TEST - 2015

ME	COURSE	DAY : SUNDAY
	MECHANICAL	**TIME : 10.00 A.M. TO 1.00 P.M.**

MAXIMUM MARKS	TOTAL DURATION	MAXIMUM TIME FOR ANSWERING
180	**200 MINUTES**	**180 MINUTES**

MENTION YOUR DIPLOMA CET NUMBER	QUESTION BOOKLET DETAILS	
	VERSION CODE	SERIAL NUMBER
	A – 4	**101984**

DOs :

1. Check whether the Diploma CET No. has been entered and shaded in the respective circles on the OMR answer sheet.
2. This Question Booklet is issued to you by the invigilator after the 2nd **Bell i.e., after 09.50 a.m.**
3. The Serial Number of this question booklet should be entered on the OMR answer sheet and the respective circles should also be shaded completely.
4. The Version Code of this question booklet should be entered on the OMR answer sheet and the respective circles should also be shaded completely.
5. compulsorily sign at the bottom portion of the OMR answer sheet in the space provided.

DON'Ts:

1. **THE TIMING AND MARKS PRINTED ON THE OMR ANSWER SHEET SHOULD NOT BE DAMAGED / MUTILATED / SPOILED.**
2. **The 3rd Bell rings at 10.00 a.m., till then;**
   - Do not remove the paper seal of this question booklet.
   - Do not look inside this question booklet.
   - Do not start answering on the OMR answer sheet.

IMPORTANT INSTRUCTIONS TO CANDIDATES

1. This question booklet contains 180 (items) questions and each question will have one statement and four answers. (Four different options / responses.)
2. After the 3rd **Bell is rung at 10.00 a.m.** remove the paper seal of this question booklet and check that this booklet does not have any unprinted or torn or missing pages or items etc., if so, get it replaced by acomplete test booklet. Read each item and start answering on the OMR answer sheet.
3. During the subsequent 180 minutes:
   - Read each question (item) carefully
   - Choose one correct answer from out of the four available responses (options / choices) given under each question / item. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose only one response for each item.
   - **Completed darken / shade the relevant circle with a BLUE OR BLACK INK BALL POINT PEN against the question number on the OMR answer sheet.**

Correct Method of shading the circle on the OMR answer sheet is as shown below:
① ● ③ ④

4. Use the space provided on each page of the question booklet for Rough Work. Do not use the OMR answer sheet for the same
5. After the **last Bells is rung at 1.00 p.m.** stop marking on the OMR answer sheet and affix your left hand thumb **impression** on the OMR answer sheet as per the instructions.
6. Hand over the **OMR ANSWER SHEET** to the room invigilator as it is.
7. After separating the top sheet, the invigilator will return the bottom sheet replica (Candidate's copy) to you to carry home for self-evaluation.
8. Preserve the replica of the OMR answer sheet for a minimum period of **ONE year.**

SEAL

PART - A
APPLIED SCIENCE

1. In the spectrum of scattered light the lines corresponding to wavelength greater than that of incident light are called

   1. Stokes lines
   2. Antistokes lines
   3. Fluorescent lines
   4. Incident lines

2. Resolving power of telescope is given by

   1. $\dfrac{d}{1.22\lambda}$
   2. $\dfrac{1.22\lambda}{d}$
   3. $\dfrac{1.22d}{\lambda}$
   4. $\dfrac{\lambda}{1.22d}$

3. To observe diffraction pattern the obstacle should be

   1. Very big
   2. Dark
   3. Absent
   4. Comparable with the wavelength of light

4. When double refraction occurs, extraordinary ray and ordinary rays will have vibrations in the planes _____ to one another

   1. Parallel
   2. Independent
   3. Perpendicular
   4. At 45°

5. Maxwell's electromagnetic theory could explain

   1. Photo electric effect
   2. Interference of light
   3. Compton effect
   4. Black body radiation

6. The contrast between bright and dark bands of an interference pattern is

   1. Low
   2. High
   3. No change
   4. Gradually decreases

7. A non-electrolyte solution is

   1. Sugar solution
   2. Salt solution
   3. Water
   4. Copper sulphate solution

Space For Rough Work

A-4

2

ME

8. In alkalies the concentration of OH^- ions is

   1. More than 10^{-7}g ions / litre
   2. Less than 10^{-7}g ions / litre
   3. Equal to 10^{-7}g ions / litre
   4. More than 10^7g ions / litre

