

- 1 LMTD for parallel flow as compared to counter flow heat exchanger is
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 (B) high
 (C) of same value
 (D) depends on ambient condition

- 2 Fouling factor is basically used to find
 (A) effectiveness of heat exchanger
 (B) efficiency of fins
 (C) factor in designing heat exchanger
 (D) decides the life of heat exchanger

- 3 Which of the following component is not found in S.I. engine ?
 (A) Spark plug
 (B) Fuel injector
 (C) Ignition coil
 (D) All of these above

- 4 The rate of heat transfer is said to be constant if temperature
 (A) becomes zero
 (B) increases
 (C) decreases
 (D) None of these

- 5 If transmissivity of body is 0.25 and 35% radiation falling on it, is reflected back then emissivity is
 (A) 0.40
 (B) 0.45
 (C) 0.65
 (D) 0.75

- 6 Vapour compression refrigerator works on
 (A) Brayton cycle
 (B) Rankine cycle
 (C) Reversed Carnot cycle
 (D) Bell Coleman cycle


- 7 The chemical formula for R-22 is
 (A) CClF_3
 (C) CH_2CHF_2
 (B) CCl_2F_2
 (D) CHClF_2

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- 8 One ton of refrigeration can be expressed as melting of 1000 kg of ice in
- (A) 1 minute (B) 120 minutes
(C) 720 minutes (D) 1440 minutes
- 9 The removal of moisture from air at constant dry bulb temperature is called
- (A) Drying
(B) Rectification
(C) Sensible cooling with dehumidification
 (D) Dehumidification
- 10 Electrical resistance of semiconductor
- (A) falls with temperature (B) rises with temperature
(C) does not change (D) data insufficient
- 11 Which of the following hardening process is not employed for steels ?
- (A) Age hardening (B) Induction hardening
(C) Nitriding (D) Cyaniding
- 12 Unit of the hardness is
- (A) MPa (B) HRC
(C) N/mm² (D) N-m/sec
- 13 Blow holes are caused due to
- (A) less ramming of sand
(B) moisture left in core and mould
(C) uneven cooling rate
 (D) impurities present in the molten metal
- 14 Machining allowance in casting depends upon
- (A) Shape and size of casting
(B) Melting point of metal
(C) Sand permeability
(D) None of these

- 15 Pattern used in investment casting is made up of
 (A) Teflon ~~(B)~~ Wax
 (C) Nylon (D) Clay
- 16 The function of chaplet is to
 (A) increase the cooling rate of casting
 (B) decrease the cooling rate of casting
 (C) provide support to the cores inside the mould cavity
 ✓(D) make hollow cavities in casting
- 17 Seamless tubes can be manufactured by
 ✓(A) Hot spinning •(B) Piercing
 (C) Cored forging (D) Drawing
- 18 For spinning operation, the equipment used is
 (A) Pneumatic press
 ✓(B) Broaching machine
 (C) Lathe
 (D) Mechanical press
- 19 To perform piercing, blanking and forming simultaneously, the die used is
 (A) Simple die
 (B) Fluid activated diaphragm die
 ✓(C) Progressive die
 ✓(D) Compound die
- 20 Sintering in powder metallurgy
 (A) Strengthens the component
 (B) Increases electrical conductivity
 (C) Increases density and ductility
 ✓(D) All of the above

- 21 Nibbling is a process of
(A) Shaping or bending of sheets in three dimensional form
 (B) Continuous cutting along a contour may be straight lined or curved
(C) Cutting circular blanks or curved contours
(D) Hand operated shearing operation
- 22 In case of manual TIG welding, the angle of electrode with the direction of welding is
(A) 50° (B) 70°
(C) 90° (D) 30°
- 23 Weld spatter is a
(A) flux (B) pre-weld treatment
(C) welding defects (D) post weld treatment
- 24 Arc welding make use of
(A) square waveform supply (B) AC welding supply
 (C) DC welding supply (D) Both AC and DC welding
- 25 Seam welding process is
(A) TIG welding process
(B) MIG welding process
(C) Arc welding process
 (D) Continuous spot welding process
- 26 Commonly used flame in gas welding is
(A) carburising (B) oxidizing
 (C) neutral (D) All of the above
- 27 The electron beam welding is carried out in
 (A) Vacuum (B) Shielded atmosphere
(C) Inert gas chamber (D) Open air
- 28 Parameters which have an influence on metal cutting are
(A) Work material and cutting tool material
(B) Cutting tool geometry and cutting speed
(C) Depth of cut and feed rate
 (D) All of above

