

1. The term deformation per unit length is applied for \_\_\_\_\_

Answer:

- a Modulus of elasticity
- b Stress
- c Strain
- d None of the above

2. The maximum stress produced in a bar of tapering sections is at \_\_\_\_\_

Answer:

- a Smaller end
- b Larger end
- c Middle part
- d Anywhere other than end parts

3. A bolt is made to pass through a tube and both of them are tightly fitted with the help of washer and nuts. If the nut is tightened, then \_\_\_\_\_

Answer:

- a A bolt and tube are subjected to compressive load
- b A bolt and tube are subjected to tensile load
- c A bolt is subjected to compressive load, while tube subjected to tensile load
- d A bolt is subjected to tensile load, while tube subjected to compressive load

4. If a composite bar is cooled, then the nature of stress in the part with high coefficient of thermal expansion will be \_\_\_\_\_

Answer:

- a Tensile
- b Zero
- c Compressive
- d None of the above

5. If a cantilever beam is subjected to point load at its free end, then the shear force under the point load is \_\_\_\_\_

Answer:

- a Less than the load
- b More than the load
- c Equal to load
- d Zero

6. The value of the Poisson's ratio for the steel varies from .....

Answer:

- a 0.20 to 0.25
- b 0.25 to 0.35
- c 0.35 to 0.40
- d 0.40 to 0.45

7. The ratio of average shear stress to maximum shear stress for a circular section is \_\_\_\_\_

Answer:

- a 2
- b 2/3
- c 3/2
- d 3/4

8. A material which recovers fully after unloading but not instantaneously is known as .....

Answer:

- a Plastic
- b Elastic
- c Partially elastic
- d Anelastic

9. A column is known as short column if .....

Answer:

- a The length is more than 7 times of the diameter
- b Slenderness ratio is more than 120
- c The length is less than 8 times of the diameter
- d None of the above

10. The value poisson's ratio is never greater than.....

Answer:

- a 0.05
- b 0.50
- c 1.50
- d 5.00

11. Induction type single phase energy meter measures electric energy in \_\_\_\_\_

Answer:

- a KW
- b Wh
- c KWh
- d VAR

12. Relative Permeability of vacuum is \_\_\_\_\_

Answer:

- a 1
- b  $1 \frac{H}{m}$
- c  $\frac{1}{4} \frac{H}{m}$
- d  $4 \times 10^{-6} \frac{H}{m}$



20. Transformers are rated in KVA instead of KW because \_\_\_\_\_

Answer:

- a Load power factor is often not known
- b KVA is fixed whereas KW depends on load p.f.
- c Total transformer loss depends on volt-ampere
- d It has become customary

21. Which conversion factor is wrong?

Answer:

- a  $1 \text{ \AA} = 0.1 \text{ nm}$
- b  $1 \text{ HP} = 7457 \text{ W}$
- c  $1 \text{ psi} = 6.89 \text{ N/m}^2$
- d  $T^{\circ}\text{F} = (5/9)(T+459.67) \text{ K}$

22. From the table given below, find which SI unit is incorrect?

Answer:

	Physical Quantity	Definition of the SI unit
a.	Momentum	$\text{Kg.m.s}^{-1}$
b.	Angular Acceleration	$\text{Rad.s}^{-2}$
c.	Moment of inertia	$\text{Kg.m}^{-2}$
d.	Energy	$\text{Kg.m}^2.\text{s}^{-2}$

23. Find wrong statement which is stated below about the Potential Energy (PE)?

Answer:

- a. The PE is zero if the body is in the state of indifferent equilibrium
- b. In the case of an unstable position of equilibrium of the body its PE decreases on any virtual displacement
- c. The PE is a maximum if the body is in a stable position of equilibrium
- d. The PE is a maximum if the body is in a unstable position of equilibrium

24. The principle of conservation of angular momentum for a rigid body is applicable when .....

Answer:

- a The external forces add to zero
- b The external force and moments are absent
- c The internal forces add to zero
- d The resultant external moment is zero

25. If the sectional area is in  $\text{mm}^2$  and the distance of centre of area from a line is in mm, then units of moment of inertia of the section about the line is expressed in .....