9. An example of derived unit is

   1. Meter
   2. Second
   3. Netwon
   4. Candela

10. The prefix used for 10^{-15} is

    1. Femto
    2. Pico
    3. Peta
    4. Nano

11. An example of dimensionless constant is

    1. Strain
    2. Efficiency
    3. Force
    4. Pi

12. A main scale is divided into half mm and having a Vernier containing 10 divisions has a least count of _____cm.

    1. 0.05
    2. 0.005
    3. 0.02
    4. 0.025

13. According to Newton's second law of motion F = Kma. The value of K is

    1. 0.1
    2. 0
    3. 10
    4. 1

14. The velocity of a freely falling body is maximum

    1. At the beginning
    2. Just before it touches ground
    3. Exactly half way
    4. After it touches ground

15. Wet clothes are dried in washing machine by the property of

    1. Inertia of rest
    2. Inertia of direction
    3. Inertia of motion
    4. Inertia of time

16. A force of 1.2×10^{-2} N acts for 3 seconds on a body of mass 0.04kg at rest. The velocity gained by the body is

    1. 0.9 m/s
    2. 9 m/s
    3. 0.09 m/s
    4. 9.2 m/s

Space For Rough Work

17. An example of vector quantity is

    1.   Volume   .   2.   Energy   3.   Density   4.   Force

18. Handle of the door is fixed away from the end where it is fixed with hinges to

    1.   Increase the moment of force   2.   Decrease the moment of force

    3.   Keep the door firm   4.   Lock it easily

19. Resultant of two equal forces perpendicular to each other acts at an angle _____ to first force

    1. $90°$ 2. $180°$ 3. $30°$ 4. $45°$

20. The resultant of two forces acting on a body cannot be

    1.   Greater than first force

    2.   Zero

    3.   Lesser than first force

    4.   Lesser than the difference between two forces

21. Towing of a boat by two forces is an illustration of

    1.   Lami's theorem   2.   Law of triangle of forces

    3.   Law of parallelogram of forces   4.   Law of polygon of forces

22. Shock absorber is an example for

    1.   Compressive stress   2.   Tensile stress

    3.   Shear stress   4.   Shear strain

23. Factor of safety of a structure is

    1.   Within 2   2.   Equal to zero

    3.   Vary between 5 and 10   4.   More than 10

24. In case of liquids as the temperature increases, the viscosity of liquid decreases due to

    1.   Increase in the rate of diffusion of gases

    2.   Decrease in the rate of diffusion of gases

    3.   Increase in the potential energy of molecules

    4.   Increase in the kinetic energy of molecules

Space For Rough Work

25. One Pascal is equal to

    1. 10 dynes/cm^2

    2. 1 dyne / cm^2

    3. 100 dynes / cm^2

    4. 0.1 dyne / cm^2

26. To calm down turbulent sea, sailors use oil to

    1. Decrease surface tension

    2. Increase surface tension

    3. Decrease viscosity

    4. Increase cohesive force

27. The thrust on the bottom of the container having a base area of 20 m^2 filled with water to a height of 3 m is _____ (given g =10m/s^2)

    1. 6 x 10^5 N

    2. 6 x 10^4 N

    3. 6 x 10^3 N

    4. 6 x 10^2 N

28. Amount of heat required to raise the temperature of 1 kg of water through 1°C is

    1. One calorie

    2. One joule

    3. One kilo-calorie

    4. One kilojoule

29. Absolute scale of temperature has its zero at

    1. 0°C

    2. –100°C

    3. 273°C

    4. – 273°C

30. In case of an ideal gas, the value of pressure or volume co-efficient is

    1. $\dfrac{1}{273}$

    2. $-\dfrac{1}{273}$

    3. 273

    4. –273

31. The distance travelled by the disturbance per unit time in a given direction is

    1. Wave amplitude

    2. Wave velocity

    3. Wave frequency

    4. Wavelength

32. The speed of the transverse wave along the stretched string is given by

    1. $V=\sqrt{\dfrac{T}{m}}$

    2. $V=\sqrt{\dfrac{m}{T}}$

    3. $V=\sqrt{\dfrac{1}{T}}$

    4. $V=\dfrac{\sqrt{m}}{T}$

Space For Rough Work

33. Absorption co-efficient of sound wave is given by _____. Where E_m is energy absorbed by the given medium E_{ow} is the energy absorbed by open window.

