

ECET 2011

1. The ratio of maximum stress in a machine component (at a notch) to the nominal stress at the same section is known as ()
- (1) endurance limit (2) stress concentration factor
(3) surface finish factor (4) factor of safety
2. Torsional rigidity of a shaft is equal to ()
- (1) product of modulus of rigidity and polar moment of inertia
(2) sum of modulus of rigidity and polar moment of inertia
(3) difference of modulus of rigidity and polar moment of inertia
(4) ratio of modulus of rigidity and polar moment of inertia
3. Brittle coating technique is used for ()
- (1) experimental stress analysis (2) protecting metal against corrosion
(3) non destructive testing of metals (4) determining brittleness
4. The size of a part to which all limits of variation are determined, is called ()
- (1) actual size (2) basic size
(3) tolerance (4) zone of tolerance
5. The included angle of ACME threads is ()
- (1) 60° (2) 55°
(3) 45° (4) 29°
6. The initial tension in a bolt (in MKS units) used for making fluid tight joint is equal to ()
- (1) $284d$ (2) $142d$
(3) $81d$ (4) $568d$
7. For equal number of rivets is more than one row for lap joint or butt joint, the pitch of the rivets should not be less than ()
- (1) $d/2$ (2) d
(3) $1.5d$ (4) $2d$
8. The hub length of the flange coupling should not be less than ()
- (1) $3D$ (2) $2D$
(3) $1.5D$ (4) D

9. The relation between the tension on tight side (T_1) and slack side (T_2) in the belt is ()
(1) $\frac{T_1}{T_2} = \mu\theta$ (2) $\frac{T_1}{T_2} = \frac{\mu}{\theta}$
(3) $\frac{T_1}{T_2} = e^{-\mu\theta}$ (4) $\frac{T_1}{T_2} = e^{\mu\theta}$
10. In the design of steam boilers, according to the boilers code, the factor of safety should be atleast equal to ()
(1) 2 (2) 3
(3) 5 (4) 8
11. Unit of universal gas constant is ()
(1) NmKg/K (2) Nm/KgK
(3) J/Kg- $^{\circ}$ C (4) Kg-m/K
12. Internal energy of a gas is a function of ()
(1) pressure (2) pressure and volume
(3) temperature (4) entropy
13. The area under the temperature-entropy curve (T-S) of any thermodynamic process represents ()
(1) workdone (2) heat absorbed
(3) heat rejected (4) both heat absorbed/rejected
14. The relationship between entropy, enthalpy and work is ()
(1) $Tds = dH + Vdp$ (2) $dH = Vdp - Tds$
(3) $Tds = dH - Vdp$ (4) $Vdp = dH/Tds$
15. Morse test is used to determine ()
(1) shaft horse power
(2) indicated horse power for multicylinder engine
(3) mean effective pressure for single cylinder
(4) temperature of the exhaust gases in multi cylinder engine
16. Air fuel ratio for a petrol engine theoretically is ()
(1) 25 : 1 (2) 20 : 1
(3) 10 : 1 (4) 15 : 1
17. The ignition quality of diesel is measured by ()
(1) calorific value (2) specific fuel consumption
(3) octane number (4) cetane number
18. In petrol engines, the detonating tendency increases when ()
(1) engine speed is increased (2) engine speed is decreased
(3) compression ratio is increased (4) compression ratio is decreased