Answer:

- |                 |                    |
|-----------------|--------------------|
| a $\text{mm}^2$ | c $\text{mm}^4$    |
| b $\text{mm}^3$ | d $\text{mm}^{-2}$ |

26. The existence of potential energy implies that .....

Answer:

- |                                     |                                       |
|-------------------------------------|---------------------------------------|
| a A general force field exists      | c There must be a gravitational field |
| b A conservative force field exists | d The body should be in equilibrium   |

27. The principle of virtual work states that the virtual work should be zero for a body .....

Answer:

- |  |   |
|--|---|
| a To be in equilibrium in general      | c Moving with constant acceleration       |
| b In equilibrium if it does not rotate | d Rotating at a constant angular velocity |

28. 01 Newton produces acceleration of .....

Answer:

- |   |   |
|---|---|
| a $1\text{m/s}^2$ in a mass ( in Kg)    | c $9.81\text{m/s}^2$ in a mass ( in gm) |
| b $9.81\text{m/s}^2$ in a mass ( in Kg) | d $1\text{m/s}^2$ in a mass ( in gm)    |

29. The bell crank lever is a .....

Answer:

- |            |                 |
|------------|-----------------|
| a Straight | c Simple bent   |
| b Compound | d None of these |

30. The efficiency of the machine is less than 50%, it is known as .....

Answer:

- |                      |                        |
|----------------------|------------------------|
| a Reversible machine | c Self-locking machine |
| b Ideal machine      | d None of these        |

31. Screw Jack used for lifting heavy loads by supplying comparatively .....

Answer:

- a Bigger effort at its end
- b Smaller effort at its end
- c Zero efforts at its end
- d None of these

32. If the sum of all forces acting on a body is zero, then it may be concluded that the body .....

Answer:

- a Must be in equilibrium
- b May be in equilibrium provided forces are concurrent
- c cannot be in equilibrium
- d May be in equilibrium provided forces are parallel

33. Forces of attraction between two homogeneous solid spheres of radii  $r_1$  and  $r_2$  and masses  $m_1$  and  $m_2$  placed at a distance  $r$  between their centers. State the correct expression for this force.

Answer:

- a  $G r^2 / (m_1 m_2)$
- b  $(R m_1 m_2) / r^2$
- c  $(G m_1 m_2) / r^2$
- d  $(G m_1 m_2) / R^2$

34. The displacement of a point .....

Answer:

- a implies the distance moved by a point
- b is a vector, from the initial to the final position of the point
- c is always less than the distance traversed by the point
- d is independent of the distance and the direction of the movement of the point

35. A rigid body, in translation.....

Answer:

- a Can only move in a straight line
- b May move along a straight or a curved path
- c Cannot move on a circular path
- d Must undergo plane motion only

36. Which of the following group of plants can be used as the indicator of SO pollution of air?

Answer:

- a Epiphytic Lichen
- b Ferns
- c Liver Worts
- d Horn Worts

37. On inhalation, which of the following dissolved more rapidly in human blood hemoglobin than oxygen?

Answer:

- |                     |                 |
|---------------------|-----------------|
| a Sulphur dioxide   | c Ozone         |
| b Carbon mono-oxide | d Nitrous oxide |

38. Land disposal of sewage will be favorable where \_\_\_\_\_

Answer:

- |   |  |
|---|--|
| a Climate is wet & rate of evaporation is low | c The rivers run dry and have a small flow during summer |
| b Rainfall is very high                       | d All of the above.                                      |

39. The water from kitchen, bathroom, wash-basin is called \_\_\_\_\_

Answer:

- |           |                 |
|-----------|-----------------|
| a Sewage  | c Raw sewage    |
| b Sullage | d None of these |