   1. $a = \dfrac{E_m}{E_{ow}}$
   2. $a = \dfrac{E_{ow}}{E_m}$
   3. $a = E_m \times E_{ow}$
   4. $a = E_m + E_{ow}$

34. The rich quality of a musical note depends on
   1. Fundamental frequency
   2. Loudness
   3. Larger number of over tones
   4. Pitch

35. Waxing and waning are the characteristics of
   1. Periodic motion
   2. Oscillations
   3. Beats
   4. Frequency

36. Velocity of sound in air varies
   1. Inversely as the square root of the density of the medium
   2. Directly as the square root of the density of the medium
   3. Directly as the density of medium
   4. Inversely as the density of medium

37. The vibrations of a body of decreasing amplitude are called
   1. Undamped free vibrations
   2. Damped free vibrations
   3. Resonant vibrations
   4. Forced vibrations

38. Another name for field emission is
   1. Cold cathode emission
   2. Thermionic emission
   3. Photoelectric emission
   4. Secondary emission

39. In case of photoelectric emission, the rate of emission of electron is
   1. Independent of frequency of radiation
   2. Dependent on frequency of radiation
   3. Dependent on wavelength of incident radiation
   4. Independent of intensity of radiation

40. Emission of radiation from radioactive element is
   1. Slow
   2. Fast
   3. Spontaneous
   4. Very slow

Space For Rough Work

PART - B
APPLIED MATHEMATICS

41. $\int\limits_{-1}^{1}(2x+1)(5-x)dx$ is

1. 10
2. $\dfrac{26}{3}$
3. $\dfrac{-26}{3}$
4. $\dfrac{11}{3}$

42. $\int\limits_{0}^{\pi/4} tan^2x \ sec^2x \ dx$ is

1. $\dfrac{1}{3}$
2. $\dfrac{4}{3}$
3. $\dfrac{1}{2}$
4. $\dfrac{-1}{3}$

43. The RMS value of $y^2 = x^2 - 2x$ over the interval $[1, 3]$ is

1. $\sqrt{\dfrac{5}{3}}$
2. $\sqrt{\dfrac{2}{3}}$
3. $\dfrac{1}{3}$
4. $\dfrac{1}{\sqrt{3}}$

44. The differential equation of $y^3 = 5ax$ by eliminating arbitrary constant a is

1. $\dfrac{dy}{dx} - \dfrac{y}{3x} = 0$

2. $\dfrac{dy}{dx} + \dfrac{y}{3x} = 0$

3. $\dfrac{dy}{dx} - \dfrac{3y}{x} = 0$

4. $\dfrac{dy}{dx} - \dfrac{5y}{3x} = 0$

45. The integrating factor of the differential equation $x\dfrac{dy}{dx} - (1-x)y = x^3$ is

1. $\dfrac{e^x}{x}$
2. xe^x
3. $e^{\frac{x^2-2x}{2}}$
4. $e^{\frac{2x-x^2}{2}}$

Space For Rough Work

46. If $\begin{vmatrix} 2x+1 & -5x \\ 1 & 3 \end{vmatrix} = 0$, then x is

1. $\dfrac{3}{11}$ 　　　　2. $\dfrac{-3}{11}$ 　　　　3. $\dfrac{11}{3}$ 　　　　4. $-\dfrac{11}{3}$

47. For the simultaneous linear equations $2x+y+z=1$, $x+y+2z=0$ and $3x+2y-z=2$, the value of Δx is

1. 3 　　　　2. −11 　　　　3. −7 　　　　4. −3

48. If $A = \begin{bmatrix} 2 & 3 \\ 5 & 4 \end{bmatrix}$, $B = \begin{bmatrix} -1 & 7 \\ -4 & 1 \end{bmatrix}$ then $(A+B)^T$ is

1. $\begin{bmatrix} 1 & 1 \\ 10 & 5 \end{bmatrix}$ 　　2. $\begin{bmatrix} 1 & 10 \\ 1 & 5 \end{bmatrix}$ 　　3. $\begin{bmatrix} -1 & 10 \\ -1 & 5 \end{bmatrix}$ 　　4. $\begin{bmatrix} -1 & -1 \\ 10 & 5 \end{bmatrix}$

