapour plant
D. any one of these

Answer: Option D

Ques 22. In a reaction turbine, when steam flows through the fixed blades,

A. pressure increases while velocity decreases
B. pressure decreases while velocity increases
C. pressure and velocity both decreases
D. pressure and velocity both increases

Answer: Option B

Ques 23. For maximum efficiency of an impulse turbine, the steam should leave the blades at right angles to their motion.

A. Correct
B. Incorrect

Answer: Option A

Ques 24. In a four stage compressor, if the pressure at the first and third stage are 1 bar and 16 bar, then the delivery pressure at the fourth stage will be

A. 1 bar
B. 16 bar
C. 64 bar
D. 256 bar

Answer: Option C

Ques 25. The compressed air may be used

A. in gas turbine plants
B. for operating pneumatic drills
C. in starting and supercharging of I.C. engines
D. all of the above

Answer: Option D

Ques 26. The volumetric efficiency for reciprocating air compressors is about

A. 10 to 40%
B. 40 to 60%
C. 60 to 70%
D. 70 to 90%

Answer: Option D

Ques 27. Which of the following statement is wrong?

A. In a two stage reciprocating air compressor with complete intercooling, maximum work is saved.
B. The minimum work required for a two stage reciprocating air compressor is double the work required for each stage.
C. The ratio of the volume of free air delivery per stroke to the swept volume of the piston is called volumetric efficiency.
D. none of the above

Answer: Option D

Ques 28. In a single acting reciprocating compressor, the suction, compression and delivery of air takes place in _____ of the piston.
A. one stroke
B. two strokes
C. three strokes
D. four strokes

Answer: Option B

Ques 29. Intercooling in multi-stage compressors is done
A. to cool the air during compression
B. to cool the air at delivery
C. to enable compression in two stages
D. to minimise the work of compression

Answer: Option D

Ques 30. Which of the following statement is correct?
A. The ratio of the discharge pressure to the inlet pressure of air is called compressor efficiency.
B. The compression ratio for the compressor is always greater than unity.
C. The compressor capacity is the ratio of workdone per cycle to the stroke volume.
D. During isothermal compression of air, the workdone in a compressor is maximum.

Answer: Option B

Ques 31. The volume of air delivered by the compressor is called
A. free air delivery
B. compressor capacity
C. swept volume
D. none of these

Answer: Option B

Ques 32. Rotary compressors are used for delivering

A. small quantities of air at high pressures
B. large quantities of air at high pressures
C. small quantities of air at low pressures
D. large quantities of air at low pressures

Answer: Option D

Ques 33. A large clearance Volume in a reciprocating compressor results in

A. reduced volume flow rate
B. increased volume flow rate
C. lower suction pressure
D. lower delivery pressure

Answer: Option A

Ques 34. When the temperature of air leaving the intercooler, in a two stage compression with intercooler, is _____ the original atmospheric air temperature, then the intercooling is known as perfect or complete intercooling.

A. equal to
B. less than
C. more than

Answer: Option A

Ques 35. An aftercooler is used to

A. remove impurities from air
B. reduce volume of air
C. cause moisture and oil vapour to drop out
D. cool the air

Answer: Option C

Ques 36. The ratio of the volume of free air delivery per stroke to the swept volume of the piston, is known as

A. compressor efficiency
B. volumetric efficiency
C. isothermal efficiency
D. mechanical efficiency

Answer: Option B

Ques 37. Which of the following statement is correct?

A. The reciprocating compressors are best suited for high pressure and low volume capacity
B. The effect of clearance volume on power consumption is negligible for the same volume of discharge
C. both (a) and (b)
D. none of these

Answer: Option C

Ques 38. If the flow of air through the compressor is parallel to its axis, then the compressor is
A. reciprocating compressor
B. centrifugal compressor
C. axial flow compressor
D. turbo-compressor

Answer: Option C

Ques 39. The absolute pressure of air at the outlet of a compressor is called
A. back pressure
B. critical pressure
C. discharge pressure
D. none of these

Answer: Option C

Ques 40. The compressor capacity is defined as the
A. actual volume of the air delivered by the compressor when reduced to normal temperature and pressure conditions
B. volume of air delivered by the compressor
C. volume of air sucked by the compressor during its suction stroke
D. none of the above

Answer: Option B

Steam Boilers:

Ques 1. In a boiler fusible plug is situated ……

A. Near the man hole
B. Just below the water level
C. At the crown of the furnace
D. At the base of the boiler

Answer: Option C

Ques 2. The function of fusible plug is…….

A. To drain off the water of the shell
B. To prevent damage of boiler against over heating
C. To blow off excess steam
D. None of these

Answer: Option B

Ques 3. The function of super heater in steam boiler is …….

A. Pre-heat the feed water
B. Pre heat the air
C. Increase the temperature of steam above saturation temp.
D. Increase the rate of combustion of fuel

Answer: Option C

Ques 4. In water tube boilers

A. water passes through the tubes which are surrounded by flames and hot gases
B. the flames and hot gases pass through the tubes which are surrounded by water
C. forced circulation takes place
D. none of these

Answer: Option A

Ques 5. In a glass tube type water indicator for a boiler, one end of the tube is connected to water space and the other end is connected to

A. water space also
B. chimney

C. steam space
D. superheater

Answer: Option C

Ques 6. A device used to increase the temperature of saturated steam without raising its pressure, is called
A. blow off cock
B. fusible plug
C. superheater
D. stop valve

Answer: Option C

Ques 7. An economiser _____ the steam raising capacity of a boiler.
A. increases
B. decreases
C. has no effect on

Answer: Option A

Ques 8. The function of a safety valve is
A. to blow off steam when the pressure of steam inside the boiler exceeds the working pressure
B. to indicate the water level inside the boiler to an observer
C. to measure pressure of steam inside the steam boiler
D. none of the above

Answer: Option A

Ques 9. A safety valve mainly used with locomotive and marine boilers is
A. lever safety valve
B. dead weight safety valve
C. high steam and low water safety valve
D. spring loaded safety valve

Answer: Option D

Ques 10. A device in which some portion of waste heat of flue gases is recovered to heat the air before it passes to the furnace for combustion purpose, is knwon as
A. superheater
B. air preheater
C. economiser
D. injector

Answer: Option B

Ques 11. In a fire tube boiler, the water is contained inside the tubes which are surrounded by flames and hot gases from outside.