40. Ground water mining in the coastal area can result into \_\_\_\_\_

Answer:

- |  |  |
|--|--|
| a Increase in the water table              | c Decrease in the toxicity of ground water |
| b Increase in the salinity of ground water | d Decrease in the salinity of ground water |

41. When does the Air (Prevention & Control of pollution) Act have enacted?

Answer:

- |        |        |
|--------|--------|
| a 1974 | c 1981 |
| b 1980 | d 1987 |

42. Due to entrophication \_\_\_\_\_

Answer:

- |                 |                             |
|-----------------|-----------------------------|
| a BOD increases | c Algae are destroyed       |
| b BOD decreases | d Water become less harmful |

43. Air pollution from automobiles can be controlled by fitting \_\_\_\_\_

Answer:

- |                              |                       |
|------------------------------|-----------------------|
| a Cyclone Separator          | c Catalytic Converter |
| b Electrostatic Precipitator | d Wet Scrubbe         |

44. Excess fluoride in drinking water is likely to cause \_\_\_\_\_

Answer:

- |                      |                             |
|----------------------|-----------------------------|
| a Blue Baby Syndrome | c Change in taste and odour |
| b Fluorosis          | d Intestinal irritation     |

45. Disease caused by eating fish inhabiting mercury contaminated water is\_\_\_\_\_

Answer:

- a Mina-mata diseases
- b Bright's diseases
- c Hiroshima episode
- d Osteosclerosis

46. The highest moisture content is in \_\_\_\_\_

Answer:

- a Garbage
- b Rubbish
- c Agricultural Waste
- d Hospital Waste

47. Biomedical waste may be disposed of by \_\_\_\_\_

Answer:

- a Incineration
- b Autoclaving
- c Dumping in deep sea
- d None of these

48. Which of the following is a point source of water pollution?

Answer:

- a Offshore oil wells
- b Livestock feed lots
- c Urban lands
- d Crop lands

49. If A be a matrix whose inverse exists then which of the following is not true?

Answer:

- a  $A^{-1} = (\det(A))^{-1}$
- b  $(A^2)^{-1} = (A^{-1})^2$
- c  $(A^T)^{-1} = (A^{-1})^T$
- d None of these

50. If  $A = \begin{pmatrix} 1 & 1 \\ 1 & 1 \end{pmatrix}$  than  $A^{100} = ?$

Answer:

- a  $2^{99} \begin{pmatrix} 1 & 1 \\ 1 & 1 \end{pmatrix}$
- b  $2^{101} \begin{pmatrix} 1 & 1 \\ 1 & 1 \end{pmatrix}$
- c  $2^{100} \begin{pmatrix} 1 & 1 \\ 1 & 1 \end{pmatrix}$
- d None of these

51. In the Newton's forward interpolation formula the value of  $u = \frac{x - x_0}{h}$  lies

between Answer:

- a 1 and 2
- c 0 and  $\infty$



- b    -1 and 1
- d    0 to 1

52. If  $P(A+B) = \frac{2}{7}$ ; then  $P(\overline{AB}) = ?$

Answer:

- a    1/7
  - b    3/7
  - c    4/7
  - d    5/7
53. 5 boys and 3 girls are seated at random in a row. The probability that no boy seats between two girls is .....

Answer:

- a    3/28
  - b    1/28
  - c    3/25
  - d    4/19
54. If  $f = \log(x^2 + y^2) + \tan^{-1}(y/x)$ , then the value of  $f_{xx} + f_{yy}$  is .....

Answer:

- A    - 1
  - b    2
  - c    0
  - d    1
55. The area of the parallelogram whose adjacent sides are  $(\hat{i} - 2\hat{j} + 3\hat{k})$  and  $(2\hat{i} + \hat{j} - 4\hat{k})$ , is .....

