

1. Which of the following metals is magnetic?

- | | |
|-------------|-------------|
| A Aluminium | B Nickel |
| C Copper | D Magnesium |

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2. Which of the following materials is brittle

- | | |
|-------------------|--------------------|
| A Mild steel | B Cast iron |
| C Stainless steel | D High speed steel |

3. Chills are used in casting moulds to

- A achieve directional solidification.
- B reduce possibility of blow holes.
- C reduce the freezing time.
- D Increase the smoothness of the casting surface.

4. Which of the following is the best metal for making a pattern?

- | | |
|-------------|-------------|
| A Steel | B Aluminium |
| C Cast iron | D Brass |

5. Powder metallurgy uses

- | | |
|--------------------------|---------------|
| A Pressure | B Heat |
| C Pressure and heat both | D No pressure |

6 Spring back effect is found in

A Forging

B Bending

C Rolling

D Drawing

7 Metal extrusion process is generally used for producing

A Uniform solid sections

B Uniform hollow sections

C Uniform solid and hollow sections

D Varying solid and hollow sections.

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8 Welding produces a

A Permanent joint

B Semi-permanent joint

C Temporary joint

D Cotter joint

9 Which of the following joining methods does not use filler metal?

A Gas welding

B Arc welding

C Resistance welding

D Soldering

10 Which of the following welding processes uses non-consumable electrodes?

A TIG Welding

B Gas welding

C Normal arc welding

D Submerged arc welding.

11 Cutting conditions for a machining process include the following parameters

- | | | | |
|---|---------------|---|-------------------|
| A | Cutting speed | B | Feed |
| C | Depth of cut | D | All of the above. |

12 In Taylor's tool life equation $VT^n=C$, n depends mainly on the following parameter:

- | | | | |
|---|---------------|---|--------------------|
| A | Work material | B | Cutting conditions |
| C | Depth of cut | D | Tool material. |

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13 Which of the following is a non-traditional method?

- | | | | |
|---|----------|---|----------------------|
| A | Milling | B | Drilling |
| C | Grinding | D | Ultrasonic machining |

14 Try square is used

- | | |
|---|--|
| A | To check perpendicularity of two surfaces. |
| B | For angular measurements. |
| C | To measure flatness of a surface. |
| D | All of the above. |

15 V-blocks are used

- A To test the flatness of a surface
- B To hold cylindrical pieces
- C To hold triangular pieces
- D To measure the roundness of a surface.

16 A surface plate is made of

- | | |
|-------------|---------|
| A Aluminium | B Brass |
| C Cast iron | D Steel |

17 Computer integrated manufacturing (CIM) includes

- | | |
|-------|--------------------|
| A CAD | B CAM |
| C MRP | D All of the above |

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18 A flexible manufacturing system consists of

- A Automated machines
- B Automated material handling equipment's
- C Automated storage and retrieval systems
- D All of the above

19 Which one of the following charts gives simultaneously , information about the progress of work and machine loading?

A Process chart

B Machine load chart

C Mass - machine chart

D Gantt chart.

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20 The individual human variability in time studies to determine the production standards is taken case of by

A Personnel allowances

B Work allowances

C Rating factor

D None of the above

21 String diagram is used when

A Team of workers is working at a place

B Material handling is to be done

C Idle time is to be reduced

D All of the above.

22 Which one of the following forecasting technique is not suited for making forecast for planning production schedules in the short range?

A Moving average

B Exponential moving average

C Regression analysis

D Delphi.

23 Material management is connected with the planning of

- | | |
|------------------|--------------------------------|
| A Raw materials | B Work -in-process inventories |
| C Finished goods | D All of the above |

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24 IF orders are placed once a month to meet an annual demand of 6000 units, then average inventory would be

- | | |
|-------|-------|
| A 200 | B 250 |
| C 300 | D 500 |

25 Classifying items in A, B, and C categories for selective control in inventory management is done by arranging items in the decreasing order of

- | | |
|------------------------|---------------|
| A Total inventory cost | B Item value |
| C Annual usage value | D Item demand |

26 The mathematical technique for finding the best use of limited resources in an optimum manner is known as

- | | |
|----------------------|----------------------|
| A Operation research | B Linear programming |
| C Network analysis | D Queuing theory |

