MPPSC AE

Previous Year Paper
Paper - II
Mechanical Engineering
(2016 Shift 2)

State Engineering (Prelims) Exam – 2016

Second Paper – Second Shift

(Final Model Answer Key)

Mechanical Engineering

Q.No: 1	**The equivalent bending moment under combined action of bending moment M and torque T is**
A	$\sqrt{M^2+T^2}$
B	$\frac{1}{2}\sqrt{M^2+T^2}$
C	$M+\sqrt{M^2+T^2}$
D	$\frac{1}{2}(M+\sqrt{M^2+T^2})$
Correct Answer	**D**

Q.No: 2	$\frac{PL^3}{3EI}$ **is the deflection under the load 'P' of a cantilever beam (Length 'L', Modulus of elasticity 'E' and Moment of inertia 'I'). The strain energy due to bending is**
A	$\frac{P^2L^3}{3EI}$
B	$\frac{P^2L^3}{6EI}$
C	$\frac{P^2L^3}{4EI}$
D	$\frac{P^2L^3}{48EI}$
Correct Answer	**B**

Q.No: 3	**The outside diameter of a hollow shaft is twice of it's inside diameter. The ratio of its torque carrying capacity of that of a solid shaft of the same material and same outside diameter is**
A	**15/16**
B	**3/4**
C	**1/2**
D	**1/16**
Correct Answer	**A**

Q.No: 4	**A square bar of side 4 cm and length 100 cm is subjected to axial load P. The same bar is then used as a cantilever beam and subjected to an end load P. The ratio of the strain energies, stored in the bar in the second case to that stored in first case, is**
A	**16**
B	**400**
C	**1000**
D	**2500**
Correct Answer	**D**

Q.No: 5	**Which theory of failure is applicable for copper components under steady load?**
A	**Principal stress theory**
B	**Strain energy theory**
C	**Maximum shear stress theory**
D	**Principal strain theory**
Correct Answer	**C**

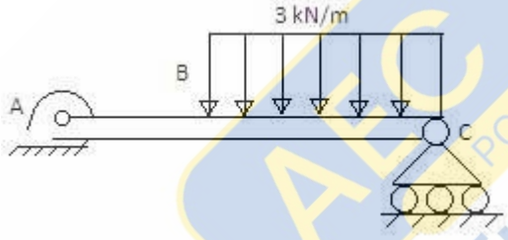
Q.No: 6	**The bucking load for a column one end fixed and other end free is 10kN. If both ends of this column is fixed, then what would be the buckling load capacity of this column ?**
A	**10 kN**
B	**20 kN**
C	**80 kN**
D	**160 kN**
Correct Answer	**D**

Q.No: 7	**In a laminated spring the strips are provided in different lengths for**
A	**Equal distribution of stress**
B	**Equal distribution of strain energy**
C	**Reduction in weight**
D	**All are correct**
Correct Answer	**A**

Q.No: 8	**Wire diameter, mean coil diameter and number of turns of a closely-coiled steel spring are d, D and N respectively and stiffness of the spring is K. A second spring is made of same steel but with wire diameter, mean coil diameter and number of turns 2d, 2D and 2N respectively. The stiffness of the new spring is**
A	**K**
B	**2K**

C	**4K**
D	**8K**
Correct Answer	**A**

Q.No: 9	**Hoop stress in a thin cylinder of a diameter 'd' and thickness 't' subjected to pressure 'P' will be**
A	$\frac{Pd}{4t}$
B	$\frac{Pd}{2t}$
C	$\frac{2Pd}{t}$
D	$\frac{Pd}{t}$
Correct Answer	**B**

Q.No: 10	**A mass less beam has a loading pattern as shown in Fig. The beam is of rectangular cross-section with a width of 30 mm and height of 100 mm**  **The maximum bending moment occurs at**
A	**Location B**
B	**2500 mm to the right of A**
C	**2675 mm to the right of A**
D	**3225 mm to the right of A**
Question Deleted	

Q.No: 11	**Instantaneous center of a body rolling with sliding on a stationary curved surface lies**
A	**At the point of contact**
B	**On the common tangent at the point of contact**
C	**On the common normal at the point of contact**
D	**None of these are correct**
Correct Answer	**C**

Q.No: 12	**When a slider moves with a velocity 'v' on a link rotating at an angular speed of 'ω' the coriolis component of acceleration is given by**
A	$\sqrt{2v/\omega}$
B	**vω**
C	**vω/2**
D	**2vω**
Correct Answer	**D**