A. True
B. False

Answer: Option B

Ques 12. Water tube boilers produce steam at a _____ pressure than that of fire tube boilers.

A. lower
B. higher

Answer: Option B

Ques 13. The performance of a boiler is measured by the

A. amount of water evaporated per hour
B. steam produced in kg/h
C. steam produced in kg/kg of fuel burnt
D. all of these

Answer: Option D

Workshop Technology:

Ques 1. Surface plate is used to check the trueness of flat surfaces.

A. True
B. False

Answer: Option A

Ques 2. The accuracy of micrometers, calipers, dial indicators can be checked by a

A. feeler gauge
B. slip gauge
C. ring gauge
D. plug gauge

Answer: Option B

Ques 3. The type of file used for a wood work is

A. single-cut file
B. double cut file
C. rasp-cut file
D. any one of these

Answer: Option C

Ques 4. In arc welding, the electric arc is produced between the work and the electrode by

A. voltage
B. flow of current
C. contact resistance
D. all of these

Answer: Option C

Ques 5. Which of the following welding process uses non-consumable electrodes?

A. TIG welding
B. MIG welding
C. Manual arc welding
D. Submerged arc welding

Answer: Option A

Ques 6. The temperature at which the new grains are formed in the metal is called

A. lower critical temperature
B. upper critical temperature
C. eutectic temperature
D. recrystallisation temperature

Answer: Option D

Ques 7. In submerged arc welding, an arc is produced between a

A. carbon electrode and the work
B. metal electrode and the work
C. bare metal electrode and the work
D. two tungsten electrodes and the work

Answer: Option C

Ques 8. In arc welding the electric arc is produced between the work and the electrode by…..

A. Flow of current
B. Contact resistance
C. Voltage
D. All of these

Answer: Option B

Ques 9. In shielded arc welding

A. large electrode is used
B. welding rod coated with slag is used
C. welding rod coated with fluxing material is used
D. none of the above

Answer: Option C

Ques 10. A file removes the metal during

A. forward stroke
B. return stroke
C. both forward and return strokes
D. none of these

Answer: Option A

Ques 11. An oxidising flame is obtained when equal volumes of oxygen and acetylene are supplied.

A. True
B. False

Answer: Option B

Ques 12. A neutral flame is obtained by supplying
A. equal volumes of oxygen and acetylene
B. more volume of oxygen and less volume of acetylene
C. more volume of acetylene and less volume of oxygen
D. none of the above

Answer: Option A

Ques 13. For welding plates of thickness less than 5 mm, its edges
A. do not require bevelling
B. should be bevelled to a single-V or U-groove
C. should have a double-V or U-groove on one side
D. should have a double-V or U-groove on both sides

Answer: Option A

Ques 14. Most of the oxy-acetylene welding is done with
A. neutral flame
B. oxidising flame
C. carburising flame
D. all of these

Answer: Option A

Ques 15. The current in electric resistance welding can be regulated by
A. varying the input supply
B. changing the primary turns of the transformer
C. changing the secondary turns of the transformer
D. any one of the above

Answer: Option B

Ques 16. The teeth of hacksaw blade are bent
A. towards right
B. towards left
C. alternately towards right and left and every third or fourth left straight
D. may be bent in any direction

Answer: Option C

Ques 17. The torch used for oxygen cutting is same as for oxy-acetylene welding.

A. Yes
B. No

Answer: Option B

Ques 18. The flux commonly used in brazing is…….

A. Borax
B. Zinc Chloride
C. ammonium chloride
D. None of the above

Answer: Option A

Ques 19. A neutral flame is obtained by supplying…….

A. More oxygen and less acetylene
B. Equal volume of oxygen and acetylene
C. More acetylene and less oxygen
D. None of the above

Answer: Option B

Ques 20. Most of the oxy acetylene welding is done with…

A. Oxidizing flame
B. Carburizing flame
C. Neutral Flame
D. All of the above

Answer: Option C

Ques 21. The maximum flame temperature in oxy acetylene flame occurs ……

A. At the inner core
B. At the outer core
C. At the torch tip

D. Between the outer and inner core

Answer: Option A

Ques 22. The cold chisel is made from….

A. Mild steel
B. High speed steel
C. Cast tool steel
D. Stainless steel

Answer: Option B

Ques 23. The hacksaw blade cuts on the…..

A. Return stroke
B. Forward stroke
C. Cutting depends upon the direction of force
D. Both forward and return stroke

Answer: Option B

Ques 24. The teeth of hacksaw blades are bent ……

A. Towards left
B. Any direction
C. Towards right
D. Alternately towards right and left

Answer: Option D

Ques 25. A file removes the metal during…….

A. Return stroke
B. Forward stroke
C. Both in return and forward stroke
D. None of the above

Answer: Option B

Ques 26. Brasses and bronzes are welded using

A. neutral flame
B. oxidizing flames
C. carburising flame
D. reducing flame

Answer: Option A

Ques 27. Reducing flame is obtained in oxyactetylane welding with

A. excess oxygen
B. equal parts of both gases
C. excess of acetylene
D. reduced acetylene

Answer: Option C

Ques 28. One of the following objectives is not achieved by the process of annealing

A. to relieve internal stress
B. to refine grain structure
C. to increase the yield point
D. to soften the metal

Answer: Option C

Ques 29. Feeler gauges are used for measuring the

A. thickness of plates
B. clearances between mating parts
C. pitch of screw threads
D. radius of curvature

Answer: Option B

Ques 30. One of the following function is not performed by coating on the welding electrodes

A. increase the cooling rate
B. provide protective atmosphere
C. refuce oxidation
D. stabilize the arc

Answer: Option A

Ques 31. Cast iron and steel pipes are produced by

A. Die casting
B. Slush casting
C. Investment casting
D. True centrifugal casting

Answer: Option D

Ques 32. The oxy-acetylene gas used in gas welding produce a flame temperature of

A. 1800°C
B. 2100°C
C. 2400°C
D. 3200°C

Strength of Materials:

Ques 1. The combined effect of external forces acting on a body is called…

A. Stress
B. Strain
C. Load
D. None of the above

Answer: Option C

Ques 2. The internal resistance which the body offers to meet with the load is called….

A. Stress
B. Strain
C. Pressure
D. None of the above

Answer: Option A

Ques 3. The deformation per unit length is called…..

A. Strain
B. Tensile stress
C. Compressive stress
D. Shear stress

Answer: Option A

Ques 4. The value of Poisson's ratio depends on the….

