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OPSC MVI

**Previous Year Paper
(Automobile Engg.)
2018**



DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE ASKED TO DO SO

Test Booklet Series

T. B. C. : MVI – I – 17/18

A

TEST BOOKLET

INSPECTOR OF MOTOR VEHICLE/
ADDITIONAL R.T.O (ENFORCEMENT)
ASSISTANT WORKS ENGINEER
(AUTOMOBILE ENGINEERING)

Serial No.

1033

Time Allowed : $1\frac{1}{2}$ Hours

Maximum Marks : 100

: INSTRUCTIONS TO CANDIDATES :

1. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS TEST BOOKLET **DOES NOT** HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET OF THE SAME SERIES ISSUED TO YOU.
2. ENCODE CLEARLY THE TEST BOOKLET SERIES **A, B, C OR D**, AS THE CASE MAY BE, IN THE APPROPRIATE PLACE IN THE ANSWER SHEET USING BALL POINT PEN (BLUE OR BLACK).
3. You have to enter your **Roll No.** on the Test Booklet in the Box provided alongside. **DO NOT** write *anything else* on the Test Booklet.
4. **YOU ARE REQUIRED TO FILL UP & DARKEN** ROLL NO., TEST BOOKLET / QUESTION BOOKLET SERIES IN THE ANSWER SHEET AS WELL AS FILL UP TEST BOOKLET / QUESTION BOOKLET SERIES AND SERIAL NO. AND ANSWER SHEET SERIAL NO. IN THE ATTENDANCE SHEET CAREFULLY. **WRONGLY FILLED UP ANSWER SHEETS ARE LIABLE FOR REJECTION AT THE RISK OF THE CANDIDATE.**
5. This Test Booklet contains **100** items (questions). Each item (question) comprises four responses (answers). You have to select the correct response (answer) which you want to mark (darken) on the Answer Sheet. In case, you feel that there is more than one correct response (answer), you should mark (darken) the response (answer) which you consider the best. In any case, choose **ONLY ONE** response (answer) for each item (question).
6. You have to mark (darken) all your responses (answers) **ONLY** on the **separate Answer Sheet** provided by using **BALL POINT PEN (BLUE OR BLACK)**. See instructions in the Answer Sheet.
7. All items (questions) carry equal marks. All items (questions) are compulsory. Your total marks will depend only on the number of correct responses (answers) marked by you in the Answer Sheet. **There will be negative marking for every wrong answer @ 0.25 mark.**
8. Before you proceed to mark (darken) in the Answer Sheet the responses to various items (questions) in the Test Booklet, you have to fill in some particulars in the Answer Sheet as per the instructions sent to you with your **Admission Certificate**.
9. After you have completed filling in all your responses (answers) on the Answer Sheet and after conclusion of the examination, you should hand over to the Invigilator the *Answer Sheet* issued to you. You are allowed to take with you the candidate's copy / second page of the Answer Sheet along with the **Test Booklet**, after completion of the examination, for your reference.
10. Sheets for rough work are appended in the Test Booklet at the end.