Q.No: 13	**In spur gears, the circle on which the involute is generated is called**
A	**Pitch circle**
B	**Clearance circle**
C	**Base circle**
D	**Addendum circle**
Correct Answer	**C**

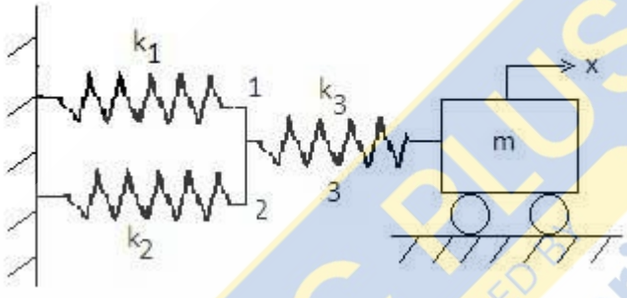
Q.No: 14	**In a simple gear train, if the number of idler gear is odd, then the direction of motion of driven gear will**
A	**be same as that of the driving gear**
B	**be opposite to the driving gear**
C	**depend upon the number of teeth on both gears**
D	**depend upon the size of the gears**
Correct Answer	**A**

Q.No: 15	**The choice of displacement diagram during the rise or return of a follower of a cam-follower mechanism is based on dynamic considerations. For high speed cam, follower will have which one of the following**
A	**Cycloidal motion**
B	**Simple harmonic motion**
C	**Parabolic or uniform acceleration motion**
D	**Uniform motion or constant velocity motion**
Correct Answer	**A**

Q.No: 16	**Which one of the following can completely balance several masses revolving in different planes on a shaft ?**
A	**A single mass in any one plane**
B	**A single mass in one of the planes of the revolving masses**
C	**Two masses in any two planes**
D	**Two equal masses in any planes**

Correct Answer	**C**

Q.No: 17	**The primary distributing force due to inertia of reciprocating parts of mass 'm' at radius 'r' rotating with an angular velocity 'ω' is given by**
A	**mω^2 r sin θ**
B	**mω^2 r cos θ**
C	**mω^2 r sin $\left(\frac{2\theta}{n}\right)$**
D	**mω^2 r cos $\left(\frac{2\theta}{n}\right)$**
Correct Answer	**B**

Q.No: 18	 **Which one of the following is the correct value of the natural frequency (ω_n) of the system given above ?**
A	$\left[\frac{1}{\left\{\frac{1}{k_1+k_2}+\frac{1}{k_3}\right\}m}\right]^{\frac{1}{2}}$
B	$\left(\frac{3k}{m}\right)^{\frac{1}{2}}$
C	$\left(\frac{k}{2m}\right)^{\frac{1}{2}}$
D	$\left[\frac{k_3+\left[\frac{1}{\frac{1}{k_1}+\frac{1}{k_2}}\right]}{m}\right]^{\frac{1}{2}}$
Correct Answer	**A**

Q.No: 19	**A shaft carries a weight 'w' at the centre. The CG of the weight is displaced by an amount 'e' from the axis of the rotation. If 'y' is the additional displacement of the CG from the axis of rotation due to the centrifugal force, then the ratio of 'y' to e (where 'ω_c' is the critical speed of shaft and ω is the angular speed of shaft) is given by**

A	$\frac{1}{\left[\frac{\omega_c}{\omega}\right]^2+1}$
B	$\frac{1}{\left[\frac{\omega_c}{\omega}\right]^2-1}$
C	$\left[\frac{\omega_c}{\omega}\right]^2+1$
D	$\left[\frac{\omega_c}{\omega}\right]^2-1$
Correct Answer	**B**

Q.No: 20	**The effect of gyroscopic couple on rolling of ships is**
A	**Very high**
B	**Very low**
C	**No effect**
D	**Moderate**
Correct Answer	**C**

Q.No: 21	**A transmission shaft subjected to bending loads must be designed on the basis of**
A	**Maximum shear stress theory**
B	**Fatigue strength**
C	**Maximum normal stress and maximum shear stress theories**
D	**Maximum normal stress theory**
Correct Answer	**D**

Q.No: 22	**The design calculations for members subject to fluctuating loads with the same factor of safety yield the most conservative estimates when using**
A	**Gerber relation**
B	**Soderberg relation**
C	**Goodman relation**
D	**None of these are correct**
Correct Answer	**B**