Answer:

- a     $6\sqrt{5}$  sq. unit
  - b     $5\sqrt{6}$  sq. unit
  - c     $5\sqrt{5}$  sq. unit
  - d    None of these
56. The degree of the homogeneous function  $z = \frac{x^{\frac{1}{3}} + y^{\frac{1}{3}}}{x^{\frac{1}{2}} + y^{\frac{1}{2}}}$ , for satisfying the

Euler’s Theorem of partial derivation, is .....

Answer:

- a    1/2
  - b    1/3
  - c    1/6
  - d     $-(1/6)$
57. The sum of two non-integral roots of  $\begin{vmatrix} x & 3 & 4 \\ 5 & x & 5 \\ 4 & 2 & x \end{vmatrix} = 0$  is .....

Answer:

- a    4
- B    - 4
- c    -25
- d    3

58. The integrating factor for the differential equation  $\frac{dy}{dx} + \frac{xy}{2(1-x^2)} = \frac{x}{2}$  is .....

Answer:

- A  $(1 - x^2)^{\frac{1}{2}}$  c  $\log_e(1 - x^2)$
- b  $(1 - x^2)^{\frac{-1}{4}}$  d None of these

59. If A is a skew-symmetric matrix of odd order, then the determinant of A is ..... Answer:

- A -1 c 1
- b 0 d A real number

60. If  $\vec{\alpha} \cdot \vec{\beta} = \vec{\alpha} \cdot \vec{\gamma}$  and  $\vec{\alpha} \times \vec{\beta} = \vec{\alpha} \times \vec{\gamma}$ , then .....

Answer:

- a  $\vec{\alpha}$  is parallel to  $(\vec{\beta} - \vec{\gamma})$  c Either  $\vec{\alpha} = 0$  and  $\vec{\beta} = \vec{\gamma}$
- b  $\vec{\alpha}$  is perpendicular to  $(\vec{\beta} - \vec{\gamma})$  d None of these

61. If  $\vec{\alpha} + \vec{\beta} + \vec{\gamma} = \vec{0}$ ,  $|\vec{\alpha}| = 3$ ,  $|\vec{\beta}| = 5$ , and  $|\vec{\gamma}| = 7$ , then the angle between  $\vec{\alpha}$  and  $\vec{\beta}$  is ..... Answer:

- a  $\frac{\pi}{6}$  c  $\frac{2\pi}{3}$
- b  $\frac{\pi}{3}$  d  $\frac{\pi}{4}$

612. In Gaussian Elimination Method, the system of linear equations is reduced into a .....

Answer:

- a Triangular system c Diagonal system
- b Normal system d None of these

63. From the table given below, find the value of  $\Delta^3 f(10)$ .

x:	10	11	12	13
f(x):	1.0235	1.1342	1.3241	1.5319

Answer:

- |   |        |   |          |
|---|--------|---|----------|
| a | 0.0179 | c | 0.2078   |
| b | 0.0792 | D | - 0.0613 |

64. The sum of 11101 + 10111 equals

Answer:

- |   |        |   |        |
|---|--------|---|--------|
| a | 110011 | c | 110100 |
| b | 100001 | d | 100100 |

65. Which of the following is not the benefit of modular Programming?

Answer:

- |   |  |   |   |
|---|--|---|---|
| a | It increases program readability       | c | It allows for the creation of a library of common programming task        |
| b | It increases programmers' productivity | d | It allows one programmer to do the job of many in the same amount of time |

66. Which of the following have the fastest access time?

Answer:

- |   |                        |   |                |
|---|------------------------|---|----------------|
| a | Semiconductor memories | c | Magnetic disks |
| b | Magnetic tapes         | d | Compact disks  |

67. If each successive code differs from its preceding code by a single bit only, then this code is called .....

Answer:

- |   |           |   |               |
|---|-----------|---|---------------|
| a | BCD code  | c | Binary code   |
| b | Gray code | d | Weighted code |

68. Resolution of externally defined symbols is performed by .....

Answer:

- |   |        |   |             |
|---|--------|---|-------------|
| a | Linker | c | Compiler    |
| b | Loader | d | Interpreter |

69. The advantages of XML over HTML are:

- i) It allows processing of data stored in web-pages, ii) It uses meaningful tags which aids in understanding the nature of document, iii) It is simpler than HTML, iv) It separates presentation and structure of document.