19. For a four cylinder in-line I.C. Engine, the most popular firing order is ()
 (1) 1-4-3-2 (2) 1-3-4-2
 (3) 1-2-3-4 (4) 1-2-4-3
20. Which of the following air breathing engine is associated with constant volume combustion ()
 (1) ram jet (2) pulse jet
 (3) turbo jet (4) turbo prop
21. When the load on C.I. engine decreases, its efficiency increases. This is due to ()
 (1) hit and miss governing (2) higher maximum temperature
 (3) quantity governing (4) quality governing
22. Decrease in engine speed from no load to full load is called ()
 (1) hunting (2) speed drop
 (3) performance number (4) carburetion
23. Maximum hydraulic efficiency of an impulse turbine in terms of blade angle at the outlet is : ()
 (1) $\frac{1 + \cos\phi}{2}$ (2) $\frac{1 - \cos\phi}{2}$
 (3) $\frac{1 + \sin\phi}{2}$ (4) $\frac{1 - \sin\phi}{2}$
24. A double overhung pelton wheel has ()
 (1) two jets (2) two runners
 (3) four jets (4) four runners
25. The unit power developed by a turbine is (P = Power, H = head) ()
 (1) $\frac{P}{\sqrt{H}}$ (2) $\frac{P}{H}$
 (3) $\frac{P}{H^{3/2}}$ (4) $\frac{P}{H^2}$
26. Which of the following turbine is preferred for a head of 0-25m of water ? ()
 (1) Pelton wheel (2) Kaplan turbine
 (3) Francis turbine (4) Curtis turbine
27. In a centrifugal pump, the regulating valve is provided on ()
 (1) casing (2) delivery pipe
 (3) suction pipe (4) impeller
28. Multi stage centrifugal pumps are used to give ()
 (1) high discharge (2) high head
 (3) viscous fluids (4) no density fluids

38. For the steam which is initially saturated and flowing through a nozzle, the ratio of pressures at exit and at inlet for maximum discharge is equal to ()
(1) 0.545 (2) 0.582
(3) 0.50 (4) 0.60
39. If the back pressure for a convergent nozzle is equal to inlet pressure of the nozzle, then mass rate of flow through the nozzle is ()
(1) minimum (2) zero
(3) maximum (4) constant
40. Formation of shock wave front in case of convergent-divergent nozzle takes place ()
(1) at throat (2) in convergent portion
(3) in divergent portion (4) outside nozzle
41. De-Laval turbine is ()
(1) single wheel impulse turbine (2) pressure compounded turbine
(3) velocity compounded turbine (4) reaction turbine
42. For parson's reaction turbine, degree of reaction is ()
(1) 80% (2) 50%
(3) 75% (4) 100%
43. In reaction turbine, the expansion of steam over the blades represents ()
(1) free expansion process (2) isothermal process
(3) adiabatic process (4) throttling process
44. The ratio of the heat actually utilized in generation of steam to the heat supplied by the fuel in the same period is known as ()
(1) efficiency of turbine (2) efficiency of economiser
(3) boiler efficiency (4) chimney efficiency
45. Which of the following refrigerant has the highest latent heat ? ()
(1) Ammonia (2) Carbon dioxide
(3) Freon-12 (4) Freon-22
46. The refrigerant used for steam jet refrigeration is ()
(1) CO_2 (2) NH_3
(3) R-12 (4) H_2O
47. Refrigerant number R-744 means ()
(1) Carbon dioxide (2) Ammonia
(3) Sulphur dioxide (4) Methyl chloride

48. Which of the refrigerant is highly toxic ? ()
- (1) CO_2 (2) SO_2
(3) NH_3 (4) R-12
49. The wet bulb depression is zero when relative humidity is equal to ()
- (1) zero (2) 0.5
(3) 0.75 (4) 1.0
50. The process of adding heat to moist air at the same humidity ratio is known as ()
- (1) sensible heating (2) sensible cooling
(3) humidification (4) dehumidification
51. If the relative humidity of atmosphere is equal to one, then the rate of evaporation of surface water will be ()
- (1) high (2) low
(3) normal (4) zero
52. In air conditioning, the mixing of two or more streams of moist air follows ()
- (1) adiabatic process (2) isothermal process
(3) polytropic process (4) constant pressure process
53. Who among the following is known as father of industrial engineering ? ()
- (1) Newton (2) Gilberth
(3) Gnatt (4) Taylor
54. Standard time is equal to ()
- (1) Normal time + idle time (2) Normal time + Allowances
(3) Normal time + Idle time + Allowance (4) Normal time - Allowances
55. In break even analysis, the total cost consists of ()
- (1) fixed cost + variable cost (2) fixed cost only
(3) fixed cost + sales revenue (4) variable cost only
56. The process, which determines the programme for the operations, is known as ()
- (1) despatching (2) scheduling
(3) routing (4) loading
57. The information about the production schedule is obtained from ()
- (1) Starting diagram (2) Gnatt chart
(3) Distribution curve (4) Travel chart