- 29 Continuous chip formation takes place due to
 (A) machining of ductile materials
 (B) machining of brittle materials
 (C) formation of built up edges
 (D) low cutting speed
- 30 Side cutting edge angle is also known as 
 (A) approach angle (B) lead angle
 (C) relief angle (D) end relief angle
- 31 The value of rake angle for carbide or diamond tipped tools is
 (A) Zero (B) Zero or negative
 (C) Positive (D) No such relationship exists
- 32 Jig is an arrangement which
 (A) checks the accuracy of work piece
 (B) is used to control vibrations only
 (C) holds, locates the work piece and guides the cutting tools
 (D) only holds and locates the work piece
- 33 The main function of cutting fluid is
 (A) control total heat
 (B) improve surface finish
 (C) protect against rusting
 (D) prevent the formation of built up edges
- 34 The conversion of electrical energy into mechanical energy in case of USM takes place because of
 (A) spark
 (B) chemical reaction
 (C) a high velocity beam of electrons
 (D) Piezo electric effect
- 35 Buffing is required to
 (A) remove metal
 (B) provide luster
 (C) hide any cracks visible on surface
 (D) precedes grit blasting

- 36 Which of the following has highest voltage requirements ?
 (A) EBM (B) LBM
(C) EDM (D) AJM
- 37 In a shaper machine
 (A) tool reciprocates horizontally
(B) tool reciprocates vertically
(C) work piece reciprocates horizontally
(D) work piece reciprocates vertically
- 38 Arbors are used to
 (A) hold the milling cutters on machine
(B) decrease metal removal rate
(C) dissipate heat formed during machining
(D) increase frictional coefficient
- 39 The tool with signature 12, 10, 4, 4, 6, 6, 2 has end relief angle as
(A) 10 (B) 4
(C) 6 (D) 2
- 40 Generalised Measurement system diagram is used
 (A) to analyse an instrument (B) to design an instrument
(C) for both (A) and (B) (D) None of the above
- 41 Precision is defined as
 (A) repeatability of a measuring process
 (B) agreement of result of measurement with true value of measured quantity
(C) lesser number of controllable errors
(D) lesser number of random errors
- 42 Which of the following tools can convert angular measurements into linear measurements ?
(A) Vernier bevel protector (B) Dial bevel protector
 (C) Sine bar (D) Auto Collimator
- 43 Slip gauges are used for
 (A) Calibration of micrometers and vernier calipers
(B) Calibration of sine bar
(C) Calibration of pressure measuring instruments
(D) Calibration of temperature measuring instruments

- 44 Surface roughness is expressed in
(A) Ra
(C) HRC
 (B) Rh
(D) BHN
- 45 Master scheduling means
 (A) Assigning of resources required to complete the work order
(B) Weekly or monthly breakdown of production requirement for a definite period
(C) Time required to complete each operation
(D) To show work progress
- 46 Gantt charts are used for
 (A) Graphical representation of machine operation
(B) Small scale production
(C) Large scale production
(D) Showing performance of machine under loaded conditions
- 47 Man-machine charts indicates
(A) idle time for men and machine both
 (B) idle time of machine only
(C) idle time of men only
(D) None of the above
- 48 Total inventory cost is
(A) Ordering cost + Carrying cost
(B) Carrying cost + Shortage cost
 (C) Ordering cost + Shortage cost
(D) Ordering cost + Carrying cost + Shortage cost
- 49 The items which requires maximum control in ABC analysis are
(A) A items
(C) C items
(B) B items
 (D) All of above
- 50 Programmable Logic Controller (PLC) is used for applications like
(A) on / off control
(C) counting and sequencing
(B) timing
 (D) All of the above
- 51 Critical path is
 (A) shortest path and consumes minimum time
(B) shortest path and consumes maximum time
(C) longest path and consumes maximum time
(D) No such relationship exist