Q.No: 23	**Stress concentration in a machine component of ductile materials is not so harmful as it is in brittle materials because**
A	**In ductile materials local yielding may distribute stress concentration**
B	**Ductile materials have large Young's modulus**

C	**Poisson's ratio is larger in ductile materials**
D	**Modulus of rigidity is larger in ductile materials**
Correct Answer	**A**

Q.No: 24	**The power transmitted by a belt is dependent on the centrifugal effect in the belt . The maximum power can be transmitted when the centrifugal tension is**
A	**1/3 of the tension (T_1) on the tight side**
B	**1/3 of the total tension (T_t) on the tight side**
C	**1/3 of the tension (T_2) on the slack side**
D	**1/3 of the tension (T_1) and (T_2)**
Correct Answer	**B**

Q.No: 25	**The permissible stress in fillet weld is 100 N/mm^2 . The fillet weld has equal leg lengths of 15 mm each. The allowable shearing load on per cm length of the weld is**
A	**22.5 kN**
B	**15.0 kN**
C	**10.6 kN**
D	**7.5 kN**
Correct Answer	**C**

Q.No: 26	**The shearing area of a Key of length 'L' breadth 'b' depth 'h' is equal to**
A	**b X h**
B	**L X h**
C	**L X b**
D	$L \times \frac{h}{2}$
Correct Answer	**C**

Q.No: 27	**In the calculation of induced shear stress in the helical springs, the wahl's correction factor is used to take of**
A	**combined effect of transverse shear stress and bending stress in wire**
B	**combined effect of bending stress and curvature of wire**
C	**combined effect of transverse shear stress and curvature of wire**
D	**combined effect of torsional shear stress & transverse shear stress of wire**
Correct Answer	**C**

Q.No: 28	**Which sunk key is made from a segment of a circular disc of uniform thickness, known as**

A	**Feather key**
B	**Kennedy key**
C	**Woodruff key**
D	**Saddle key**
Correct Answer	**C**

Q.No: 29	**How can shock absorbing capacity of a bolt be increased**
A	**By tightening it properly**
B	**By increasing the shank diameter**
C	**By grinding the shank**
D	**By making the shank diameter equal to the core diameter of thread**
Correct Answer	**D**

Q.No: 30	**In a fillet welded joint, the weakest area of the weld is :**
A	**toe**
B	**throat**
C	**root**
D	**face**
Correct Answer	**B**

Q.No: 31	**The rake angle of a cutting tool is 10°,shear angle 35° and cutting velocity 25 m/min. What is the chip velocity along tool face?**
A	**1.9 m/min**
B	**3.9 m/min**
C	**7.9 m/min**
D	**15.8 m/min**
Correct Answer	**D**

Q.No: 32	**In abrasive jet machining as the distance between nozzle tip and the work surface increases, the material removal rate**
A	**Increases continuously**
B	**Decreases continuously**
C	**Decreases, becomes stable & then increases**
D	**Increases, becomes stable & then decreases**
Correct Answer	**D**

Q.No: 33	**As tool and work are not in contact in EDM process**
A	**no relative motion occurs between them**
B	**no wear of tool occurs**
C	**no power is consumed during metal cutting**
D	**no force between tool and work occurs**
Correct Answer	**D**

Q.No: 34	**A 50 mm diameter disc is to be punched out from a carbon steel sheet 1.0 mm thick. The diameter of the punch should be**
A	**42.925 mm**
B	**50.00 mm**
C	**50.075 mm**
D	**None of these are correct**
Correct Answer	**D**

Q.No: 35	**3-2-1 method of location of jig or fixture would collectively restrict the work piece in 'n' degree of freedom, where the value of 'n' is**
A	**9**
B	**6**
C	**8**
D	**1**
Correct Answer	**A**

Q.No: 36	**Auto collimeter is used to check**
A	**Roughness**
B	**Flatness**
C	**Angle**
D	**Automobile balance**
Correct Answer	**C**

Q.No: 37	**On a triple start, thread screw**
A	**Lead = pitch**
B	**Lead = 3 x pitch**
C	**Lead = (1/2) x pitch**
D	**Lead = 9 x pitch**
Correct Answer	**B**

Q.No: 38	**The crater wear of a cutting tool is due to**
A	**Chemical action of the coolant**
B	**Excessive heat generated during cutting**
C	**Rubbing of tool against workplace**
D	**Abrasive action of the chip**
Correct Answer	**D**