A. Size of the material
B. Type of material
C. Magnitude of load
D. Nature of load

Answer: Option B

Ques 5. The type of stresses set up in a rotating shaft due to torsion is….

A. Shear

B. Compressive
C. Bending
D. All of the above

Answer: Option A

Ques 6. The property of material to withstand deformation without fracture is called…

A. Plasticity
B. Toughness
C. Brittleness
D. Ductility

Answer: Option B

Ques 7. The property of material which allows it to deform without fracture is known as…

A. Brittleness
B. Toughness
C. Elasticity
D. Plasticity

Answer: Option D

Ques 8. The behavior of metals under the action of cyclic stresses is termed as……

A. Creep
B. Fatigue
C. Endurance
D. None of the above

Answer: Option B

Ques 9. Strain energy is the

A. energy stored in a body when strained within elastic limits
B. energy stored in a body when strained up to the breaking of a specimen
C. maximum strain energy which can be stored in a body
D. proof resilience per unit volume of a material

Answer: Option A

Ques 10. A steel bar of 5 mm is heated from 15° C to 40° C and it is free to expand. The bar Will induce

A. no stress
B. shear stress
C. tensile stress
D. compressive stress

Answer: Option A

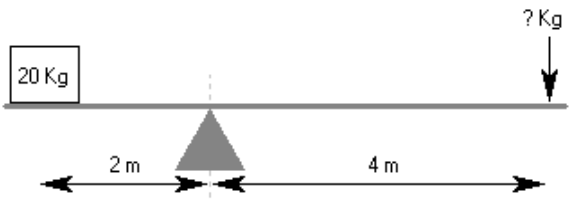
Ques 11. A body is subjected to a tensile stress of 1200 MPa on one plane and another tensile stress of 600 MPa on a plane at right angles to the former. It is also subjected to a shear stress of 400 MPa on the same planes. The maximum normal stress will be

A. 400 MPa
B. 500 MPa
C. 900 MPa
D. 1400 MPa

Answer: Option D

Mechanical Reasoning:

Ques 1. How much weight is required to balance the lever?



A. 15kg
B. 5kg.
C. 10kg
D. 7.5kg
E. 20kg

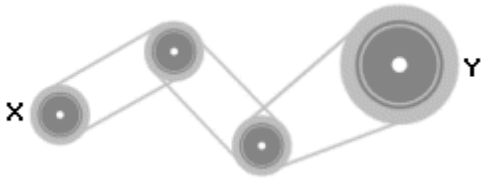
Answer : C

Ques 2. If gear X turns clockwise at a constant speed of 10 rpm. How does gear Y turn?

A. Anti Clockwise 10 rpm
B. Clock wise 10 rpm
C. Clock wise 5 rpm
D. Anti Clock wise 5 rpm
E. Clock wise 20 rpm

Answer : A

Ques 3. If drive wheel X rotates clockwise at a speed of 10 rpm. How does wheel Y turn?



A. Anti Clockwise faster

B. Clock wise slower

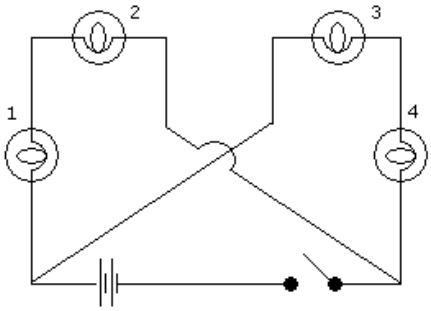
C. Clock wise faster

D. Anti Clock wise slower

E. Anti Clock wise same

Answer : B

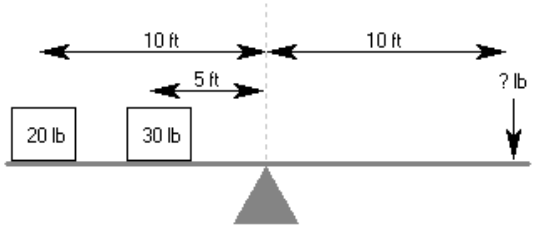
Ques 4. If bulb 1 is removed, how many bulbs will light up when the switch is closed?



A. None B. One C. Two D. Three E. Four

Answer : C

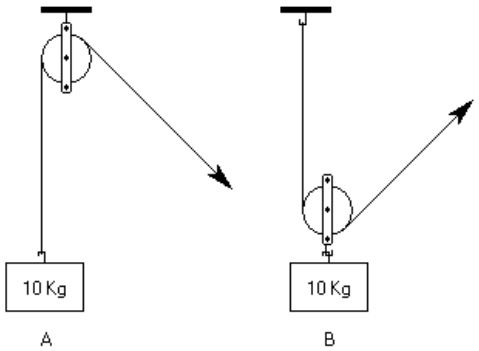
Ques 5. How much force is required to lift the weights?



A. 25lbs B. 35lbs C. 40lbs D. 45lbs

Answer : B

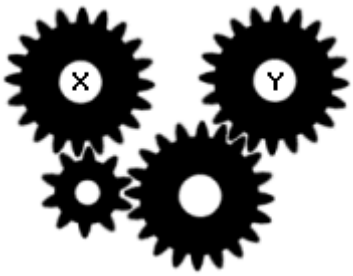
Ques 6. Which weight requires the least force to move?



A. Weight A B. Weight B

Answer : B

Ques 7. If gear X turns clockwise at a constant speed of 10 rpm, how does gear Y turn?



A. Anti Clockwise 10 rpm
B. Clock wise 10 rpm
C. Clock wise 5 rpm
D. Anti Clock wise 5 rpm
E. Clock wise 20 rpm

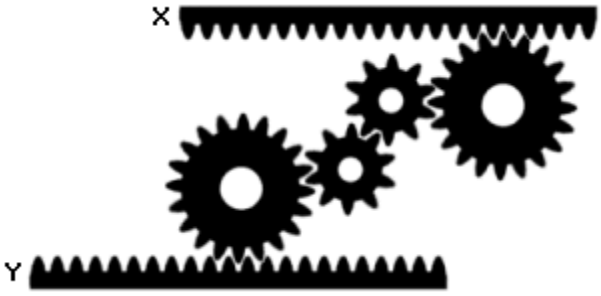
Answer : A

Ques 8. If gear X turns clockwise at a constant speed of 10 rpm. How does gear Y turn?