58. Bin cards are used for ()
(1) machine loading (2) stores
(3) accounts (4) inventory control
59. The ratio of total assets to the total liabilities of a company is known as ()
(1) acid test liquidity ratio (2) liquidity ratio
(3) primary profitability ratio (4) secondary profitability ratio
60. A compact estimate of the handling which must be done between various work sections, is obtained from ()
(1) String diagram (2) Gnatt chart
(3) Distribution curve (4) Travel chart
61. Type of frame preferred for a rear engine automobile is ()
(1) backbone frame (2) tubular frame
(3) CAD flat frame (4) integral frame
62. Which compression ring has stepped torsional section in the case of piston rings ? ()
(1) first (2) second
(3) third (4) fourth
63. For race cars, the ratio of power to weight will be ()
(1) one (2) zero
(3) higher (4) lower
64. The phenomenon by which fuel catches fire without external flame is known as ()
(1) pre ignition (2) detonation
(3) auto ignition (4) ignition lag
65. A diesel lorry in India is run by diesel of ()
(1) 90 octane number (2) 120 performance number
(3) 55 cetane number (4) 74 aniline point
66. A needle valve is a part of the following ()
(1) A.C. Mechanical fuel pump (2) Fuel injection pump
(3) Carburettor's float chamber (4) Main jet of carburettor
67. Racing cars are generally equipped with ()
(1) Wet clutch (2) Semi centrifugal clutch
(3) Solid clutch plate (4) Leather clutch facing
68. A constant mesh gearbox has been employed on ()
(1) Maruti Zen car (2) TVS Scooty
(3) Matiz car (4) Suzuki Shaolin

69. Three different gear ratios are possible from an epicyclic gear train possessing ()
 (1) only 2 gears (2) 4 gears
 (3) 6 gears (4) only 3 gears
70. The speed reduction given by a final drive assembly may be ()
 (1) varied (2) 16 : 1
 (3) 5 : 1 (4) By-passed
71. The angle between the tool face and the ground end surface of flank is known as ()
 (1) Clearance Angle (2) Rake angle
 (3) Cutting angle (4) Lip angle
72. The commonly used value of helix for a standard twist drill is ()
 (1) 12° (2) 29°
 (3) 60° (4) 118°
73. The relationship between tool life (T) and cutting speed (V) is expressed as (n & C are constants) ()
 (1) $V^n T = C$ (2) $\frac{V}{T} = C$
 (3) $VT^n = C$ (4) $\frac{T}{V} = C$
74. The operation of removal of excess metal from the edge of a strip to make it suitable for drawing without wrinkling, is known as ()
 (1) Tumbling (2) Slugging
 (3) Lancing (4) Notching
75. The recommended average cutting speed (m/min) for a high speed steel tool for cutting cast steel is ()
 (1) 15 (2) 30
 (3) 60 (4) 90
76. The process of removing metal, by feeding the work past a rotating multipoint cutter is known as ()
 (1) Broaching (2) Sawing
 (3) Milling (4) Grinding
77. If in milling operation, depth and width of the cut is constant and feed rate is doubled, the power consumption will increase by ()
 (1) 100% (2) 90%
 (3) 50% (4) 30%
78. Which of the following process is used for making cold chisels ? ()
 (1) Rolling (2) Forging
 (3) Piercing (4) Drawing