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SEAL

1. Which among the following Solid shapes will have higher drag coefficient ?
 - (A) Hemisphere
 - (B) Cone
 - (C) Sphere
 - (D) Tear Drop
2. Coefficient of drag depends on :
 - (A) Direction of wind
 - (B) Shape of body
 - (C) Material of the body
 - (D) Temperature of wind flowing
3. _____ is defined as the top of the wheel being tilted away from the vehicle.
 - (A) Negative Camber
 - (B) Positive Camber
 - (C) Toe In
 - (D) Toe Out
4. _____ is defined as the steering axis inclined towards the rear of the vehicle.
 - (A) Negative Camber
 - (B) Positive Camber
 - (C) Positive Caster
 - (D) Negative Caster
5. Clutches are designed to _____.
 - (A) Engage and Disengage the transmission system
 - (B) Smooth transfer of engine torque to transmission
 - (C) Selection of gears without any shock, snatch or fierceness
 - (D) All of the above
6. In Torque Converter Coupling point occurs at the impeller speed of _____.
 - (A) 100%
 - (B) 80% and 90%
 - (C) 50%
 - (D) None of the above
7. _____ is the removal of exhaust gases by blowing in fresh air.
 - (A) Intake Stroke
 - (B) Exhaust Stroke
 - (C) Scavenging
 - (D) None of the above
8. Moped has an engine capacity not more than _____.
 - (A) 75 cc
 - (B) 50 cc
 - (C) 25 cc
 - (D) None of the above
9. What type of sensor is commonly used for fuel quantity measurement ?
 - (A) Thermistor
 - (B) Strain gauge
 - (C) Potentiometer whose movable arm is connected to a float
 - (D) Piezoelectric sensor

10. What does a sensor do ?
 (A) It selects transmission gear ratio
 (B) It measures some variable
 (C) It is an output device
 (D) It sends signals to the driver
11. What is an EGO sensor ?
 (A) A measure of the self centeredness of the driver
 (B) A device for measuring the oxygen concentration in the exhaust of an engine
 (C) A spark advance mechanism
 (D) A measure of crankshaft acceleration
12. What is a data bus ?
 (A) A set of wires that carries bits to or from the processor and memory or peripherals
 (B) A large yellow vehicle for carrying data
 (C) A bus carrying addresses
 (D) A set of wires for control signals
13. What are computers used for in instrumentation systems ?
 (A) Signal processing
 (B) Sensor, actuator and display linearization
 (C) Display formatting
 (D) All of the above
14. The front windscreen to door pillars are referred to as :
 (A) D Pillar
 (B) B Pillar
 (C) C Pillar
 (D) None of the above
15. Acoustic Materials in Vehicle are designed for :
 (A) Insulation from noise
 (B) Damping of vibration
 (C) Both (A) and (B)
 (D) None of the above
16. The function of an alternator in an automobile is to :
 (A) Provide Electrical Power
 (B) Recharge Battery
 (C) Convert Mechanical to Electrical
 (D) All of the above
17. What does an actuator do ?
 (A) It is an input device for an engine control system
 (B) It provides a mathematical model for an engine
 (C) It causes an action to be performed in response to an electrical signal
 (D) It indicates the results of a measurement

18. In a Diesel engine, the function of a fuel injector is to :
- Mix the fuel and air
 - Ignite the air-fuel mixture
 - Provide flame front for ignition
 - Spray atomized fuel in the cylinder
19. The advantage of the fuel injection system over the carburetor system is :
- Improved fuel efficiency
 - Improved emission
 - Improved power output
 - All of the above
20. If a bearing is designated by the number 305, it means that the bearing is of :
- Light series whose bore is 5 mm
 - Light series whose bore is 25 mm
 - Medium series whose bore is 5 mm
 - Medium series whose bore is 25 mm
21. According to I. B. R., shearing resistance required to shear off the rivet per pitch length (in double shear) is (where n = Number of rivets per pitch length) :
- $\frac{\pi}{4} d^2 \times \tau \times n$
 - $2 \times \frac{\pi}{4} d^2 \times \tau \times n$
 - $1.875 \times \frac{\pi}{4} d^2 \times \tau \times n$
 - $3 \times \frac{\pi}{4} d^2 \times \tau \times n$
22. When screw threads are to be used in a situation where power is being transmitted in one direction only, then the screw threads suitable for this will be :
- Square threads
 - Acme threads
 - Knuckle threads
 - Buttress threads
23. A shaft is subjected to a maximum bending stress of 80 N/mm^2 and maximum shearing stress equal to 30 N/mm^2 at a particular section. If the yield point in tension of the material is 280 N/mm^2 and the maximum shear stress theory of failure is used, then the factor of safety obtained will be :
- 2.5
 - 2.8
 - 3
 - 3.5
24. A shaft is subjected to fluctuating loads for which the normal torque (T) and bending moment (M) are 1000 N-m and 500 N-m respectively. If the combined shock and fatigue factor for bending is 1.5 and combined shock and fatigue for torsion is 2, then the equivalent twisting moment for the shaft is :
- 2000 N-m
 - 2050 N-m
 - 2100 N-m
 - 2136 N-m