A. Anti Clockwise 10 rpm
B. Clock wise 10 rpm
C. Clock wise 5 rpm
D. Anti Clock wise 5 rpm
E. Clock wise 20 rpm

Answer : D

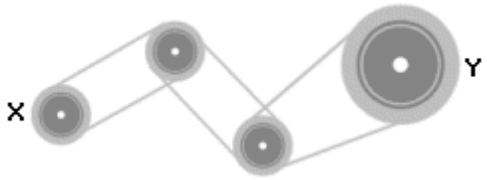
Ques 9. If bar Y moves left a constant speed, how does bar X move?



A. Left , faster
B. Right , Same
C. Left Slower
D. Left Same
E. Right Slower

Answer : D

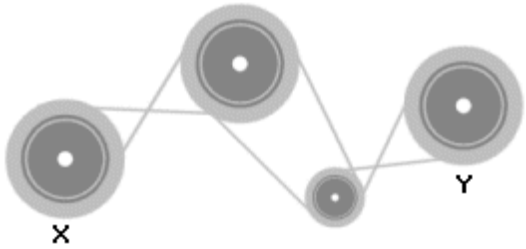
Ques 10. If drive wheel X rotates clockwise at a speed of 10 rpm. How does wheel Y turn?



A. Anti Clockwise faster
B. Clock wise slower
C. Clock wise faster
D. Anti Clock wise slower
E. Anti Clock wise same

Answer : B

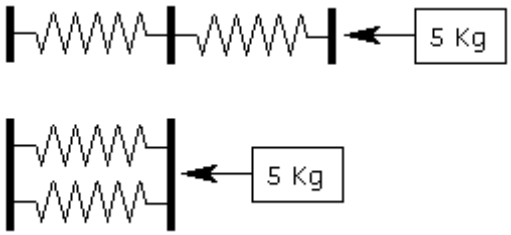
Ques 11. If drive wheel X rotates clockwise at a speed of 10 rpm. How does wheel Y turn?



A. Anti Clockwise faster
B. Clock wise slower
C. Clock wise faster
D. Anti Clock wise slower
E. Anti Clock wise same

Answer : E

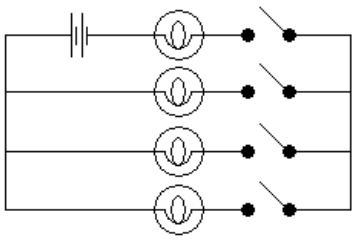
Ques 12. A force of 5 Kg compresses the springs in series 10cm.What will be the total distance that the springs in parallel are compressed?



A. 10 cm B. 2.5 cm C. 5cm D. 7.5 cm

Answer : C

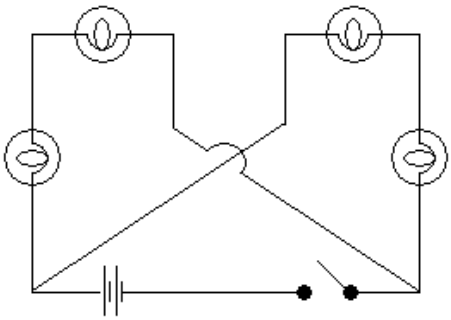
Ques 13. How many switches need to be closed to light up one bulb?



A. 1 B. 2 C. 3 D. 4

Answer : B

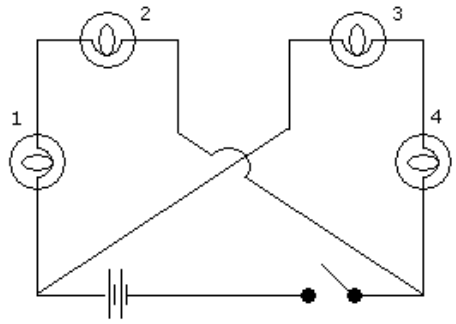
Ques 14. How many bulbs will light up when the switch is closed?



A. 1 B. 2 C. 3 D. 4

Answer : D

Ques 15. If bulb 1 is removed, how many bulbs will light up when the switch is closed?



A. 1 B. 2 C. 3 D. 4

Answer : B

Applied Mechanics:

Ques 1. Two balls of equal mass and of perfectly elastic material are lying on the floor. One of the ball with velocity v is made to struck the second ball. Both the balls after impact will move with a velocity

A. v
B. v/2
C. v/4
D. v/8

Answer: Option B

Ques 2. The velocity ratio in case of an inclined plane inclined at angle θ to the horizontal and weight being pulled up the inclined plane by vertical effort is

A. sin θ
B. cos θ
C. tan θ
D. cosec θ

Answer: Option A

Ques 3. The range of projectile on a downward inclined plane is _____ the range on upward inclined plane for the same velocity of projection and angle of projection.

A. less than
B. more than
C. equal to

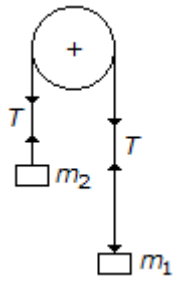
Answer: Option B

Ques 4. A body of weight W is required to move up on rough inclined plane whose angle of inclination with the horizontal is α. The effort applied parallel to the plane is given by(where μ = tanϕ = Coefficient of friction between the plane and the body.)

A. P = W tanα
B. P = W tan(α + ϕ)
C. P = W (sinα + μcosα)
D. P = W (cosα + μsinα)

Answer: Option C

Ques 5. If the masses of both the bodies, as shown in the below figure, are reduced to 50 percent, then tension in the string will be



A. same
B. half
C. double

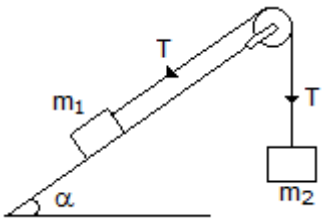
Answer: Option B

Ques 6. If a number of forces are acting at a point, their resultant will be inclined at an angle θ with the horizontal, such that

A. tan θ = ∑H/∑V
B. tan θ = ∑V/∑H
C. tan θ = ∑V x ∑H
D. tan θ = √(∑V + ∑H)

Answer: Option B

Ques 7. In the shown figure, if the angle of inclination of the plane is increased, then acceleration of the system will



A. increase
B. decrease
C. remain the same

Answer: Option B

Ques 8. The total time taken by a projectile to reach maximum height and to return back to the ground, is known as time of flight.