Which statements are true?

Answer:

- |   |            |   |             |
|---|------------|---|-------------|
| a | i, ii, iii | c | ii, iii, iv |
|---|------------|---|-------------|

b i, ii, iv

d i, iii, iv

70. What will be the output of the following program.....

```
#include <stdio.h>\nvoid main() {\n    int k = 35;\n    printf(“%d %d %d”, k==35, k=50, k>40);\n}
```

Answer:

A 35,50,40

c 0,0,0

B 0,50,0

d 1,1,1

71. Which of the following is system software?

Answer:

A UNIX

c Excel

B Word

d Tally

72. How long is an ipv6 address?

Answer:

A 32 bits

c 32 bytes

B 128 bytes

d 128 bits

73. What device is used for entering (x, y) coordinates into a system?

Answer:

A Card reader

c Keyboard

B Joystick

d Scanner

74. Which of the following ‘C’ statement is syntactically correct?

Answer:

A for ( )

c for ( ; , )

B for ( , , )

d for ( ; ; )

75. The result of logical operation is known as \_\_\_\_\_

Answer:

A Boolean

c Character

B Integer

d String

76. When a key is pressed in the keyboard, which standard is used for converting the keystroke into the corresponding bits?

Answer:

A ANSI

c EBCDIC

B ASCII

d GRAY

77. Software required to run the hardware is known as .....

Answer:

- a Utility Software
- b Application Software
- c Device Manager
- d Device Driver

78. What is the value of radix 'r', if  $(211)_r = (152)_8$  ?

Answer:

- a 6
- b 7
- c 8
- d 9

79. The differential equation  $\frac{d^2y}{dx^2} + \frac{dy}{dx} + \sin y = 0$  is .....

Answer:

- a Linear
- b Non-Linear
- c Homogeneous
- d Of degree 2

80. If  $z = \cos(x/y) + \sin(x/y)$ , then  $x \frac{\partial z}{\partial x} + y \frac{\partial z}{\partial y}$  is equal to .....

Answer:

- a Z
- b 2z
- c 0
- d None of these

81. If  $z = f(u)$  is a homogeneous function of degree n in variables x and y (where u is a function of x and y), then  $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y}$  is equal to .....

Answer:

- a  $nf(u)$
- b  $nf'(u)$
- c  $n \frac{f(u)}{f'(u)}$
- d  $n \frac{f'(u)}{f(u)}$

82. In the random experiment of rolling of two dice, the number of cases favorable to the event 'Sum 5' is .....

Answer:

- a 1
- b 2
- c 3
- d 4

83. The conditional probability P(A/B) is given by .....

Answer:

- |   |                                   |   |  |
|---|-----------------------------------|---|--|
| a | $\frac{P(AB)}{P(A)}, P(A) \neq 0$ | c | $\frac{P(AB)}{P(B)}, P(B) \neq 0$      |
| b | $\frac{P(A)}{P(B)}, P(B) \neq 0$  | d | $\frac{P(AB)}{P(A)+P(B)}, P(A) \neq 0$ |

84. The missing figure in the expression :

$$\text{Mean} = \underline{\quad?} (3\text{Median} - \text{Mode}) \text{ is } \dots\dots$$

Answer:

- |   |   |   |     |
|---|---|---|-----|
| a | 2 | c | 1/2 |
| b | 1 | d | 2/3 |

85. A card is drawn from a well-shuffled pack of playing cards. Then the probability that it is either a spade or an ace is .....