27 A dummy activity is used in PERT network to describe

- | | |
|---------------------------|------------------------|
| A Precedence relationship | B Necessary time delay |
| C Resource restriction | D Resource idleness |

250
6000
30

28 Which one of the following steps would lead to interchangeability?

A Quality control

B Process planning

C Operator training

D Product design

29 Statistical quality control techniques are based on the theory of

A Quality

B Statistics

C Probability

D All of the above

30 Fixed investment for manufacturing a product in a particular year is Rs.80000/-. The estimated sales for this period is Rs.200000/-. The variable cost per unit for this product is Rs.4/-. If each unit is sold at Rs. 20/-, then the break-even point would be

A 4000

B 5000

C 10000

D 20000

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31 For a small scale industry, the fixed cost per month is Rs 5000/-. The variable cost per product is Rs. 20/- and the sale price is Rs. 30/-per piece. The break-even production per month will be:

A 33

B 400

C 500

D 10000

- 32 The master production schedule (MPS)
- A It decides the products to be manufactured.
 - B It estimates the completion time of the products.
 - C It estimates the quality of the products.
 - D All of the above
- 33 The basic unit of MRP system include
- A Master production schedule
 - B Bill of material file
 - C Inventory record file
 - D All of the above
- 34 Which of the following variables controls the physical properties of a perfect gas?
- A Pressure
 - B Temperature
 - C Volume
 - D All of the above
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- 35 Which of the following laws is applicable for the behaviour of a perfect gas
- A Boyle's law
 - B Charles' law
 - C Gay-Lussac law
 - D All of the above
- 36 The unit of temperature in S.I. units is
- A Centigrade
 - B Celsius
 - C Fahrenheit
 - D Kelvin

37 Zeroth law of thermodynamics

- A Deals with conversion of mass and energy
- B Deals with reversibility and irreversibility of process
- C States that if two systems are both in equilibrium with a third system, they are in thermal equilibrium with each other
- D Deals with heat engines

38 The working cycle in case of four stroke engine is completed in the following number of revolutions of crankshaft

- | | |
|-----------------|-----|
| A $\frac{1}{2}$ | B 1 |
| C 2 | D 4 |

39 Scavenging air in diesel engine means

- A Air used for combustion sent under pressure
- B Forced air for cooling cylinder
- C Burnt air containing products of combustion
- D Air used for forcing burnt bases out of engine's cylinder during the exhaust period.

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40 The air fuel ratio in petrol engines is controlled by

- | | |
|-------------------------------------|---------------|
| A Controlling valve opening/closing | B Governing |
| C Injection | D Carburetion |

41 The top piston ring nearer to the piston crown is known as

- | | | | |
|---|------------------|---|--------------|
| A | Compression ring | B | Oil ring |
| C | Scraper ring | D | Leading ring |

42 Efficiency of a rankine cycle can be increased by

- A Decreasing initial steam pressure and temperature
- B Increasing exhaust pressure
- C Decreasing exhaust pressure
- D Increasing the expansion ratio

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43 Steam engine operates on

- | | | | |
|---|----------------|---|-------------------|
| A | Carnot cycle | B | Joule cycle |
| C | Stirling cycle | D | None of the above |

44 The overall efficiency of a thermal power plant is

- A Boiler efficiency, turbine efficiency, generator efficiency
- B All the three above plus gas cycle efficiency
- C Carnot cycle efficiency
- D Rankine cycle efficiency

45 An ideal flow of any fluid must fulfil the following

- | | | | |
|---|------------------------|---|---------------------------|
| A | Newton's law of motion | B | Newton's law of viscosity |
| C | Pascal law | D | Continuity equation |

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46 The increase of temperature results in

- | | | | |
|---|------------------------------|---|---------------------------------|
| A | Increase in viscosity of gas | B | Increase in viscosity of liquid |
| C | decrease in viscosity of gas | D | decrease in viscosity of liquid |

47 Metacentric height is given as the distance between

- A The centre of gravity of the body and the metacentre
- B The centre of gravity of the body and the centre of buoyancy
- C The centre of gravity of the body and the centre of pressure
- D centre of buoyancy and metacenter