25. 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) $\sin \theta$
 (B) $\cos \theta$
 (C) $\tan \theta$
 (D) $\operatorname{cosec} \theta$
26. Mass moment of inertia of a uniform thin rod of mass length (l) about its mid-point and perpendicular to its length is :
- (A) $\frac{2}{3}Ml^2$
 (B) $\frac{1}{3}Ml^2$
 (C) $\frac{3}{4}Ml^2$
 (D) $\frac{1}{12}Ml^2$
27. The acceleration of a particle moving with simple harmonic motion, at any instant is given by :
- (A) ωy
 (B) $\omega^2 y$
 (C) ω^2 / y
 (D) $\omega^3 y$
28. The moment of inertia of a sphere of mass m and radius r, about an axis tangential to it, is :
- (A) $\frac{2}{3}mr^2$
 (B) $\frac{2}{5}mr^2$
 (C) $\frac{7}{3}mr^2$
 (D) $\frac{7}{5}mr^2$
29. A straight rod length L (t), hinged at one end freely extensible at the other end, rotates through an angle $\theta(t)$ about the hinge. At time t, $L(t) = m$, $L'(t) = m/s$, $\theta(t) = \pi/4$ rad and $\theta'(t) = 1$ rad/s. The magnitude of the velocity at the other end of the rod is :
- (A) 1 m/s
 (B) 1.4 m/s
 (C) 1.7 m/s
 (D) 2 m/s
30. One of the following methods is adopted for governing of steam turbines in a power plant :
- (A) Speed control
 (B) Blow off in boiler
 (C) Hit and miss governing
 (D) Throttle governing
31. A lead ball with a certain velocity is made to strike a wall, it falls down, but rubber ball of same mass and with same velocity strikes the same wall, it rebounds. Select the correct reason from the following :
- (A) Both the balls undergo an equal change in momentum
 (B) The change in momentum suffered by rubber ball is more than the lead ball
 (C) The change in momentum suffered by rubber ball is less than the lead ball
 (D) None of the above

32. According to Indian standard specifications, 100 H6/g⁵ means that the :
- Difference between the actual size and basic size in 100 mm
 - Basic size is 100 mm
 - Actual size is 100 mm
 - None of the above
33. The constant factor in case of R10 series of preferred number is :
- 1.58
 - 1.12
 - 1.26
 - 1.06
34. The taper on cotter varies from :
- 1 in 24 to 1 in 20
 - 1 in 15 to 1 in 10
 - 1 in 32 to 1 in 24
 - 1 in 48 to 1 in 24
35. When the speed of belt increases ?
- The power transmitted will increase
 - The coefficient of friction between the belt and pulley decreases
 - The power transmitted will decrease
 - The coefficient of friction between the belt and pulley increases
36. A turbine is said to have an axial discharge when the steam leaves the blade tip at _____ to the direction of the blade motion.
- 90°
 - 180°
 - 60°
 - 27°
37. 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 :
- 0.67
 - 0.56
 - 0.4
 - 0.5
38. Thermal equilibrium means that the flow of steam is :
- Isothermal
 - Isentropic
 - Hyperbolic
 - Polytrophic
39. The reheat factor is the ratio of the :
- Isentropic heat drop to the heat supplied
 - Cumulative heat drop to the isentropic heat drop
 - Total useful heat drop to the total isentropic heat drop
 - None of the above