49. If $A = \begin{bmatrix} 1 & -3 \\ -5 & 7 \end{bmatrix}$, then adj A is

1. $\begin{bmatrix} 1 & -5 \\ -3 & 7 \end{bmatrix}$ 　　2. $\begin{bmatrix} 7 & -5 \\ -3 & 1 \end{bmatrix}$ 　　3. $\begin{bmatrix} -1 & -5 \\ -3 & -7 \end{bmatrix}$ 　　4. $\begin{bmatrix} 7 & 3 \\ 5 & 1 \end{bmatrix}$

50. The cofactor of O in $A = \begin{bmatrix} 3 & -2 & 5 \\ 1 & 6 & 0 \\ 2 & 7 & -4 \end{bmatrix}$ is

1. −25 　　　　2. 25 　　　　3. −17 　　　　4. 0

Space For Rough Work

51. If $\left(\sqrt{3}+1\right)^3 = 10+6\sqrt{3}$, then the value of $\left(\sqrt{3}+1\right)^3-\left(\sqrt{3}-1\right)^3$ is

1. $12\sqrt{3}$
2. 0
3. 20
4. $20+\sqrt{3}$

52. The middle term in the expansion of $\left(x^3+\dfrac{1}{x^2}\right)^6$

1. $10\,x^3$
2. $20\,x^3$
3. $\dfrac{20}{x^3}$
4. 20

53. If $\vec{a}=i+3j-2k$ and $\vec{b}=2i-j+3k$, then $\vec{a}\cdot\vec{b}$ is

1. -5
2. 11
3. 7
4. -7

54. The work done by the force $2i-j+6k$ when it displaces the particle from $(5, 3, -2)$ to $(7, -4, 8)$ is

1. 72
2. 48
3. -71
4. 71

55. The sine of the angle between the vectors $\vec{a}=i+j+k$ and $\vec{b}=2i-3j-4k$ is

1. $\sqrt{\dfrac{62}{87}}$
2. $\sqrt{\dfrac{87}{62}}$
3. $\dfrac{-5}{\sqrt{87}}$
4. $\sqrt{\dfrac{10}{63}}$

56. If $\cos\theta=\dfrac{5}{13}$ and θ is acute angle, then the value of $3\cos\theta-2\sin\theta$ is

1. $\dfrac{9}{13}$
2. 3
3. $\dfrac{-9}{13}$
4. -3

Space For Rough Work

57. If $x \sin 30° - Sec\ 30° \tan 30° = \tan^2 60°$, then the value of x is

1. $\dfrac{22}{3}$

2. $\dfrac{-22}{3}$

3. $\dfrac{11}{6}$

4. $\dfrac{3}{22}$

58. The value of $\sin 225° + \cos\left(-135°\right)$ is

1. $\sqrt{2}$

2. $-\sqrt{2}$

3. $\dfrac{1}{\sqrt{2}}$

4. $\dfrac{-1}{\sqrt{2}}$

59. The simplified value of $\dfrac{\sin\left(180°-A\right)\cot\left(90°-A\right)\cos\left(360°-A\right)}{\tan\left(180°+A\right)\tan\left(90°+A\right)\sin\left(-A\right)}$ is

