Id	**1**
Question	Stress concentration in a machine component of ductile material is not so harmful as it is in brittle material because
A	In ductile material local yielding may distribute stress concentration
B	Ductile material has larger Young's modulus
C	Poisson's ratio is larger in ductile material
D	Modulus of rigidity is larger in ductile material
Answer	A

Id	**2**
Question	For the fluid flowing over a flat plate with Prandtl number greater than unity, the thermal boundary layer for laminar force convection
A	Is thinner than the hydrodynamic boundary layer
B	Has thickness equal to zero
C	Is of same thickness as hydrodynamic boundary layer
D	Is thicker than the hydrodynamic boundary layer
Answer	A

Id	**3**
Question	Biot number signifies
A	The ratio of heat conducted to heat convected
B	The ratio of heat convected to heat conducted
C	The ratio of external convective resistance to internal conductive resistance
D	The ratio of internal conductive resistance to external convective resistance
Answer	D

Id	**4**
Question	With an increase in the thickness of insulation around a circular pipe heat loss to the surrounding due to
A	Convection increases while that due to conduction decreases
B	Convection decreases while that due to conduction increases
C	Conduction and convection decreases
D	Conduction and convection increases
Answer	A

Id	**5**
Question	When an ideal gas with constant specific heat is throttled adiabatically with negligible changes in kinetic and potential energies
A	$\Delta H = 0, \Delta T = 0$
B	$\Delta H > 0, \Delta T = 0$
C	$\Delta H > 0, \Delta S > 0$
D	$\Delta H = 0, \Delta S = 0$
Answer	A

Id	**6**
Question	The bolts in a rigid flange coupling connecting two shafts transmitting power are subjected to
A	Shear force and bending moment
B	Axial force
C	Torsion
D	Torsion and bending moment
Answer	A

Id	**7**
Question	If a closed system is undergoing an irreversible process the entropy of the system
A	Must increase
B	Always remain constant
C	Must decrease
D	Can increase, decrease or remain constant
Answer	D

Id	**8**
Question	Torque to weight ratio for circular shaft transmitting power is directly proportional to the
A	Square root of the diameter
B	Diameter
C	Square of the diameter
D	Cube of the diameter
Answer	B

Id	**9**
Question	Knocking tendency in SI engine reduces with increasing
A	Compression ratio
B	Valve temperature
C	Supercharging
D	Engine speed
Answer	D

Id	**10**
Question	A steel ball of mass 1 kg and specific heat 1.4 kJ/ kg is at a temperature of $60^{o}C$. it is dropped into 1 kg water at $20^{o}C$. the final steady state temperature of water is
A	$23.5^{o}C$
B	$30^{o}C$
C	$35^{o}C$
D	$40^{o}C$
Answer	A

Id	**11**
Question	For a Newtonian fluid
A	Shear stress is proportional to shear strain
B	Rate of shear stress is proportional to shear strain
C	Shear stress is proportional to rate of shear strain
D	Rate of shear stress is proportional to rate of shear strain
Answer	C

Id	**12**
Question	A circular solid disc of uniform thickness 20mm radius 200mm and mass 20kg is used as a flywheel, if it rotates at 600 rpm the kinetic energy of the flywheel in joules is
A	395
B	790
C	1580
D	3160
Answer	B

Id	**13**
Question	Hot chamber die casting is not suite for
A	Lead and its alloy
B	Zinc and its alloy
C	Tin and its alloy
D	Aluminum and its alloy
Answer	D

Id	**14**
Question	If moist air is cooled by sensible heat removal which of the following is true
A	Neither relative humidity nor specific humidity changes
B	Specific humidity changes but not relative humidity
C	Both relative and specific humidity changes
D	None of these
Answer	D

Id	**15**
Question	The specific heat of an ideal gas depends upon
A	Temperature
B	Pressure
C	Volume
D	Molecular weight and structure
Answer	D

Id	**16**
Question	Which one of the following is criterion in the design of hydrodynamic journal bearings.
A	Sommerfield number
B	Rating life
C	Specific dynamic capacity
D	Rotation factor
Answer	A

Id	**17**
Question	In shell and tube heat exchanger baffles are mainly used to
A	Increasing the mixing of fluid
B	Increase the heat transfer area
C	Deflect the flow in desired direction
D	Reduced fouling of the tube surface
Answer	C

Id	**18**
Question	For a glass plate, transmissivity and reflectivity are specified as 0.86 and 0.08 respectively,the absorptivity of the glass plate is
A	0.86
B	0.08
C	1
D	0.06
Answer	D

Id	**19**
Question	In vibration isolation which one of the following statement is not correct regarding transmissibility (T)
A	T is nearly unity at small excitation frequencies
B	T can be always reduced by using higher damping at any excitation frequency
C	T is unity at the frequency ratio of $\sqrt{2}$
D	T is infinity at resonance for undamped systems
Answer	B

Id	**20**
Question	During the chemical dehumidification process of air
A	Dry bulb temperature and specific humidity decreases
B	Dry bulb temperature increases and specific humidity decreases
C	Dry bulb temperature decreases and specific humidity increases
D	Dry bulb temperature and specific humidity increases
Answer	B

Id	**21**
Question	In the Rankine cycle, when superheated steam is used
A	Thermal efficiency increases
B	Steam consumption increases
C	Steam dryness after expansion increases
D	All of the above
Answer	D

Id	**22**
Question	Hardness of steel greatly improves with
A	Annealing
B	Cyaniding
C	Normalizing
D	Tempering
Answer	B

Id	**23**
Question	In order to have maximum power for a pelton turbine the bucket speed must be
A	Equal to jet speed
B	Equal to half of the jet speed
C	Equal to twice the jet speed
D	Independent of the jet speed
Answer	B