48 All the terms of energy in Bernoulli's equation have dimensions of

- | | | | |
|---|-------|---|--------|
| A | Enery | B | Work |
| C | Mass | D | Length |

49 When heat is transferred from one particle of hot body to another by actual motion of the heated particles, it is referred to as heat transfer by

- | | | | |
|---|------------|---|---------------------------|
| A | Conduction | B | Convection. |
| C | Radiation | D | Conduction and convection |

- 50 Heat transfer in liquid and gases takes place by
- A Conduction B Convection
- C Radiation D Conduction and convection
- 51 Heat flows from one body to other when they have
- A Different heat contents B Different specific heat
- C Different atomic structure D Different temperatures
- 52 Heat is transferred by all three modes of transfer, viz, conduction, convection and radiation in
- A Electric heater B Steam condenser
- C Melting of ice D Boiler
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- 53 An important characteristic of absorption system of refrigeration is
- A Noisy operation B Quiet operation
- C Cooling below 0°C D Very little power consumption
- 54 The refrigerant for a refrigerator should have
- A High sensible heat B High total heat
- C High latent heat D Low latent heat

55 The COP of a domestic refrigerator

- A Is less than 1
- B Is more than 1
- C Is equal to 1
- D Depends upon the make

56 In a refrigeration system, heat absorbed in comparison to heat rejected is

- A More
- B Less
- C Same
- D More for small capacity and less for high capacity

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57 While steam expands in turbines, theoretically the entropy

- A Remains constant
- B Increases
- C Decreases
- D Behaves unpredictably

58 In the impulse turbine the steam expands

- A In the nozzle
- B In the blades
- C Partly in nozzle and partly in blades
- D Neither in nozzle nor in blades

- 59 In reaction turbine the expansion of steam as it flows over blades represents
- A Throttling process B Free expansion process
- C Isothermal expansion D Adiabatic process
- 60 The most efficient method of compressing air is to compress it
- A Isothermally B Adiabatically
- C Isentropically D Isochronically
- 61 Aeroplanes employ following type of compressor
- A Radial flow B Axial flow
- C Centrifugal D Combination of above
- 62 Jet engine works on the principle of conservation of
- A Mass B Energy
- C Flow D Linear momentum

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- 63 In gas turbines, the high thermal efficiency is obtained in
- A Closed cycle
- B Open cycle
- C Both of the above
- D Closed/open depending on other considerations

- 64 Which effect is useful in measuring rapidly varying forces
- A Piezoelectric B Synchro
C Collimator D protractor
- 65 Thermal expansion of a solid is employed in
- A Thermocouple B Resistance thermometer
C Bulb thermometer D Bimetal element
- 66 For measuring temperature in the range of -20 to 600°C , following liquid is used in glass thermometer:
- A Mercury B Alcohol
C Toluene D Pentane
- 67 Protective coating by a suitable cover are applied over strain gauge in order to protect it against:
- A Temperature rise B Dust and dirt
C Moisture D Ageing
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- 68 Newton is the unit of _____
- A force B energy
C work D power

- 69 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
- 70 The area moment of inertia of a triangular area (b is base, h is height) about its centroidal axis parallel to base is
- A $bh^3/12$ B $bh^3/36$
C $hb^3/36$ D $hb^3/12$
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- 71 When more than three concurrent forces are in equilibrium select the condition that is satisfied.
- A polygon representing the forces will close
B polygon representing the forces will not close
C all the forces must have equal magnitude
D the last side of the polygon will represent the resultant.
- 72 Lami's theorem is applicable only for
- A three non-coplanar
B three concurrent non-coplanar forces
C three parallel forces
D three coplanar and concurrent forces

73 The Coefficient of Friction Depends Upon-

- | | |
|-------------------------|--|
| A Nature of surfaces | B Area of contact |
| C Shape of the surfaces | D Cross section of the contact surface |

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74 A train covers 60 miles between 2 p.m. and 4 p.m. How fast was it going at 3 p.m.?