40. The rotor of a ship rotates in clockwise direction when viewed from stern and the ship takes a left turn. The effect of gyroscopic couple acting on it will be :
- To raise the stern and lower the bow
 - To lower the bow and stern
 - To raise the bow and stern
 - To raise the bow and lower the stern
41. If the damping factor for a vibrating system is unity, then the system will be :
- Under-damped
 - Over-damped
 - Critically damped
 - Without vibrations
42. Scotch Yoke mechanism is used to generate :
- Sine functions
 - Logarithms
 - Inversions
 - Square roots
43. The effects of having excess camber is :
- Hard steering
 - Excessive steering alignment torque
 - Too much traction
 - Uneven tyre wear
44. A micrometer screw has pitch of 0.5 mm and the thimble has 100 equal divisions marked on it, the least count of the instrument in mm is :
- 0.5
 - 0.005
 - 0.025
 - 0.05
45. Which of the following methods can be used for manufacturing 2 metre long seamless metallic tubes ?
- Rolling
 - Extrusion
 - Drawing
 - Extrusion and rolling
46. In a bilateral system of tolerance, the tolerance is allowed on :
- One side of the actual size
 - Both sides of the nominal size
 - One side of the nominal size
 - Both sides of the actual size
47. A mortise gauge is a :
- Planning tool
 - Striking tool
 - Marking tool
 - Boring tool
48. A large clearance volume in a reciprocating compressor results in :
- Lower suction pressure
 - Increased volume flow rate
 - Reduced volume flow rate
 - Lower delivery pressure

49. In a jet propulsion :

- (A) Its functioning does not depend upon presence of air
- (B) The propulsive matter is ejected from within the propelled body
- (C) The propulsive matter is caused to flow around the propelled body
- (D) None of the above

50. Brasses and bronzes are welded using :

- (A) Oxidizing flames
- (B) Neutral flame
- (C) Carburizing flame
- (D) Reducing flame

51. 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) $g/4$
- (B) $g/2$
- (C) $g/3$
- (D) None of these

52. The center of gravity of a quadrant of a circle lies along its central radius (r) at a distance of :

- (A) $0.6r$
- (B) $0.7r$
- (C) $0.5r$
- (D) $0.8r$

53. A simply supported beam carrying a uniformly distributed load over its whole span, is propped at the center of the span so that the beam is held to the level of the end supports. The reaction of the prop will be :

- (A) $3/8$ th the distributed load
- (B) Half the distributed load
- (C) $5/8$ th the distributed load
- (D) Distrubed load

54. In an inward flow reaction turbine :

- (A) The water flows parallel to the axis of the wheel
- (B) The water enters the wheel at the outer periphery and then flows towards the centre of the wheel
- (C) The water enters at the center of the wheel and then flows towards the outer periphery of the wheel
- (D) The flow of water is partly radial and partly

55. If the net positive suction head (NPSH) requirement for the pump is not satisfied, then :

- (A) No flow will take place
- (B) Capitation will be formed
- (C) Efficiency will be low
- (D) Excessive power will be consumed