Q.No: 39	**The primary tool force is used in calculating the total power consumption in machining is**
A	**radial force**
B	**tangential force**
C	**axial force**
D	**frictional force**
Correct Answer	**B**

Q.No: 40	**Which one of the following processes does not cause tool wear**
A	**Ultrasonic machining**
B	**Electro discharge machining**
C	**Laser beam machining**
D	**Anode mechanical machining**
Correct Answer	**C**

Q.No: 41	**In a tool life test, doubling the cutting speed reduces the tool life to $(1/8)^{th}$ of the original. The Taylor's tool life index is**
A	**1/3**
B	**1/2**
C	**1/4**
D	**1/8**
Correct Answer	**A**

Q.No: 42	**The standard time for an operation has been calculated as 10 minutes. The worker was rated at 80%. If the relaxation and other allowances were 25%, then the normal time would be**
A	**12.5 min**
B	**10 min**
C	**80 min**

D	**08 min**
Correct Answer	**D**

Q.No: 43	**An inventory control theory, the economic order quantity (EOQ) is**
A	**Average level of inventory**
B	**Optimum lot size**
C	**Lot size corresponding to break-even analysis**
D	**Capacity of a warehouse**
Correct Answer	**B**

Q.No: 44	**Which of the following method can be used for forecasting the sales potential of a new product**
A	**Direct survey method**
B	**Time series analysis**
C	**Jury executive opinion method**
D	**Sales force composite method**
Correct Answer	**A**

Q.No: 45	**Time estimates of an activity in a PERT network are: optimistic time t_o = 9 days, pessimistic time t_p = 21 days and most likely time t_m = 15 days The approximate probability of completion of this activity in 13 days**
A	**34%**
B	**50%**
C	**16%**
D	**84%**
Correct Answer	**C**

Q.No: 46	**In a queuing problem, if the arrivals are completely random, then the probability distribution of number of arrivals in a given time follows :**
A	**Poisson distribution**
B	**Normal distribution**
C	**Binomial distribution**
D	**Exponential distribution**
Correct Answer	**A**

Q.No: 47	**Which of the following is the measure of forecast error**

A	**Mean absolute deviation**
B	**Trend value**
C	**Moving average**
D	**Price fluctuation**
Correct Answer	**A**

Q.No: 48	**Which one of the following is not a technique under Predetermined motion time system(PMTS) ?**
A	**Work factor**
B	**Synthetic data**
C	**Stopwatch time study**
D	**MTM**
Correct Answer	**C**

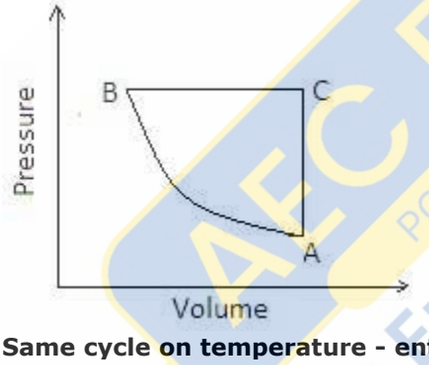
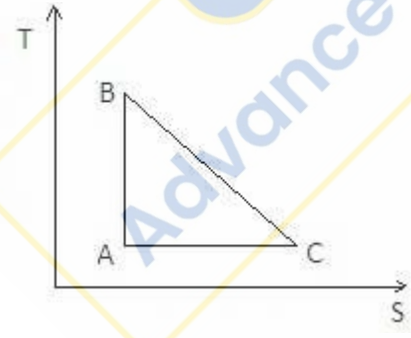
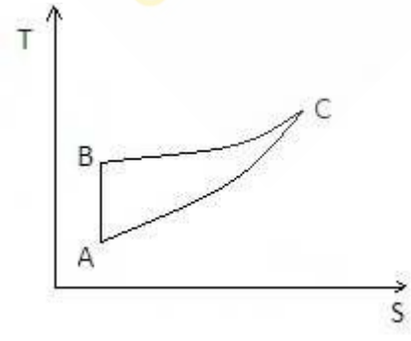
Q.No: 49	**If in a process on the shop floor, the specification are not met, but the charts for variables show control, then which of the following actions should be taken?**
A	**change the process**
B	**change the method of measurement**
C	**change the worker or provide him training**
D	**change the specifications or upgrade the process**
Correct Answer	**C**