- 52 In simplex method, the row to be replaced is the one whose elements are
 (A) zero (B) less than zero
 (C) more than zero (D) infinity
- 53 The shear stress in beam at the Extreme fiber is
 (A) maximum (B) minimum
 (C) zero (D) one
- 54 In blanking operation, the clearance provided is
 (A) 50% on punch and 50% on die
 (B) on die (C) on punch
 (D) on die or punch depending upon designers choice
- 55 Which of the following instruments are not used for pressure measurement ?
 (A) McLeod gauge (B) Stroboscope
 (C) Thermal conductivity gauge (D) Bourdon tube
- 56 The standard time of an operation has been calculated as 10 minutes. The worker was rated 80%. If the relaxation and other allowances were 25%, then the observed time would be
 (A) 12.5 min (B) 10 min
 (C) 8 min (D) 6.5 min
- 57 Which of the following steps will lead to interchangeability, ?
 (A) Quality control (B) Process planning
 (C) Product design (D) Operator training
- 58 Degrees of freedom for a robot are
 (A) 10 (B) 6
 (C) 3 (D) 5
- 59 APT language is used for
 (A) in inventory management
 (B) computing optimum feeds and speeds automatically
 (C) to facilitate programming of turning operation
 (D) positioning and continuous path programming upto 5 axis
- 60 Endurance strength of the component depends upon
 (A) Surface finish provided (B) Type of loading
 (C) Size of component (D) All of the above

- 61 The angle of V-belt is
(A) 75° (B) 15°
 (C) 45° (D) 40°
- 62 Which type of gear is used for speed reduction in the ratio of 110 : 1 (for compact design) ?
(A) Helical
(B) Spur
 (C) Worm and worm wheel
(D) Bevel
- 63 Centrifugal tension tends to
 (A) reduce the driving power
(B) increase the driving power
(C) does not affect the power
(D) decreases the tension on both side
- 64 Lever is the example of
(A) Pure torsion
(B) Pure bending
(C) Buckling
 (D) Both (A) and (B) above
- 65 Cast iron is an alloy of iron and carbon containing more than _____ % of carbon.
(A) 1 (B) 0.5
(C) 0.05 (D) 2
- 66 FeE250 indicates a steel with minimum _____ of 250 MPa.
(A) yield strength (B) ultimate strength
(C) hardness (D) None of the above
- 67 In Bell-crank lever, the angle between two arms is
(A) 135° (B) 120°
(C) 90° (D) 50°

- 68 55C4 material consists of _____% of manganese.
- (A) 4 (B) 0.4
(C) 0.04 (D) None of the above
- 69 Chromium steels containing more than 4% chromium have excellent
- (A) Hardness (B) Strength
(C) Toughness (D) Corrosion resistance
- 70 Wahl's factor is considered in
- (A) Lever design
 (B) Spring design (Helical compression)
(C) Gear design
(D) Shaft design
- 71 Most commonly used gear tooth profile is
- (A) 14.5° FD involute teeth
(B) Cycloidal tooth profile
 (C) 20° FD involute teeth
(D) 25° FD involute teeth
- 72 Any projection taken on horizontal plane is called
- (A) Plan
 (B) Elevation
(C) Right hand side view
(D) Left hand side view
- 73 Static balancing involves balancing of
- (A) Forces (B) Couples
•(C) Forces as well as couples (D) Masses
- 74 A pentograph consists of
- (A) 4 links (B) 6 links
(C) 8 links (D) 10 links

- 75 When a cam undergoes dwell, the follower
(A) moves with uniform speed
 (B) remains at rest
 (C) moves with S.H.M.
(D) None of the above
- 76 The function of the governor is
(A) to control engine power
(B) to increase the speed of engine
 (C) to maintain the speed of an engine within prescribed limits of variable load
(D) maintains constant piston speed of engine
- 77 The brakes commonly used in motor cars is
(A) Band brake
 (B) Shoe brake
(C) Band and block brake
 (D) Internal expanding shoe brake
- 78 The gyroscopic acceleration is given by
(A) $\delta w / \delta t$ (B) $w \cdot \delta \theta / \delta t$
 (C) $r \cdot \delta \theta / \delta t$ (D) $r \cdot \delta w / \delta t$
- 79 In a spring mass system, if mass is halved and the spring stiffness is doubled, the natural frequency is
(A) halved (B) doubled
(C) unchanged (D) quadrupled
- 80 The frequency of damped vibrations is always _____ the natural frequency.
(A) equal to (B) more than
(C) less than (D) double