A. Yes
B. No

Answer: Option A

Ques 9. The frequency of oscillation of a torsional pendulum is

A. $\frac{2\pi k}{r}\sqrt{\frac{g}{l}}$

B. $\frac{r}{2\pi k}\sqrt{\frac{l}{g}}$

C. $\frac{2\pi r}{k}\sqrt{\frac{g}{l}}$

D. $\frac{r}{2\pi k}\sqrt{\frac{g}{l}}$

Answer: Option D

Ques 10. The mechanical advantage of a lifting machine is the ratio of

A. distance moved by effort to the distance moved by load
B. load lifted to the effort applied
C. output to the input
D. all of the above

Answer: Option B

Ques 11. Static friction is always _____ dynamic friction.

A. equal to
B. less than
C. greater than

Answer: Option C

Ques 12. A body will begin to move down an inclined plane if the angle of inclination of the plane is _____ the angle of friction.

A. equal to
B. less than
C. greater than

Answer: Option C

Ques 13. The bodies which rebound after impact are called

A. inelastic bodies
B. elastic bodies
C. neither elastic nor inelastic bodies
D. none of these

Answer: Option B

Ques 14. The centre of gravity of an equilateral triangle with each side a, is _____ from any of the three sides.

A. 3a/2
B. 23a
C. a/23
D. 32a

Answer: Option C

Ques 15. The angle between two forces when the resultant is maximum and minimum respectively are

A. 0° and 180°
B. 180° and 0°
C. 90° and 180°
D. 90° and 0°

Answer: Option A

Ques 16. The equivalent length of a simple pendulum which gives the same frequency as compound pendulum is

A. $\frac{h}{k_G^2 + h^2}$

B. $\frac{k_G^2 + h^2}{h}$

C. $\frac{h^2}{k_G^2 + h^2}$

D. $\frac{k_G^2 + h^2}{h^2}$

Answer: Option B

Ques 17. During elastic impact, the relative velocity of the two bodies after impact is _____ the relative velocity of the two bodies before impact.

A. equal to
B. equal and opposite to
C. less than
D. greater than

Answer: Option B

Ques 18. Work done is said to be zero, when

A. some force acts on a body, but displacement is zero
B. no force acts on a body but some displacement takes place
C. either (a) or (b)
D. none of the above

Answer: Option C

Ques 19. Two like parallel forces are acting at a distance of 24 mm apart and their resultant is 20 N. It the line of action of the resultant is 6 mm from any given force, the two forces are

A. 15 N and 5 N
B. 20 N and 5 N
C. 15 N and 15 N
D. none of these

Answer: Option A

Ques 20. If two bodies having masses m1 and m2 (m1>m2) have equal kinetic energies, the momentum of body having mass m1 is _____ the momentum of body having mass m2.

A. equal to
B. less than
C. greater than

Answer: Option C

Ques 21. The point, through which the whole weight of the body acts, irrespective of its position, is known as

A. moment of inertia
B. centre of gravity
C. centre of percussion
D. centre of mass

Answer: Option B

Ques 22. The overturning of a vehicle on a level circular path can be avoided if the velocity of vehicle is _____ √(gra) / h .

A. less than
B. greater than

Answer: Option A

Ques 23. The rate of change of momentum is directly proportional to the impressed force, and takes place in the same direction in which the force acts. This statement is known as

A. Newton's first law of motion
B. Newton's second law of motion
C. Newton's third law of motion
D. none of these

Answer: Option B

Ques 24. In ideal machines, mechanical advantage is _____ velocity ratio.

A. equal to
B. less than
C. greater than

Answer: Option A

Ques 25. The maximum efficiency of a lifting machine is

A. 1/m
B. V.R./m
C. m/V.R.
D. 1/(m x V.R.)

Answer: Option D

Ques 26. A differential pulley block has larger and smaller diameters of 100 mm and 80 mm respectively. Its velocity ratio is

A. 5
B. 10
C. 20
D. 40

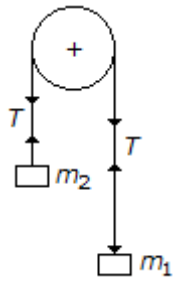
Answer: Option B

Ques 27. Which of the following statement is correct?

A. The kinetic energy of a body during impact remains constant.
B. The kinetic energy of a body before impact is equal to the kinetic energy of a body after impact.
C. The kinetic energy of a body before impact is less than the kinetic energy of a body after impact.
D. The kinetic energy of a body before impact is more than the kinetic energy of a body after impact.

Answer: Option D

Ques 28. Two bodies of masses m1,and m2 are hung from the ends of a rope, passing oyer a frictionless pulley as shown in the figure below. The acceleration of the string will be



A. $g(m_1-m_2)/(m_1+m_2)$
B. $2g(m_1-m_2)/(m_1+m_2)$
C. $g(m_1+m_2)/(m_1-m_2)$
D. $2g(m_1+m_2)/(m_1-m_2)$

Answer: Option A

Ques 29. A machine having an efficiency less than 50%, is known as
A. reversible machine
B. non-reversible machine
C. neither reversible nor non-reversible machine
D. ideal machine

Answer: Option B

Ques 30. One end of a helical spring is fixed while the other end carries the load W which moves with simple harmonic motion. The frequency of motion is given by(where δ = Deflection of the spring.)
A. $2n\sqrt{(g/\delta)}$
B. $(1/2n) \times \sqrt{(g/\delta)}$
C. $2n\sqrt{(\delta/g)}$
D. $(1/2n) \times \sqrt{(\delta/g)}$

Answer: Option B

Ques 31. The radius of gyration is the distance where the whole mass (or area) of a body is assumed to be concentrated.

A. Correct
B. Incorrect

Answer: Option A

Ques 32. A rubber ball is dropped from a height of 2 m. If there is no loss of velocity after rebounding, the ball will rise to a height of

A. 1m
B. 2m
C. 3m
D. 4m

Answer: Option B

Ques 33. In a wormed geared pulley block, if the number of teeth on the worm wheel is doubled, then its velocity ratio is also doubled.

A. True
B. False

Ques 34. The acceleration of a particle moving with simple harmonic motion is _____ at the mean position.