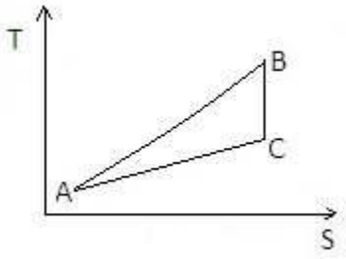
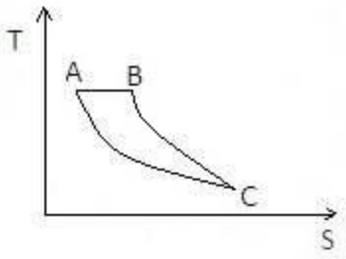
Q.No: 50	**An operating characteristic curve (OC curve) is a plot between**
A	**Consumer risk and producer risk**
B	**Probability of acceptance and probability of rejection**
C	**Percentage of defective and probability of acceptance**
D	**Average outgoing quality and probability of acceptance**
Correct Answer	**C**

Q.No: 51	**Joule-Thomson coefficient is defined as**
A	$\left(\frac{\partial T}{\partial p}\right)_h$
B	$\left(\frac{\partial H}{\partial p}\right)_T$
C	$\left(\frac{\partial H}{\partial T}\right)_p$

D	$\left(\frac{\partial P}{\partial T}\right)_h$
Correct Answer	**A**

Q.No: 52	**The internal energy of a certain system is a function of temperature alone and is given by the formula E = 25+0.25t kJ. If this system executes a process for which the work done by it per degree temperature increases is 0.75 kN-m,** $\frac{dE}{dt} = Q\text{-}W$ **, the heat interaction per degree temperature increase, in kJ, is**
A	**-1.00**
B	**1.00**
C	**-0.50**
D	**0.50**
Correct Answer	**B**

Q.No: 53	**A cycle of pressure - volume diagram is shown in the figure**  **Same cycle on temperature - entropy diagram will be represented by**
A	
B	

C	
D	
Correct Answer	**B**

Q.No: 54	**When a system undergoes a process such that** $\int \frac{dQ}{T} = 0$ **and** $\Delta S > 0,$ **the process is**
A	**isothermal**
B	**reversible adiabatic**
C	**irreversible adiabatic**
D	**isobaric**
Correct Answer	**C**

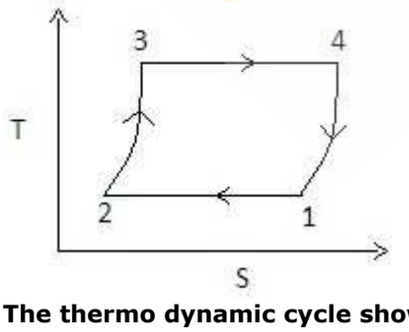
Q.No: 55	**A heat pump operating on Carnot cycle pumps heat from a reservoir at 300 K to a reservoir at 600 K. The coefficient of performance is**
A	**1.5**
B	**0.5**
C	**2**
D	**1.0**
Correct Answer	**C**

Q.No: 56	**The work done in compromising a gas isothermally is given by:**
A	$\frac{\gamma}{\gamma-1} P_1 V_1 \left[\left(\frac{P_2}{P_1} \right)^{\frac{\gamma-1}{\gamma}} - 1 \right]$
B	$mRT_1 \log_e \frac{P_2}{P_1}$

C	$mC_p(T_2 - T_1)$
D	$mRT_1(1 - \frac{T_2}{T_1})$
Correct Answer	**B**

Q.No: 57	**Consider the following statements** **1)Avaliability is the maximum theoretical work obtainable** **2)Clapeyron's equation for dry saturated steam is given by** $V_s - V_f = \frac{dT_s}{dP}\left(\frac{h_s - h_f}{T_s}\right)$ **3)A gas can have any temperature at a given pressure unlike a vapour, which has a fixed temperature at a given pressure.** **4)Joule Thomson coefficient is expressed as** $\mu = \left(\frac{\partial s}{\partial P}\right)_h$ **of these statements**
A	**1,2,3 are correct**
B	**1,3 and 4 are correct**
C	**2 and 3 are correct**
D	**1,2 and 4 are correct**
Correct Answer	**A**