Answer:

- |   |       |   |       |
|---|-------|---|-------|
| a | 17/52 | c | 4/13  |
| b | 1/52  | d | 13/52 |

86. Which measures of central tendency will be suitable to find the average marks obtained by seven students given by: 10, 8, 12, 4, 7, 11 and X (X < 5) is ..... Answer:

- |   |        |   |               |
|---|--------|---|---------------|
| a | Mean   | c | Mode          |
| b | Median | d | None of these |

87. The standard deviation of first 'n' natural number is .....

Answer:

- |   |                             |   |                              |
|---|-----------------------------|---|------------------------------|
| a | $\sqrt{\frac{n^2 - 1}{12}}$ | c | $\sqrt{\frac{2n^2 - 1}{12}}$ |
| b | $\sqrt{\frac{n^2 + 1}{12}}$ | d | $\sqrt{\frac{2n^2 + 1}{12}}$ |

88. The order of the differential equation, whose general solution is given by  $y = (c_1 + c_2) \cos(x+c_3) - c_4 e^{x+c_5}$ , where  $c_1$  to  $c_5$  all are arbitrary constants, is .....

Answer:

- |   |   |   |   |
|---|---|---|---|
| a | 5 | c | 3 |
| b | 4 | d | 2 |

89. Whenever a conductor cuts magnetic flux, an emf is induced in the conductor. This statement emphasizes on .....

Answer:

- |   |                           |   |               |
|---|---------------------------|---|---------------|
| a | Joule's Law               | c | Coulomb's Law |
| b | Webber and Ewing's Theory | d | Faraday's Law |

90. Candela is the unit of \_\_\_\_\_

Answer:

- |   |                    |   |              |
|---|--------------------|---|--------------|
| a | Flux               | c | Illumination |
| b | Luminous intensity | d | Luminance    |

91. Armature Reaction in an alternator primarily affects .....

Answer:

- |   |                            |   |                               |
|---|----------------------------|---|-------------------------------|
| a | Rotor speed                | c | Frequency of armature current |
| b | Terminal voltage per stage | d | Generated voltage per phase   |

92. Corona occurs between two transmission wires when they .....

Answer:

- |   |                   |   |                                |
|---|-------------------|---|--------------------------------|
| a | are closed placed | c | have high potential difference |
| b | are widely placed | d | carry DC power                 |

93. If power factor of a circuit is unity, its reactive power is .....

Answer:

- |   |                 |   |                     |
|---|-----------------|---|---------------------|
| a | Maximum         | c | Zero                |
| b | Equal to $I^2R$ | d | A negative quantity |

94. The main purpose of using core in a transformer is to .....

Answer:

- |   |                           |   |  |
|---|---------------------------|---|--|
| a | Decrease iron loss        | c | Eliminate magnetic hysteresis                      |
| b | Prevent eddy current loss | d | Decrease reluctance of the common magnetic circuit |

95. Composition of Muntz metal is .....

Answer:

- |   |                       |   |                       |
|---|-----------------------|---|-----------------------|
| a | 60% Copper , 40% Zinc | c | 50% Copper , 50% Zinc |
| b | 70% Copper , 30% Zinc | d | 40% Copper , 60% Zinc |

96. Hook's Law states that within the elastic limit.....

Answer:

- |   |                            |   |                            |
|---|----------------------------|---|----------------------------|
| a | Stress + Strain = Constant | c | Stress x Strain = Constant |
|---|----------------------------|---|----------------------------|

- b Stress - Strain = Constant      d Stress / Strain = Constant

97. The main objective of tempering process is to .....

Answer:

- a Refine grain size      c Harden the steel  
 b Soften the metal      d Reduce hardness

98. The slenderness ratio of a long column is \_\_\_\_\_

Answer:

- a 10 to 20      c 50 to 60  
 b 20 to 30      d Above 80

99. Rupture Stress is .....

Answer:

- a Proof stress      c Highest value of stress  
 b Breaking stress      d Stress given by dividing the load at the moment of incipient fracture by the area supporting that load

100. The critical load of column is defined as the load at which column is in ....

Answer:

- a Stable equilibrium      c Neutral equilibrium  
 b Unstable equilibrium      d None of the above

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