A. zero
B. minimum
C. maximum

Answer: Option A

Ques 35. The total energy possessed by a system of moving bodies

A. is constant at every instant
B. varies from point to point
C. is maximum in the start and minimum at the end
D. is minimum in the start and maximum at the end

Answer: Option A

Ques 36. The moment of inertia of a solid cylinder of mass m, radius r and length l about the longitudinal axis or polar axis is

A. $mr^2/2$
B. $mr^2/4$
C. $mr^2/6$
D. $mr^2/8$

Answer: Option A

Ques 37. If the body falls freely under gravity, then the gravitational acceleration is taken as

A. +8.9 m/s2
B. -8.9 m/s2
C. +9.8 m/s2
D. -9.8 m/s2

Answer: Option C

Ques 38. Three forces acting on a rigid body are represented in magnitude, direction and line of action by the three sides of a triangle taken in order. The forces are equivalent to a couple whose moment is equal to

A. area of the triangle
B. twice the area of the triangle
C. half the area of the triangle
D. none of these

Answer: Option B

Ques 39. If tension in the cable supporting a lift moving downwards is half the tension when it is moving upwards, the acceleration of the lift is

A. g/2
B. g/3
C. g/4
D. none of these

Answer: Option D

Ques 40. If the gravitational acceleration at any place is doubled, then the weight of a body will be

A. g/2
B. g
C. 2g
D. 2g

Answer: Option D

Ques 41. When a particle moves along a circular path, its acceleration has two components, one is normal component and the other is tangential component of acceleration.

A. True

B. False

Answer: Option A

Ques 42. A machine which is not capable of doing any work in the reversed direction, after the effort is removed, is called a reversible machine.

A. True
B. False

Answer: Option B

Ques 43. A cycle consisting of one constant pressure, one constant volume and two isentropic processes is known as

A. Carnot cycle
B. Stirling cycle
C. Otto cycle
D. Diesel cycle

Answer: Option D

Ques 44. An electric heater draws 3.5 A from a 110 V source. The resistance of the heating element is approximately

A. 385 Ω
B. 38.5 Ω
C. 3.1 Ω
D. 31 Ω

Answer: Option D

Basic Electricals & Electronics:

Ques 1. How much resistance is required to limit the current from a 12 V battery to 3.6 mA?

A. 3.3 k Ω
B. 33 k Ω
C. 2.2 k Ω
D. 22 k Ω

Answer: Option A

Ques 2. When there is 12 mA of current through a 1.2 k Ω resistor, the voltage across the resistor is

A. 14.4 V
B. 1.4 V
C. 100 V
D. 10 V

Answer: Option A

Ques 3. A series circuit consists of three resistors with values of 120Ω , 270Ω , and 330Ω . The total resistance is

A. less than 120Ω
B. the average of the values
C. 720 Ω
D. 120 Ω

Answer: Option C

Ques 4. When one of three series resistors is removed from a circuit and the circuit is reconnected, the current

A. increases
B. increases by one-third
C. decreases by one-third
D. decreases by the amount of current through the removed resistor

Answer: Option A

Ques 5. Two 1.2 k Ω resistors are in series and this series combination is in parallel with a 3.3 k Ω resistor. The total resistance is

A. 138 Ω
B. 1,389 Ω
C. 5,700 Ω
D. 880 Ω

Answer: Option B

Ques 6. A certain Wheatstone bridge has the following resistor values: R1 = 10 k Ω, R2 = 720Ω , and R4 = 2.4 kΩ . The unknown resistance is

A. 24 Ω
B. 2.4 Ω
C. 300 Ω
D. 3,000 Ω

Answer: Option D

Ques 7. A 12 k Ω resistor, a 15 k Ω resistor, and a 22 k Ω resistor are in series with two 10 k Ω resistors that are in parallel. The source voltage is 75 V. Current through the 15 k Ω resistor is approximately

A. 14 mA
B. 1.4 mA
C. 5 mA
D. 50 mA

Answer: Option B

Ques 8. A balanced Wheatstone bridge consists of an RV of 3,500 Ω , an R2 of 200Ω , and an R3 of 680 Ω . The value of RUNK is

A. 680 Ω
B. 1,029 Ω
C. 200 Ω
D. 880 Ω

Answer: Option B

Ques 9. To produce an 800 Hz sine wave, a four-pole generator must be operated at

A. 200 rps
B. 400 rps
C. 800 rps
D. 1,600 rps

Answer: Option B

Ques 10. If the rms current through a 4.7 kΩ resistor is 4 mA, the peak voltage drop across the resistor is

A. 4 V
B. 18.8 V
C. 26.6 V
D. 2.66 V

Answer: Option C

Ques 11. If the peak of a sine wave is 13 V, the peak-to-peak value is

A. 6.5 V
B. 13 V
C. 26 V
D. none of the above

Answer: Option C

Ques 12. A sinusoidal current has an rms value of 14 mA. The peak-to-peak value is

A. 45.12 mA
B. 16 mA
C. 39.6 mA
D. 22.6 mA

Answer: Option C

Ques 13. Two series resistors are connected to an ac source. If there are 7.5 V rms across one resistor and 4.2 V rms across the other, the peak source voltage is

A. 16.54 V
B. 1.65 V
C. 10.60 V
D. 5.93 V

Answer: Option A

Ques 14. A certain appliance uses 350 W. If it is allowed to run continuously for 24 days, how many kilowatt-hours of energy does it consume?

A. 20.16 kWh
B. 201.6 kWh
C. 2.01 kWh
D. 8.4 kWh

Answer: Option B

Ques 15. A given power supply is capable of providing 6 A for 3.5 h. Its ampere-hour rating is

A. 0.58 Ah
B. 2.1 Ah
C. 21 Ah
D. 58 Ah

Answer: Option C

Ques 16. A 120 Ω resistor must carry a maximum current of 25 mA. Its rating should be at least

A. 4.8 W
B. 150 mW
C. 15 mW
D. 480 mW

Answer: Option B

Ques 17. Three hundred joules of energy are consumed in 15 s. The power is

A. 2,000 W
B. 2 W
C. 20 W
D. 200 W

Answer: Option C

Ques 18. The substances which have a large number of free electrons and offer a low resistance are called

A. insulators
B. inductors
C. semi-conductors
D. conductors

Answer: Option D

Ques 19. The property of a conductor due to which it passes current is called

(a) resistance
(b) reluctance
(c) conductance

(d) inductance

Answer: Option C

Ques 20. The resistance of a conductor varies inversely as

(a) length
(6) area of cross-section
(c) temperature
(d) resistivity

Answer: Option B

Ques 21. With rise in temperature the resistance of pure metals

(a) increases
(b) decreases
(c) first increases and then decreases
(d) remains constant

Answer: Option a

Ques 22. With rise in temperature the resistance of semi-conductors

(a) decreases
(b) increases
(c) first increases and then decreases
(d) remains constant

Answer: Option A

Ques 23. An instrument which detects electric current is known as

(a) voltmeter
(b) rheostat
(c) wattmeter
(d) galvanometer

Answer: Option D

Ques 24. Two resistors are said to be connected in series when

(a) same current passes in turn through both

(b) both carry the same value of current

(c) total current equals the sum of branch currents

(d) sum of IR drops equals the applied e.m.f.