Q.No: 58	**The heat absorbed or rejected during a polytropic process is equal to**
A	$\left(\frac{\Upsilon - n}{\Upsilon - 1}\right)^{1/2}$ x workdone
B	$\left(\frac{\Upsilon - n}{n - 1}\right)$ x workdone
C	$\left(\frac{\Upsilon - n}{\Upsilon - 1}\right)^{2}$ x workdone
D	$\left(\frac{\Upsilon - n}{\Upsilon - 1}\right)$ x workdone
Correct Answer	**D**

Q.No: 59	 **The thermo dynamic cycle shown above on the T-S diagram pertains to which one of the**

	following ?
A	**Stirling cycle**
B	**Ericsson cycle**
C	**Vapour compression**
D	**Brayton cycle**
Question Deleted	

Q.No: 60	**What is the loss of available energy associated with the transfer of 1000kJ of heat from a constant temperature system at 600K to another at 400K? When the environmental temperature is 300K?**
A	**140 kJ**
B	**250 kJ**
C	**166.67 kJ**
D	**180 kJ**
Correct Answer	**B**

Q.No: 61	**The depth of a fluid is measured in vertical Z-direction; X and Y are the other two directions and are mutually perpendicular. The static pressure variation in the fluid is given by (symbols have the usual meaning).**
A	$\frac{dp}{dz} = g$
B	$\frac{dp}{dz} = 0$
C	$\frac{dp}{dz} = \rho g$
D	$\frac{dp}{dz} = -\rho g$
Correct Answer	**D**

Q.No: 62	**Surface tension is due to**
A	**Cohesion**
B	**Viscous force**
C	**Adhesion**
D	**The difference between adhesive and cohesive force**
Correct Answer	**A**

Q.No: 63	**The density of a fluid is sensitive to changes is pressure. The fluid will be known as**
A	**Newtonian fluid**
B	**Perfect fluid**
C	**Compressible fluid**
D	**Real fluid**
Correct Answer	**C**

Q.No: 64	**Is it possible to pump water available at around 100^0C under atmospheric condition using centrifugal pump placed near the tank**
A	**No**
B	**Yes**
C	**Yes, if pump is selected properly**
D	**None of these are correct**
Correct Answer	**A**

Q.No: 65	**If the stream function is given by φ=3xy then the velocity at a point (2,3) will be**
A	**7.21 unit**
B	**10.82 unit**
C	**18 unit**
D	**54 unit**
Correct Answer	**B**

Q.No: 66	**Why are the surge tanks used in pipe line?**
A	**To reduce frictional loss in pipe**
B	**To ensure uniform flow in pipe**
C	**To relieve the pressure due to water hammer**
D	**To reduce cavitalion**
Correct Answer	**C**

Q.No: 67	**Consider the following statements in respect to Kaplan Turbine:** **1) It is a reaction turbine** **2) It is an impulse turbine** **3) It has adjustable blades**
A	**1, 2, and 3**
B	**2 and 3 only**
C	**1 and 2 only**

D	**1 and 3 only**
Correct Answer	**D**

Q.No: 68	**The degree of reaction of a turbine is defined as a ration of**
A	**Static pressure drop to total energy**
B	**Total energy transfer to static pressure drop**
C	**Change of velocity energy across the turbine to the total energy transfer**
D	**Velocity energy to pressure energy**
Correct Answer	**A**

Q.No: 69	**Eular number is defined as the ratio of inertia force to**
A	**Viscous force**
B	**Elastic force**
C	**Pressure force**
D	**Gravity force**
Correct Answer	**C**

Q.No: 70	**The vanes of a unfrifugal pump are generally**
A	**Radial**
B	**Curved backward**
C	**Curve forward**
D	**Twisted**
Correct Answer	**B**

Q.No: 71	**Heat transfer takes place according to**
A	**Zeroth law of thermodynamics**
B	**First law of thermodynamics**
C	**Second law of thermodynamics**
D	**Third law of thermodynamics**
Correct Answer	**C**

Q.No: 72	**It is desired to increase the heat dissipation rate over the surface of an electronic device of spherical shape of 5mm radius exposed to convection with h=10 W/m^2 K by encasing it in a spherical sheath of conductivity 0.04 W/mK. For maximum heat flow, the diameter of the sheath should be**
A	**18 mm**

B	**16 mm**
C	**12 mm**
D	**8 mm**
Correct Answer	**B**

Q.No: 73	**Heat is lost from a 100 mm diameter steam pipe placed horizontally in ambient at 30°C. If the Nusselt is 25 and thermal conductivity of air is 0.03 W/mK, then the heat transfer coefficient will be**
A	**7.5 W/m^{2}K**
B	**16.2 W/m^{2}K**
C	**25.2 W/m^{2}K**
D	**30 W/m^{2}K**
Correct Answer	**A**