- 81 A flow is said to be laminar when
- (A) the fluid particles moves in a zig-zag way
 - (B) the Reynold number is high
 - (C) the fluid particles moves in layers parallel to the boundary
 - (D) None of the above

- 82 Reynold's number is defined as the
- (A) ratio of inertia force to gravity force
 - (B) ratio of viscous force to gravity force
 - (C) ratio of viscous force to elastic force
 - (D) ratio of inertia force to viscous force

- 83 Manometer is a device used for measuring
- (A) velocity at a point in a fluid
 - (B) pressure at a point in a fluid
 - (C) discharge of a fluid
 - (D) None of the above

- 84 The overall efficiency of a turbine is the ratio of
- (A) power at inlet of turbine to the power at the shaft
 - (B) power at the shaft to the power given to the runner
 - (C) power at the shaft to the power at the inlet of turbine
 - (D) None of the above

- 85 Cavitation can takes place in case of
- (A) Pelton wheel
 - (B) Francis turbine
 - (C) Centrifugal pump
 - (D) in (B) and (C) both

- 86 The advantage offered by welded joints compared to rivetted joints
- (A) Lower cost
 - (B) Leak proof joint
 - (C) Less time consuming
 - (D) All of the above (A), (B) and (C)

- 87 Life of a ball bearings is expressed as
(A) No. of hours in service
(B) Total revolutions made
(C) Number of shocks absorbed
 (D) Both (A) and (B)
- 88 If both pinion and gear are made up of same material, then which of the following decides design procedure ?
(A) Gear is the determining factor
(B) Pinion is the determining factor
(C) Any one of the above given in (A) and (B)
(D) None of these
- 89 For hydrostatic bearing
(A) The oil pressure is generated by rotation of journal
 (B) Pressurized external oil supply made
(C) Load carrying capacity depends upon viscosity
(D) None of these
- 90 If one kg of steam sample contains 0.6 kg dry steam, then the value of dryness fraction is
(A) 0.2 (B) 0.4
(C) 0.6 (D) 0.8
- 91 Purpose of choke in a car is to
(A) increase speed (B) get better fuel economy
 (C) to start in cold weather (D) get better pickup
- 92 Fuel pulverisation is done for
(A) easily transportation (B) maximum storage capacity
(C) lesser moisture content (D) better combustion
- 93 Entropy is expressed as a function of
(A) Heat (B) Pressure and temperature
(C) Temperature and volume (D) None of these

- 94 General gas equation can be expressed as
(A) $PV = \text{Constant}$ (B) $PV = RT$
 (C) $PV = mRT$ (D) $PV^n = K$
- 95 During expansion in steam turbine, entropy
 (A) increase exponentially (B) decrease exponentially
(C) increase linearly (D) None of these
- 96 Intercooling is done in a multistage compressors to
(A) supply air at two different pressure
 (B) cool air during compression
(C) cool air at delivery section
(D) minimise compression work
- 97 Turbine blade are made up of
 (A) Alloy steel (B) Cast iron
(C) Nickel alloy (D) Hadfield steel
- 98 Maximum temperature in gas turbine is of the under of
 (A) $1600\text{ }^\circ\text{C}$ (B) $2600\text{ }^\circ\text{C}$
(C) $500\text{ }^\circ\text{C}$ (D) $600\text{ }^\circ\text{C} - 900\text{ }^\circ\text{C}$
- 99 Thermal efficiency of a power plant is
(A) Product of turbine efficiency, boiler efficiency and generator efficiency
(B) Joule cycle efficiency
 (C) Rankine cycle efficiency
(D) Reversed Carnot cycle efficiency
- 100 The ratio of heat flow for two walls having same thickness but one having thermal conductivity thrice of other is
(A) 1 : 3 (B) 3 : 1
(C) 1 : 6 (D) 1 : 9