Answer: Option A

Ques 25. The rating of a fuse wire is always expressed in

(a) ampere-hours

(b) ampere-volts

(c) kWh

(d) amperes

Answer: Option D

Ques 26. If a wire conductor of 0.2 ohm resistance is doubled in length, its resistance becomes

(a) 0.4 ohm

(b) 0.6 ohm

(c) 0.8 ohm

(d) 1.0 ohm

Answer: Option A

Ques 27. In an electric kettle water boils in 10 m minutes. It is required to boil the boiler in 15 minutes, using same supply mains

(a) length of heating element should be decreased

(b) length of heating element should be increased

(c) length of heating element has no effect on heating if water

(d) none of the above

Answer: Option A

Ques 28. Bulbs in street lighting are all connected in

(a) parallel

(b) series

(c) series-parallel

(d) end-to-end

Answer: Option A

Ques 29. Sparking occurs when a load is switched off because the circuit has high

(a) resistance
(b) inductance
(c) capacitance
(d) impedance

Answer: Option B

Ques 30. Ohm's law is not applicable to

(a) semi-conductors
(b) D.C. circuits
(c) small resistors
(d) high currents

Answer: Option A

Ques 31. A thermistor has

(a) positive temperature coefficient
(b) negative temperature coefficient
(c) zero temperature coefficient
(d) variable temperature coefficient

Answer: Option C

Ques 32. Conductance : mho ::

(a) resistance : ohm
(b) capacitance : henry
(c) inductance : farad
(d) lumen : steradian

Answer: Option a

Ques 33. For maximum transfer of power, internal resistance of the source should be

(a) equal to load resistance
(b) less than the load resistance
(c) greater than the load resistance
(d) none of the above

Answer: Option A

Ques 34. If three 15 uF capacitors are connected in series, the net capacitance is

(a) 5 uF
(6) 30 uF
(c) 45 uF
(d) 50 uF

Answer: Option A

Ques 35. If three 10 uF capacitors are connected in parallel, the net capacitance is

(a) 20 uF
(b) 30 uE
(c) 40 uF
(d) 50 uF

Answer: Option B

Ques 36. During the charging of a lead-acid cell

(a) its voltage increases
(b) it gives out energy
(c) its cathode becomes dark chocolate brown in colour
(d) specific gravity of H2SO4 decreases

Answer: Option A

Ques 37. During charging the specific gravity of the electrolyte of a lead-acid battery

(a) increases
(b) decreases
(c) remains the same

(d) becomes zero

Answer: Option A

Ques 38. The best indication about the state of charge on a lead-acid battery is given by

(a) output voltage
(b) temperature of electrolyte
(c) specific gravity of electrolyte
(d) none of the above

Answer: Option C

Ques 39. The output voltage of a charger is

(a) less than the battery voltage
(b) higher than the battery voltage
(c) the same as the battery voltage
(d) none of the above

Answer: Option B

Ques 40. A dead storage battery can be revived by

(a) adding distilled water
(6) adding so-called battery restorer
(c) a dose of H2SO4
(d) none of the above

Answer: Option D

Ques 41. Trickle charging of a storage battery helps to

(a) maintain proper electrolyte level
(b) increase its reserve capacity
(c) prevent sulphation
(d) keep it fresh and fully charged

Answer: Option D

Ques 42. Electrolyte used in a lead-acid cell is

(a) NaOH
(b) onlyH2S04
(c) only water
(d) dilute H2SO4

Answer: Option D

Ques 43. The specific gravity of electrolyte is measured by

(a) manometer
(6) a mechanical gauge
(c) hydrometer
(d) psychrometer

Answer: Option C

Ques 44. When the specific gravity of the electrolyte of a lead-acid cell is reduced to 1.1 to 1.15 the cell is in

(a) charged state
(b) discharged state
(c) both (a) and (b)
(d) active state

Answer: Option B

Ques 45. Over charging

(a) produces excessive gassing
(b) loosens the active material
(e) increases the temperature resulting in buckling of plates
(d) all above

Answer: Option D

Ques 46. Undercharging

(a) reduces specific gravity of the electrolyte
(b) increases specific gravity of the electrolyte
(c) produces excessive gassing

(d) increases the temperature

Answer: Option A

Ques 47. Each cell has a vent cap

(a) to allow gases out when the cell is on charge
(b) to add water to the cell if needed
(c) to check the level of electrolyte
(d) to do all above functions

Answer: Option D

Ques 48. 48 ampere-hour capacity would deliver a current of

(a) 48 amperes for 1 hour
(b) 24 amperes for 2 hours
(c) 8 amperes for 6 hours
(d) 6 amperes for 8 hours

Answer: Option D

Ques 49. Following will happen if battery charging rate is too high

(a) excessive gassing will occur
(b) temperature rise will occur
(c) bulging and buckling of plates will occur
(d) all above will occur

Answer: Option D

Ques 50. If a battery is wrongly connected on charge following will happen

(a) current delivered by the battery will be high
(b) current drawing will be nil
(c) current drawing will be very small
(d) current drawing will be very high

Answer: Option D

Ques 51. _____ of electrolyte indicates the state of charge of the battery

(a) colour
(b) mass
(c) viscosity
(d) specific gravity

Answer: Option D

Ques 52. The following indicate that battery on charge has attained full charge

(a) colour of electrode
(b) gassing
(c) specific gravity
(d) all above

Answer: Option D

Ques 53. Petroleum jelly is applied to the electrical connections to the lead-acid battery

(a) prevent local heating
(b) prevent short-circuiting
(c) reduce path resistance
(d) prevent corrosion

Answer: Option D

Ques 54. Direction of rotation of a split phase motor can be reversed by reversing the connection of

(a) running winding only
(b) starting winding only
(c) either (a) or (b)
(d) both (a) and (b)