Q.No: 74	**What is the expression for the thermal conduction resistance to heat transfer through a hollow sphere of inner radius r_1, and outer radius r_2, and thermal conductivity K?**
A	$\frac{(r_2 - r_1) r_1 r_2}{4\pi K}$
B	$\frac{4\pi K (r_2 - r_1)}{r_1 r_2}$
C	$\frac{r_2 - r_1}{4\pi K \; r_1 r_2}$
D	**None of these is correct**
Correct Answer	**C**

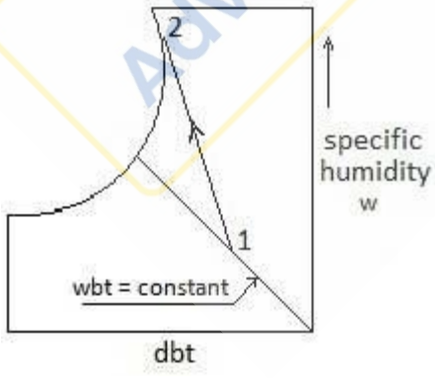
Q.No: 75	**For the radiation between two infinite parallel planes of emissivity ε_1 and ε_2 respectively, which one of the following is the expression for emissivity factor?**
A	$\varepsilon_1 \, \varepsilon_2$
B	$\frac{1}{\varepsilon_1} + \frac{1}{\varepsilon_2}$
C	$\frac{1}{\frac{1}{\varepsilon_1} + \frac{1}{\varepsilon_2}}$
D	$\frac{1}{\frac{1}{\varepsilon_1} + \frac{1}{\varepsilon_2} - 1}$

Correct Answer	**D**

Q.No: 76	**For simple vapour compression cycle, enthalpy at suction=1600 kJ/kg, enthalpy at discharge from the compressor =1800 kJ/kg, enthalpy at exit from condenser =600 kJ/kg. What is the COP for this refrigeration cycle?**
A	**3.3**
B	**5.0**
C	**4.0**
D	**4.5**
Correct Answer	**B**

Q.No: 77	**The leaks is a refrigeration system using freon are defected by**
A	**A halide torch, which on detection produces greenish flame lighting**
B	**Sulphur sticks, which on detection gives white smoke**
C	**Using reagents**
D	**Sensing reduction pressure**
Correct Answer	**A**

Q.No: 78	**What is the saturation temperature at the partial pressure of water vapour in the air water vapour mixture called?**
A	**Dry bulb temperature**
B	**Wet bulb temperature**
C	**Dew point temperature**
D	**Saturation temperature**
Correct Answer	**C**

Q.No: 79	 **Which one of the following statement is correct for a cooling and humidification process 1-2 as shown on the psychometric chart shown in figure?**
A	**wbt decreases in the process**
B	**The total enthalpy increases in the process**

C	**The total enthalpy remains constant in the process**
D	**It is an adiabatic saturation process**
Correct Answer	**B**

Q.No: 80	**A human body feels comfortable when the heat produced by the metabolism of human body is equal to**
A	**Heat dissipated to surroundings**
B	**Heat stored in the human body**
C	**Sum of Heat dissipated to surroundings and Heat stored in the human body**
D	**Difference of Heat dissipated to surroundings and Heat stored in the human body**
Correct Answer	**C**

Q.No: 81	**The order of values of thermal efficiency of Otto, Diesel and Dual cycle, when they have equal compression ratio and heat rejection, is given by**
A	$\eta_{Otto} > \eta_{Diesel} > \eta_{Dual}$
B	$\eta_{Diesel} > \eta_{Dual} > \eta_{Otto}$
C	$\eta_{Dual} > \eta_{Diesel} > \eta_{Otto}$
D	$\eta_{Otto} > \eta_{Dual} > \eta_{Diesel}$
Correct Answer	**D**

Q.No: 82	**The method of determination of indicated power of multi cylinder SI engine is given by the use of**
A	**Morse test**
B	**Prony break test**
C	**Prony heat test**
D	**Heat balance test**
Correct Answer	**A**

Q.No: 83	**In spark ignition engines knocking can be reduced by:**
A	**Increasing the compression ration**
B	**Increasing the cooling water temperature**
C	**Retarding the spark advance**
D	**Increasing the inlet air temperature**
Correct Answer	**C**