Id	**24**
Question	For a given set of operating pressure limits of a Rankine cycle, the highest efficiency occurs for
A	Saturated cycle
B	Superheated cycle
C	Reheat cycle
D	Regenerative cycle
Answer	D

Id	**25**
Question	Wood flour is added to core sand to improve
A	Collapsibility of core
B	Dry strength of core
C	Shear strength of core
D	Tolerance in casting
Answer	A

Id	**26**
Question	Air enters a counter flow heat exchanger at $70^{o}C$ and leaves at $40^{o}C$. Water enters at $30^{o}C$ and leaves at $50^{o}C$. the LMTD in degree centigrade is
A	5.65
B	14.43
C	19.52
D	20.17
Answer	B

Id	**27**
Question	Tooth interference in an external involute spur gear pair can be reduced by
A	Decreasing center distance between gear pair
B	Decreasing module
C	Decreasing pressure angle
D	Increasing number of gear teeth
Answer	D

Id	**28**
Question	Wet bulb depression under saturated ambient air condition
A	Is always positive
B	Is always negative
C	Is always zero
D	May have a value depending upon the dew point temperature
Answer	C

Id	**29**
Question	The maximum possible draft in cold rolling of sheet increases with the
A	Increasing in coefficient of friction
B	Decrease in coefficient of friction
C	Decrease in roll radius
D	Increases roll velocity
Answer	A

Id	**30**
Question	Constant pressure lines in the surperheated region of the Mollier diagram will have
A	A positive slope
B	A negative slope
C	Zero slope
D	Both positive and negative slope
Answer	A

Id	**31**
Question	In PERT the distribution of time is assumed to be
A	Normal
B	Gamma
C	Beta
D	Exponential
Answer	C

Id	**32**
Question	The number of inversions for a slider crank mechanism is
A	6
B	5
C	4
D	3
Answer	C

Id	**33**
Question	For a floating body buoyant force acts at the
A	Centriod of the floating body
B	Center of gravity of the body
C	Centriod of the fluid vertically below the body
D	Centriod of the displaced fluid
Answer	D

Id	**34**
Question	Little's law is a relationship between
A	Stock level and lead time in a inventory system
B	Waiting time and length of a queue in a queuing system
C	Number of machines and job due dates in a scheduling problem
D	Uncertainly in the activity time and project completion time
Answer	B

Id	**35**
Question	In pool boiling, the highest HTC occurs in
A	Subcooled boiling zone
B	Nucleate boiling zone
C	Partial film boiling zone
D	Film boiling zone
Answer	B

Id	**36**
Question	During a phase change of a pure substance,
A	$dG = 0$
B	$dP > 0$
C	$DH = 0$
D	$dU = 0$
Answer	A

Id	**37**
Question	Availability of a system at any given state is
A	A property of a system
B	The maximum work obtainable as the system goes to dead state
C	The total energy of a system
D	The maximum useful work obtainable as the system goes to dead state
Answer	D

Id	**38**
Question	For a four bar linkage in toggle position the value of mechanical advantages is
A	0
B	0.5
C	1
D	Infinity
Answer	D

Id	**39**
Question	Which of the following is a technique for forecasting
A	Exponential smoothening
B	PERT/CPM
C	Gantt chart technique
D	Control charts
Answer	A

Id	**40**
Question	For a current carrying wire of 20 mm diameter exposed to air $h = 20\,W/m^2K$, maximum heat dissipation occurs when thickness of insulation $(0.5\mathrm{W}/mK)$.
A	30mm
B	25mm
C	20mm
D	15mm
Answer	D

Id	**41**
Question	Set up cost do not include
A	Labour cost of setting up machine
B	Ordering cost or raw material
C	Maintenance cost of machines
D	Cost of processing the workpiece
Answer	D

Id	**42**
Question	Production flow analysis is a method of identifying part families that uses data from
A	Engineering drawings
B	Production schedule
C	Bill of materials
D	Route sheets
Answer	D

Id	**43**
Question	Heat and work are
A	Intensive properties
B	Extensive properties
C	Point functions
D	Path functions
Answer	D

Id	**44**
Question	In a flow field the stream lines and equipotential lines
A	Are parallel
B	Cut at any angle
C	Are orthogonal everywhere in the field
D	Cut orthogonal except at the stagnation points
Answer	D

Id	**45**
Question	Wrinkling is a common defect found in
A	Bent component
B	Deep drawn component
C	Embossed component
D	Blanked component
Answer	B

Id	**46**
Question	Thermal conductivity is lower for
A	Wood
B	Air
C	Water at $100^{o} C$
D	Steam at 1 bar
Answer	B

Id	**47**
Question	For full depth of involute spur gear the minimum number of teeth of pinion to avoid interference depends upon
A	Pressure angle
B	Speed ratio
C	Circular pitch
D	Pitch diameter
Answer	A

Id	**48**
Question	For air with a relative humidity of 80% ,
A	The dry bulb temperature is less than the wet bulb temperature
B	The dew point temperature is less than wet bulb temperature
C	The dew point and wet bulb temperatures are equal
D	The dry bulb and dew point temperatures are equal
Answer	B

Id	**49**
Question	A diffuse radiation surface has
A	Radiation intensity independent of angle
B	Emissive power independent of angle
C	Emissive power independent of wavelength
D	Radiation intensity independent of both angle and wavelength
Answer	A

Id	**50**
Question	The parameters which determine the fricition factor for turbulent flow in a rough pipe are
A	Froude number and relative roughness
B	Froude number and Mach number
C	Reynolds number and relative roughness
D	Mach number and relative roughness
Answer	C