1. $\sin A$

2. $-\sin A$

3. 1

4. $cosec\ A$

60. The simplified value of $\dfrac{\sin 2A}{1+\cos 2A}$ is

1. $2\tan A$

2. $\sin A$

3. $\cot A$

4. $\tan A$

61. If $\tan A = \dfrac{3}{4}$ and $\tan B = \dfrac{1}{7}$, then the value of (A+B) is

1. $\dfrac{\pi}{6}$

2. $\dfrac{25}{23}$

3. $\dfrac{\pi}{4}$

4. $\dfrac{23}{25}$

62. The value of $\cos 20° + \cos 100° + \cos 140°$ is

1. 0

2. $\cos 50°$

3. $\dfrac{1}{2}$

4. $\sin 50°$

Space For Rough Work

63. The value of $\cos^{-1}\left[\tan 135°\right]$ is

    1. $0°$ 2. $180°$ 3. $45°$ 4. $90°$

64. The centroid of the triangle formed by the vertices $(-10,\ 6)$, $(2, -2)$ and $(2, 5)$ is

    1. $(-2, 3)$ 2. $(2, 3)$ 3. $\left(-3, \dfrac{9}{2}\right)$ 4. $(-6, 9)$

65. A point $(-4, 3)$ divides the line AB externally in the ratio of $1 : 2$. Given $A(-1, -3)$ then the point B is

    1. $(6, -3)$ 2. $(-10, 15)$ 3. $(2, 9)$ 4. $(2, -9)$

66. The area of triangle formed by the point, $(3, -1)$, $(2, 0)$ and $(K, 4)$ is 10 Sq. Units, then the value of K is

    1. 12   2. 7   3. -22 4. 22

67. The slope of the line joining the points $(-2, 3)$ and $(4, -6)$ is

    1. $\dfrac{3}{2}$ 2. $\dfrac{-3}{2}$ 3. $\dfrac{2}{3}$ 4. $\dfrac{-2}{3}$

68. The equation of straight line passing through $(4, -1)$ and having equal intercepts is

    1. $x + y - 1 = 0$ 2. $x + y - 5 = 0$ 3. $x + y - 3 = 0$ 4. $x + y + 3 = 0$

69. The equation of the line passing through $(5, -2)$ and parallel to the line $3x + 2y + 7 = 0$ is

    1. $3x + 2y - 11 = 0$ 2. $3x - 2y + 11 = 0$

    3. $3x - 2y - 19 = 0$ 4. $2x - 3y - 16 = 0$

Space For Rough Work

70. The value of $\displaystyle \lim_{x \to -2} \frac{x+2}{x^5+32}$ is

   1. $\dfrac{1}{80}$
   2. 80
   3. $\dfrac{-1}{80}$
   4. -80

71. The value of $\displaystyle \lim_{x \to 0} \frac{2x - tan\,3x}{sin\,2x + 3x^2}$ is

   1. $\dfrac{-1}{5}$
   2. 0
   3. $\dfrac{1}{2}$
   4. $-\dfrac{1}{2}$

72. If $y = e^x log\,x$, then $\dfrac{dy}{dx}$ at $x = 1$ is

   1. e^x
   2. e
   3. 1
   4. 0

73. If $y = tan^{-1} \sqrt{\dfrac{1+cos\,x}{1-cos\,x}}$, then $\dfrac{dy}{dx}$ is

   1. 2
   2. -2
   3. $\dfrac{-1}{2}$
   4. $\dfrac{1}{2}$

74. If $\sqrt{x^3} + \sqrt{y^3} = \sqrt{a^3}$, then $\dfrac{dy}{dx}$ is

   1. $\sqrt{\dfrac{x}{y}}$
   2. $-\sqrt{\dfrac{x}{y}}$
   3. $\sqrt{\dfrac{y}{x}}$
   4. $-\sqrt{\dfrac{y}{x}}$

75. The second derivative of $y = log(sec\,x - tan\,x)$ is

   1. $-sec\,x\,tan\,x$
   2. $sec\,x\,tan\,x$
   3. $-sec\,x$
   4. $sec\,x$

Space For Rough Work

76. Water flows into the cylindrical tank of radius 7mt at the rate of 294 cubic mt/sec, then the rate of height of water rising in the tank is

    1. $\dfrac{\pi}{6}\ mt\ /\ sec$

    2. $\dfrac{6}{\pi}\ mt\ /\ sec$

    3. $14406\ mt\ /\ sec$

    4. $\dfrac{21}{\pi}\ mt\ /\ sec$

77. The maximum value of the function $y = x + \dfrac{1}{x}$ is

    1. 0
    2. 2
    3. 1
    4. −2

78. The value of $\int tan^2 x\ dx$ is

    1. $tan\ x - x + c$
    2. $x - tan\ x + c$
    3. $\left(sec^2 x\right)^2 + c$
    4. $-cot\ x - x + c$

79. The value of $\int \dfrac{cos\ x}{1 + sin\ x}\ dx$ is

    1. $log\left(sec^2 x + sec\ x\ tan\ x\right) + c$

    2. $log\left(sin\ x\right) + c$

    3. $log\left(1 + sin\ x\right) + c$

    4. $\dfrac{\left(1 + sin\ x\right)^2}{2} + c$

80. $\int sin^2 x\ sin\ 2x\ dx$ is

    1. $\dfrac{sin^2 x}{2} + c$
    2. $\dfrac{sin^4 x}{2} + c$
    3. $sin^2 x + c$
    4. $\dfrac{-sin^4 x}{2} + c$