Q.No: 84	**Which of the following set of materials in most commonly used in catalytic converters for CI engines?**
A	**Platinum, Palladium and Rhodium**
B	**Palladium, Rhodium and Ruthenium**
C	**Rhodium , Ruthenium and Platinum**
D	**Ruthenium , Platinum and Palladium**
Correct Answer	**A**

Q.No: 85	**The three way catalytic converter cannot control which one of the following?**
A	**HC emission**
B	**CO emission**
C	**NO_x emission**
D	**PM emission**
Correct Answer	**D**

Q.No: 86	**In thermal power plants, the deaerator is used mainly to**
A	**Remove air from condenser**
B	**Increase firewater temperature**
C	**Reduce steam pressure**
D	**Remove dissolved gases from feed water**
Correct Answer	**D**

Q.No: 87	**The most commonly used moderator in nuclear power plants is**
A	**Heavy water**
B	**Concrete and bricks**
C	**Steel**
D	**Graphite**
Correct Answer	**D**

Q.No: 88	**The efficiency of a simple gas turbine can be improved by using a regenerator, because the**
A	**Work of compression is reduced**
B	**Heat required to be supplied is reduced**
C	**Work out put of the turbine is increased**
D	**Heat rejected is increased**
Correct Answer	**B**

Q.No: 89	**Given that** **N = speed, P=power, H=heat** **The specific speed of hydraulic turbine is given by**
A	$\frac{N\sqrt{P}}{H^{4/5}}$
B	$\frac{N\sqrt{P}}{H^{5/4}}$
C	$\frac{P\sqrt{N}}{H^{4/5}}$
D	$\frac{P\sqrt{N}}{H^{5/4}}$
Correct Answer	**B**

Q.No: 90	**In a two stage compressor with ideal inter cooling, for the work requirement to be minimum, the intermediate pressure Pi in terms of condenser and evaporator pressure Pc and Pe respectively is**
A	$Pi=Pc\ Pe$
B	$Pi=\sqrt{Pc\ Pe}$
C	$Pi=\sqrt{Pc/Pe}$
D	$Pi=Pc/Pe$
Correct Answer	**B**

Q.No: 91	**General description of CAD does not consist of**
A	**Implementation**
B	**Synthesis**
C	**Presentation**
D	**Optimization**
Correct Answer	**A**

Q.No: 92	**Volume of work produced in FMS environment is determined from**
A	**Number of machine used in the FMS**
B	**Kind of material handling equipment used in FMS**
C	**King of layout used in FMS**
D	**All are correct**

Correct Answer	**D**

Q.No: 93	**The axis movement of a robot may include**
A	**Elbow rotation**
B	**Wrist rotation**
C	**X-Y coordinate motion**
D	**Elbow, wrist and X-Y coordinate motion**
Correct Answer	**D**

Q.No: 94	**Which is one of the following not the output device?**
A	**Printer**
B	**Stylus**
C	**Display device**
D	**Plotter**
Correct Answer	**B**

Q.No: 95	**Machining time in NC and CNC machine tools is_____in comparison to conversional machine tool**
A	**More**
B	**Less**
C	**Unpredictable**
D	**Equal**
Correct Answer	**B**

Q.No: 96	**What is the purpose of satellite computers in Distributed Numerical Control machines?**
A	**To act as stand by systems**
B	**To share the processing of large size NC**
C	**To serve a group of NC machines**
D	**To network with another DNC setup**
Correct Answer	**B**

Q.No: 97	**In which machining system, the highest level of automation is found?**
A	**CNC machine tools**
B	**Automatic transfer machines**
C	**Machine tools with electro hydraulic positioning and control**
D	**DNC machining system**

Correct Answer	**C**

Q.No: 98	**Which one of the following has automatic tool changing unit and a component indexing device**
A	**Machining center**
B	**NC system**
C	**CNC system**
D	**DNC system**
Correct Answer	**A**

Q.No: 99	**Transfer machines can be defined as :**
A	**Material Processing machines**
B	**Material handling machines**
C	**Material Processing and Material handling machines**
D	**Components feeders for automatic assembly**
Correct Answer	**C**

Q.No: 100	**Punched tape is used in?**
A	**NC machine**
B	**CNC machine**
C	**NC and CNC both**
D	**DNC machine**
Correct Answer	**A**