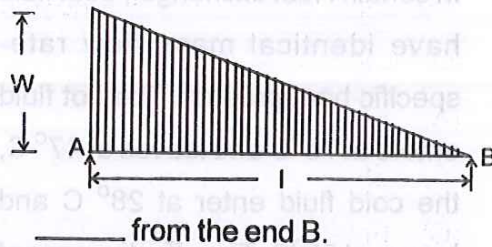
56. The efficiency of Diesel cycle approaches to Otto cycle efficiency when :
- Cutt-off is constant
 - Cutt-off is zero
 - Cutt-off is increased
 - Cutt-off is decreased
57. Surface endurance limit of gear material is dependent upon its :
- Elastic strength
 - Yield strength
 - Brinell hardness number
 - Toughness
58. The cracks in helical springs used in railway carriage usually start on the inner side of the coil because of the fact that :
- It has a lower curvature than the outer side
 - It is subjected to a higher cyclic loading than the outer side
 - It is subjected to a higher stress than the outer side
 - It is more stretched than the outer side during the manufacturing process
59. 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 :
- 1 bar
 - 256 bar
 - 64 bar
 - 16 bar
60. The degree of reaction in an axial flow compressor is defined as the ratio of static enthalpy rise in the :
- Stator to static enthalpy rise in the stage
 - Rotor to static enthalpy rise in the stator
 - Stator to static enthalpy rise in the rotor
 - Rotor to static enthalpy rise in the stage
61. The efficiency between dry bulb temperature and wet bulb temperature, is called :
- Wet bulb depression
 - Dry bulb depression
 - Dew point depression
 - Degree of saturation
62. Thermal diffusivity is a :
- Physical property of a substance
 - Function of temperature
 - Dimensionless parameter
 - All of these
63. The superheated vapor region, in a pressure enthalpy chart, is represented by the space :
- To the right of saturated liquid line
 - Between the saturated liquid line and saturated vapour line
 - To the left of saturated liquid line
 - None of the above

64. A heat pump working on a reversed Carnot cycle has a C.O.P. of 5. It works as a refrigerator taking 1 kW of work input. The refrigerating effect will be :
- (A) 1 kW
(B) 3 kW
(C) 2 kW
(D) 4 kW
65. Lancing is the operation of :
- (A) Removal of metal to the desired shape from the edge of a plate
(B) Cutting a sheet of metal in a straight line along the length
(C) Cutting a sheet of metal through part of its length and then bending the cut portion
(D) Bending a sheet of metal along a curved axis
66. If the diameter of the hole is subject to considered variation, then for locating in jigs and fixtures, the pressure type of locator used is :
- (A) Diamond pin locator
(B) vee locator
(C) Conical locator
(D) Cylindrical locator
67. Which of the following statement is incorrect with reference of lathe cutting tools ?
- (A) The nose is the corner, are or chamfer joining the side cutting and the end cutting edges
(B) The heel is that part of the tool which is shaped to produce the cutting edges and face
(C) The base is that surface of the shank which bears against the support and takes tangent pressure of the cut
(D) The flank of the tool is the surface or surface below and adjacent to the cutting edges
68. The firing order for an in-line four cylinder I. C. engine is :
- (A) 1-2-4-3
(B) 1-2-3-4
(C) 1-3-4-2
(D) 1-3-2-4
69. A small percentage of boron is added to steel in order to :
- (A) Increase wear resistance
(B) Increase harden ability
(C) Reduce mach inability
(D) Increase endurance strength
70. Muntz metal contains :
- (A) 70% copper and 30% zinc
(B) 60.45% copper, 35.2% zinc and 5.35% nickel
(C) 60% copper and 40% zinc
(D) 59% copper, 40% zinc and 1% tin

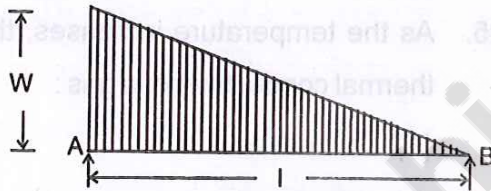
71. Which of the following is a metamorphous material ?
 (A) Brass
 (B) Lead
 (C) Silver
 (D) Mica
72. The specific fuel consumption per B. P. hour for a petrol engine is about :
 (A) 0.25 kg
 (B) 0.3 kg
 (C) 0.2 kg
 (D) 0.35 kg
73. Two long parallel surfaces each of emissivity 0.7 are maintained at different temperature and accordingly have radiation heat exchange between them. It is desired to reduce 75% of the radiant heat transfer by inserting thin parallel shields of emissivity 1 on both sides. The number of shields should be :
 (A) One
 (B) Two
 (C) Three
 (D) Four
74. In a CAD package, mirror image of a 2D point P(5, 10) is to be obtained about a line which passes through the origin and makes an angle of 45° counterclockwise with the X-axis. The coordinates of the transformed point will be :
 (A) (7.5, 5)
 (B) (10, 5)
 (C) (7.5, -5)
 (D) (10, -5)
75. Consider a single degree of freedom system with viscous damping excited by a harmonic force. At resonance, the phase angle of the displacement with respect to exciting force is :
 (A) 0°
 (B) 45°
 (C) 90°
 (D) 135°
76. A metric thread of pitch 2 mm and thread angle 60° is inspected for its pitch diameter using 3-wire method. The diameter of the best size wire in mm is :
 (A) 0.866
 (B) 1.000
 (C) 1.154
 (D) 2.000
77. The value of enthalpy of steam at the inlet and outlet of a steam turbine in a rankine cycle are 2800 kJ/kg and 1800 kJ/kg respectively. Neglecting pump work, the specific steam consumption in kg/kW-hour is :
 (A) 3.60
 (B) 0.36
 (C) 0.06
 (D) 0.01