79. A casting is to be machined on a lathe. The casting should be held in ()
(1) magnetic chuck (2) collect chuck
(3) four jaw chuck (4) two jaw chuck
80. Which material of the following is mostly used for drills, taps and reamers ? ()
(1) low alloy carbon steel (2) high speed steel
(3) ceramics (4) cemented carbide
81. The process which is employed for the production of seamless tubes, is known as ()
(1) Rolling (2) Forging
(3) Casting (4) Piercing
82. For extrusion, the temperature of copper alloys in the die should be ()
(1) 1100 to 1250°C (2) 650 to 900°C
(3) 425 to 480°C (4) 350 to 425°C
83. The process used to produce geometrically true surfaces is known as ()
(1) Reaming (2) Honing
(3) Broaching (4) Tapping
84. The wear ratio for hardened plain carbon steel work is ()
(1) 0.5 (2) 1.0
(3) 2.0 (4) 3.0
85. Which of the following machining methods require electrolyte ()
(1) LBM (2) UTM
(3) USM (4) EDM
86. Which one of the following metals has the least weldability ? ()
(1) Carbon steel (2) Iron
(3) Stainless steel (4) Cast iron
87. The forging of steel specimen is done at a temperature of ()
(1) 400°C (2) 600°C
(3) 800°C (4) 1000°C
88. The number of zones of heat generation of spot welding are ()
(1) two (2) three
(3) four (4) five
89. Spot welding is most suitable for joining parts having thickness upto ()
(1) 50 mm (2) 30 mm
(3) 20 mm (4) 10 mm
90. Projection welding is ()
(1) an arc welding process
(2) a continuous spot welding process
(3) a multi spot welding process
(4) a process used for jointly two round bars

91. For welding steel by MIG process, the gas used is ()
 (1) pure Argon gas (2) CO_2
 (3) Argon-oxygen mixture (4) Nitrogen
92. The ratio of oxygen to acetylene for complete combustion is ()
 (1) 1 : 1 (2) 2 : 1
 (3) 2.5 : 1 (4) 3 : 1
93. The units of moment of inertia are ()
 (1) Kg-m^3 (2) Kg-m^2
 (3) Kg-m (4) Kg-m^4
94. The statement-the algebraic sum of the moments taken about any point in the plane of forces is zero - is known as ()
 (1) Law of polygon of forces (2) Lami's theorem.
 (3) Newton's law of forces (4) Law of moments
95. The relation between modulus of elasticity (E), Modulus of rigidity (C) and bulk modulus (K) is given by ()
 (1) $E = \frac{3KC}{C+9K}$ (2) $E = \frac{9KC}{C+3K}$
 (3) $E = \frac{C+9K}{3KC}$ (4) $E = \frac{C+3K}{9KC}$
96. Principal plane is a plane on which shear stress is ()
 (1) maximum (2) minimum
 (3) average of max. & min. (4) zero
97. The tensile force at a distance 'y' from support in a vertical hanging bar of length 'l' which carries a load of 'P' at the bottom is equal to (w = weight per unit length) ()
 (1) P (2) $P + wl$
 (3) $P + w(l - y)$ (4) $P + wy$
98. The carbon content in cast iron is ()
 (1) above 2% (2) upto 2%
 (3) below 0.8% (4) above 0.3%
99. Which of the following is an amorphous material ? ()
 (1) lead (2) glass
 (3) brass (4) zinc
100. Under microscope, pearlite appears as ()
 (1) white (2) dark
 (3) light (4) finger print

KEY

1. 2	2. 1	3. 2	4. 2	5. 4	6. 1	7. 3	8. 3	9. 4	10. 3
11. 2	12. 3	13. 4	14. 2	15. 2	16. 4	17. 4	18. 3	19. 2	20. 2
21. 4	22. 2	23. 1	24. 1	25. 3	26. 2	27. 2	28. 3	29. 3	30. 2
31. 4	32. 3	33. 2	34. 3	35. 3	36. 2	37. 2	38. 2	39. 2	40. 3
41. 1	42. 2	43. 3	44. 3	45. 3	46. 4	47. 1	48. 2	49. 4	50. 1
51. 4	52. 1	53. 4	54. 2	55. 1	56. 2	57. 2	58. 2	59. 2	60. 4
61. 4	62. 2	63. 4	64. 3	65. 3	66. 4	67. 2	68. 1	69. 1	70. 3
71. 4	72. 2	73. 3	74. 4	75. 2	76. 3	77. 1	78. 2	79. 3	80. 2
81. 4	82. 2	83. 2	84. 1	85. 4	86. 4	87. 4	88. 3	89. 4	90. 3
91. 1	92. 2	93. 2	94. 4	95. 2	96. 4	97. 3	98. 1	99. 2	100. 2

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