- | | |
|---------|---------|
| A 60mph | B 30mph |
| C 40mph | D 50mph |

75 What does Newton's third law states?

- A The rate of change of momentum is equal to the force applied
- B For every reaction, there is an opposite reaction
- C The body tends to be rotated if the force is applied tangentially
- D The body is rest until a force is applied

76 The screw pair has DOF _____ and is a _____ pair?

- | | |
|-------------|------------|
| A 1, Higher | B 2, Lower |
| C 2, Higher | D 1, Lower |

77 The number of independent inversions of a RRPP chain =

- | | |
|-----|-----|
| A 3 | B 1 |
| C 2 | D 4 |

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82 The cam and follower is an example of

- | | |
|----------------|---------------|
| A lower pair | B screw pair |
| C sliding pair | D higher pair |

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83 When a rigid body is suspended vertically and it oscillates with a small amplitude under the action of the force of gravity, the body is known as

- | | |
|----------------------|---------------------|
| A simple pendulum | B compound pendulum |
| C torsional pendulum | D second's pendulum |

84 Critical damping is a function of

- A mass and stiffness
- B mass and damping coefficient
- C mass and natural frequency
- D damping coefficient and natural frequency

85 Which theory of failure will you use for aluminum components under steady loading?

- | | |
|---------------------------|-------------------------------|
| A Principle stress theory | B Principle strain theory |
| C Strain energy theory | D Maximum shear stress theory |

- 86 Interchangeability can be achieved by
- | | |
|-------------------|---------------------------|
| A Standardization | B Better process planning |
| C Simplification | D Better product planning |
- 87 A key connecting a flange coupling to a shaft is likely to fail in
- | | |
|-----------|-----------|
| A Shear | B Tension |
| C Torsion | D bending |
- 88 If diameter of a shaft is doubled the power transmitted capacity will be
- | | |
|------------------------|--------------|
| A Either twice or half | B Four times |
| C Eight times | D Same |
- 89 A friction circle is a circle drawn when a journal rotates in a bearing. Its radius depends upon the coefficient of friction and the
- | |
|---|
| A Magnitude of the forces on journal |
| B Angular velocity of journal |
| C Clearance between journal and bearing |
| D Radius of journal |
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- 90 The gears are used to connect two parallel shafts except
- | | |
|------------------------|----------------|
| A Spur gear | B Helical gear |
| C Double helical gears | D Bevel gears |

91 The power transmitted by a belt drive is (T_1 =Tension on tight side, T_2 =Tension on slack side, where v = linear velocity, ω = angular velocity)

A $(T_1 - T_2) \times v$

B $(T_1 - T_2) \times \omega$

☒ C $(T_1 - T_2) / v$

D $(T_1 - T_2) / \omega$

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92 In a general two dimensional stress system, planes of maximum shear stress are inclined at _____ with principal planes.

☒ A 90 degree

B 180 degree

C 45 degree

D 60 degree

93 In a simply supported beam carrying a uniformly distributed load over the left half span, the point of contraflexure will occur in

A Left half span of the beam

B Right half span of the beam.

C Quarter points of the beam

☒ D Does not exist

94 Which theory gives satisfactory results for brittle materials?

A Maximum shear stress theory

☒ B Maximum principle stress theory

C Shear strain energy theory

D Maximum total strain energy theory

- 95 Strain energy is the
- ☒ A energy stored in a body when strained within elastic limits
 - ☐ B maximum strain energy which can be stored in a body
 - ☐ C energy stored in a body when strained upto the breaking of a specimen
 - ☐ D proof resilience per unit volume of a material

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- 96 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
- 97 The deformation per unit length is called
- ☐ A tensile stress
 - ☐ B compressive stress
 - ☒ C shear stress
 - ☐ D strain
- 98 The neutral axis of the cross-section of a beam is that axis at which the bending stress is
- ☒ A zero
 - ☐ B minimum
 - ☐ C maximum
 - ☐ D infinity

99 In power transmission equation, $P = 2\pi NT / (60 \times 1000)$

- A P is in kw and T is maximum torque
- B P is in Nm/sec and T is maximum torque
- C P is in Nm/sec and T is mean torque
- D ✓ P is in kw and T is mean torque

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100 When a close-coiled helical spring is subjected to an axial load, it is said to be under.

- | | |
|-------------|------------|
| A Bending | B Shear |
| C ✓ Torsion | D Crushing |