78. A metallic rod of 500 mm length and 50 mm diameter, when subjected to a tensile force of 1000kN at the ends. Experience an increase in its length by 0.5 mm and a reduction in its diameter by 0.015mm, then the poisson's ratio of rod is :
- (A) 0.25
(B) 0.3
(C) 0.35
(D) 0.28
79. The main cutting force acting on a tool during turning (orthogonal cutting) operation of a metal is 400 N. The turning was performed using 2 mm depth of cut and 0.1 mm/rev feed rate. The specific cutting pressure (in N/mm²) is :
- (A) 1000
(B) 2000
(C) 3000
(D) 4000
80. A column has a rectangular cross section of 10 mmx 20 mm and length of 1 m. The slenderness ratio is close to :
- (A) 200
(B) 346
(C) 477
(D) 950
81. The object of caulking in a riveted joint is to make the joint
- (A) Free from corrosion
(B) Stronger in tension
(C) Free from stresses
(D) Leak-proof
82. The maximum diameter of the hole that can be punched from a plate of maximum shear stress $\frac{1}{4}$ th of its maximum crushing stress of punch, is equal to (where t = Thickness of the plate) :
- (A) t
(B) 2t
(C) 3t
(D) 4t
83. The simply supported beam 'A' of length 1 carries a central point load W. Another beam 'B' is loaded with a uniform distributed load such that the total load on the beam is W. The ratio of maximum deflections between beams A and B is :
- (A) $\frac{5}{8}$
(B) $\frac{8}{5}$
(C) $\frac{5}{4}$
(D) $\frac{4}{5}$

84. The maximum bending moment for the beam shown in the below figure, lies at a distance of



- _____ from the end B.
- (A) $1/2$
 (B) $1/3$
 (C) $1/(2)^{1/2}$
 (D) $1/(3)^{1/2}$
85. For the beam shown in figure below, the shear force at A is :



- (A) $w/6$
 (B) $w/3$
 (C) w
 (D) $2w/3$
86. The ductility of a material _____ with the increase in percentage reduction in area of a specimen under tensile test :
- (A) Increases
 (B) Decreases
 (C) Remains same
 (D) Undefined

87. In a vibrating system, if the actual damping coefficient is 40 N/m/s and critical damping coefficient is 420 N/m/s, then logarithmic decrement is equal to :

- (A) 0.2
 (B) 0.4
 (C) 0.6
 (D) 0.8

88. In ECM, the metal removal rate is directly proportional to :

- (A) Density of work material
 (B) Gram atomic weight of work material
 (C) Concentration of the electrolyte used
 (D) Thermal conductivity of the work material

89. In order to have maximum power from a pelton wheel turbine, the bucket speed must be :

- (A) Equal to the jet speed
 (B) Equal to half of jet speed
 (C) Equal to twice the jet speed
 (D) Independent of the jet speed