Answer: Option C

Ques 55. The starting torque of a squirrel-cage induction motor is

(a) low
(b) negligible
(c) same as full-load torque

(d) slightly more than full-load torque

Answer: Option A

Ques 56. It is advisable to avoid line-starting of induction motor and use starter because

(a) motor takes five to seven times its full load current
(b) it will pick-up very high speed and may go out of step
(c) it will run in reverse direction
(d) starting torque is very high

Answer: Option A

Ques 57. In a three-phase induction motor, the number of poles in the rotor winding is always

(a) zero
(b) more than the number of poles in stator
(c) less than number of poles in stator
(d) equal to number of poles in stator

Answer: Option D

Ques 58. DOL starting of induction motors is usually restricted to

(a) low horsepower motors
(b) variable speed motors
(c) high horsepower motors
(d) high speed motors

Answer: Option A

Ques 59. A 3-phase induction motor stator delta connected, is carrying full load and one of its fuses blows out. Then the motor

(a) will continue running burning its one phase
(b) will continue running burning its two phases
(c) will stop and carry heavy current causing permanent damage to its winding
(d) will continue running without any harm to the winding

Answer: Option A

Ques 60. A 3-phase induction motor delta connected is carrying too heavy load and one of its fuses blows out. Then the motor

(a) will continue running burning its one phase
(b) will continue running burning its two phase
(c) will stop and carry heavy current causing permanent damage to its winding
(d) will continue running without any harm to the winding

Answer: Option C

Ques 61. The main function of a fuse is to

(a) protect the line
(b) open the circuit
(c) protect the appliance
(d) prevent excessive currents
(e) none of the above

Answer: Option D

Ques 62. The arcing contacts in a circuit breaker are made of

(a) copper tungsten alloy
(b) porcelain
(c) electrolytic copper
(d) aluminium alloy

Answer: Option A

Ques 63. The single phasing relays are used for the protection of

(a) single phase motors only
(b) two phase motors only
(c) two single phase motors running in parallel
(d) three phase motors

Answer: Option D

Ques 64. A fuse is connected

(a) in series with circuit

(b) in parallel with circuit
(c) either in series or in parallel with circuit
(d) none of the above

Answer: Option A

Ques 65. The electrical power to a meggar is provided by
(a) battery
(b) permanent magnet D.C. generator
(c) AC. generator
(d) any of the above

Answer: Option B

Ques 66. The operating voltage of a meggar is about
(a) 6 V
(b) 12 V
(c) 40 V
(d) 100 V

Answer: Option D

Ques 67. A semiconductor has …… temperature coefficient of resistance.

a. Positive
b. Zero
c. Negative
d. None of the above

Answer: Option C

Ques 68. The most commonly used semiconductor is …….

a. Germanium
b. Silicon
c. Carbon
d. Sulphur

Answer: Option B

Ques 69. A semiconductor has generally …… valence electrons.

a. 2
b. 3
c. 6
d. 4

Answer: Option D

Ques 70. When a pentavalent impurity is added to a pure semiconductor, it becomes ……

a. An insulator
b. An intrinsic semiconductor
c. p-type semiconductor
d. n-type semiconductor

Answer: Option D

Ques 71. An n-type semiconductor is ……

a. Positively charged
b. Negatively charged
c. Electrically neutral
d. None of the above

Answer: Option C

Ques 72. A trivalent impurity has ….. valence electrons

a. 4
b. 5
c. 6
d. 3

Answer: Option D

Ques 73. Addition of trivalent impurity to a semiconductor creates many ……..

a. Holes
b. Free electrons
c. Valence electrons
d. Bound electrons

Answer: Option A

Ques 74. A hole in a semiconductor is defined as …….

a. A free electron
b. The incomplete part of an electron pair bond
c. A free proton
d. A free neutron

Answer: Option B

Ques 75. In a semiconductor, current conduction is due to ……..

a. Only holes
b. Only free electrons
c. Holes and free electrons
d. None of the above

Answer: Option C

Ques 76. The battery connections required to forward bias a pn junction are ……

a. +ve terminal to p and –ve terminal to n
b. -ve terminal to p and +ve terminal to n
c. -ve terminal to p and –ve terminal to n
d. None of the above

Answer: Option A

Ques 77. A reverse bias pn junction has ……

a. Very narrow depletion layer
b. Almost no current
c. Very low resistance
d. Large current flow

Answer: Option B

Ques 78. A zener diode is used as …….

a. an amplifier
b. a voltage regulator
c. a rectifier

d. a multi vibrator

Answer: Option B

Ques 79. A zener diode is always …… connected.

a. reverse
b. forward
c. either reverse or forward
d. none of the above

Answer: Option A

Ques 80. In the breakdown region, a zener didoe behaves like a …… source.

a. constant voltage
b. constant current
c. constant resistance
d. none of the above

Answer: Option A

Ques 81. For proper operation of the transistor, its collector should have ……

a. Proper forward bias
b. Proper reverse bias
c. Very small size
d. None of the above

Answer: Option B

Ques 82. An ammeter is connected in …….. with the circuit element whose current we wish to measure

a) Series
b) Parallel
c) Series or parallel
d) None of the above

Answer: Option a

Ques 83. A galvanometer in series with a high resistance is called ……

a) An ammeter
b) A voltmeter

c) A wattmeter
d) None of the above

Answer: Option B

Ques 84. An ammeter should have ……. resistance

a) Infinite
b) Very large
c) Very low
d) None of the above

Answer: Option C

Ques 85. A voltmeter should have ……. Resistance

a) Zero
b) Very high
c) Very low
d) None of the above

Answer: Option B

Ques 86. An SCR has ……. pn junctions

a) Two
b) Three
c) Four
d) None of the above

Answer: Option B

Ques 87. An SCR has ……. semiconductor layers

a) Two
b) Three
c) Four
d) None of the above

Answer: Option C

Ques 88. An SCR behaves as a ……. Switch

a) Unidirectional

b) Bidirectional
c) Mechanical
d) None of the above

Answer: Option A

Ques 89. The control element of an SCR is ……

a) Cathode
b) Anode
c) Anode supply
d) Gate

Answer: Option D

Ques 90. An SCR is turned off by …….

a) Reducing anode voltage to zero
b) Reducing gate voltage to zero
c) Reverse biasing the gate
d) None of the above

Answer: Option A

Ques 91. When SCR is OFF, the current in the circuit is …….

a) Exactly zero
b) Small leakage current
c) Large leakage current
d) None of the above

Answer: Option B