90. Cavitations in a hydraulic reaction turbine is most likely to occur at the turbine :

- (A) Entry
 (B) Exit
 (C) Stator exit
 (D) Rotor exit

91. A coolant fluid at 30°C flows over a heated flat plate maintained at a constant temperature of 100°C . The boundary layer temp distribution at a given location on the plate may be approximated as $T = 30 + 70 \exp(-y)$, where y (in m) is the distance normal to plate and T in $^{\circ}\text{C}$. If thermal conductivity is 1W/mK , the local convective heat transfer (in $\text{W/m}^2\text{K}$) at that location is :
- (A) 0.2
(B) 1
(C) 5
(D) 10
92. For laminar forced convection over a flat plate, if the free stream velocity increases by a factor of 2, then the average heat transfer coefficient :
- (A) Remains same
(B) Decreased by a factor of $\sqrt{2}$
(C) Rises by a factor of $\sqrt{2}$
(D) Rises by a factor of 4
93. In condenser of a power plant, the steam condenses at a temperature of 60°C , the cooling water enters at 30°C and leaves at 45°C . The logarithmic mean temperature difference of the condenser in $^{\circ}\text{C}$ is :
- (A) 16.2
(B) 21.6
(C) 30
(D) 37.5
94. In certain Heat exchanger, both fluid have identical mass flow rate-specific heat product. The hot fluid enters at 76°C and leaves at 47°C , the cold fluid enter at 28°C and leaves at 55°C . The effectiveness of the heat exchanger is :
- (A) 0.16
(B) 0.58
(C) 0.72
(D) 1
95. As the temperature increases, the thermal conductivity of a gas :
- (A) Increases
(B) Decreases
(C) Remains constant
(D) Increases up to a certain temperature and then decreases
96. What is the value of radiation view factor for two inclined flat plates having common edge of equal width and with an angle of 20 degrees is :
- (A) 0.83
(B) 1.17
(C) 0.66
(D) 1.34

97. A rigid container of volume 0.5 m^3 contains 1 kg of water at 120°C ($v_f = 0.00106 \text{ m}^3/\text{kg}$, $v_g = 0.8908 \text{ m}^3/\text{kg}$). The state of water is :
- (A) Compressed liquid
(B) Saturated liquid
(C) Mixture of saturated liquid and saturated vapour
(D) Superheated vapour
98. The crank radius of a single cylinder I.C engine is 60 mm and the diameter of the cylinder is 80 mm . The swept volume of the cylinder in cm^3 is :
- (A) 48
(B) 96
(C) 302
(D) 603
99. Moist air at 35°C and 100% relative humidity is entering a device and leaving at 25°C and 100% relative humidity. The name of the device is :
- (A) Humidifier
(B) Dehumidifier
(C) Sensible heater
(D) Sensible cooler
100. Dew point temperature is the temperature at which condensation begins when the air is cooled at constant :
- (A) Volume
(B) Entropy
(C) Pressure
(D) Enthalpy

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humidity is entering a device and leaving at 25°C and 100% relative humidity. The name of the device is:

- (A) Humidifier
- (B) Dehumidifier
- (C) Sensible heater
- (D) Sensible cooler

100. Dew point temperature is the temperature at which condensation begins when the air is cooled at constant:

- (A) Volume
- (B) Entropy
- (C) Pressure
- (D) Enthalpy

contains 1kg of water at 120°C ($v_g = 0.00108 \text{ m}^3/\text{kg}$, $v_g = 0.8808 \text{ m}^3/\text{kg}$)

The state of water is:

- (A) Compressed liquid
- (B) Saturated liquid
- (C) Mixture of saturated liquid and saturated vapour
- (D) Superheated vapour

98. The crank radius of a single cylinder I.C engine is 50 mm and the diameter of the cylinder is 80 mm. The swept volume of the cylinder in cm^3 is:

- (A) 48
- (B) 98
- (C) 302
- (D) 603