Space For Rough Work

PART - C
MECHANICAL ENGINEERING

81. In a four stroke cycle petrol engine, during suction stroke

1. Only air is sucked in
2. Only petrol is sucked in
3. Mixture of petrol and air is Sucked in
4. None of the above

82. Which of the following part **is** related to CI engine

1. Carburettor
2. Spark plug
3. Injector
4. Distributor

83. In four stroke, four cylinder CI Engine the number of spark plugs used are

1. Four
2. Eight
3. One
4. Zero

84. In an I.C. Engine, the process of removing burnt gasses from combustion chamber of the engine cylinder is known as

1. Detonation
2. Super Charging
3. Scavenging
4. Polymerisation

85. The object of supercharging the engine is to

1. To reduce the mass of the engine per brake power
2. To reduce space occupied by the engine
3. To increase the power output of an engine
4. All of the above

86. The ratio of work done per cycle to the stroke volume of the compressor is known as

1. Compressor Capacity
2. Compression ratio
3. Compressor efficiency
4. Mean effective pressure

Space For Rough Work

87. Piston and the cylinder of an I C Engine Constitute

    1. A turning Pair   2. A Sliding Pair

    3. A Rolling Pair   4. A Serew Pair

88. The relation between number of pairs (P) and number of links (I) in a Kinematic chain is given by

    1. $l = 2p - 4$ 2. $l = 4p - 2$ 3. $l = 3p - 4$ 4. $l = 4p - 3$

89. The Mechanism which consists of two turning pairs and two sliding pairs known as

    1. Crank and slotted lever mechanism

    2. Whit worth Quick return motion Mechanism

    3. Oscillating Cylinder engine

    4. Elliptical trammel

90. The relative motion between belt and pulley caused by expansion and contraction of belt passing from one side to another is called

    1. Slip   2. Creep

    3. Centrifugal Tension   4. Initial Tension

91. When 'T' is the maximum tension in the belt and 'm' is the mass of the belt per unit length, then velocity of the belt for maximum power transmission is

    1. $\sqrt{\dfrac{T}{m}}$ 2. $\sqrt{\dfrac{T}{2m}}$ 3. $\sqrt{\dfrac{T}{3m}}$ 4. $\sqrt{\dfrac{T}{4m}}$

92. _____ is used to transmit Exact Velocity ratio

    1. Flat belt drive   2. Rope drive   3. V-belt drive   4. Gear drive

93. The product of circular pitch and diametral pitch of a gear tooth is

    1. π 2. $\pi/2$ 3. 2π 4. $\pi/3$

Space For Rough Work

A-4   15   M E

94. The radial distance from top of the tooth to the bottom of the tooth in a meshing gear is called

   1. Addendum   2. Dedendum   3. Clearance   4. Total Depth

95. If M_1 and M_2 are the two masses rotating in the same plane with r_1 and r_2 being their radii of rotation respectively, then condition for balancing is

   1. $m_1 r_2 = m_2 r_1$ 2. $m_1 r_1 = m_2 r_2$

   3. $(m_1 + r_2) = (m_2 + r_1)$ 4. $(m_1 + r_1) = (m_2 + r_2)$

96. Which is the type of contact in case of a cam with roller follower?

   1. line Contact   2. Point Contact

   3. Surface Contact   4. No Contact

97. For static balancing of a shaft,

   1. The net dynamic moment on the shaft should be zero

   2. The net dynamic force on the shaft should be zero

   3. The net couple on the shaft should be Zero

   4. None of the above

98. The follower motion is parallel to the cam axis in case of

   1. Radial cam with knife edge follower

   2. Radial Cam with Roller Follower

   3. Cylindrical Cam with Oscillating Follower

   4. Cylindrical Cam with Reciprocating Follower

99. Example of axial brake is

   1. Block brake   2. Shoe brake

   3. Disc brake   4. Band brake

100. _____ falls into the category of Absorption dynamometer

   1. Rope brake dynamometer   2. Epicy clic train dynamometer

   3. Belt transmission dynamometer   4. Torsion dynamometer

Space For Rough Work

101. In case of frictional cluctches,the theory that is normally considered, unless otherwise stated is

    1. Theory of uniform pressure
    2. Theory of uniform wear
    3. Theory of uniform force
    4. Theory of uniform moments

102. The relation between Young's Modulus (E) and Bulk Modulus (K) is given by

    1. $E = 3K\left(1+\dfrac{2}{m}\right)$
    2. $E = 3K\left(1-\dfrac{2}{m}\right)$
    3. $E = 2K\left(1+\dfrac{2}{m}\right)$
    4. $E = 2K\left(1-\dfrac{2}{m}\right)$

103. When a bar is cooled from $100^{\circ}C$ to $50^{\circ}C$ and if is not allowed to contract, the stress induced is

    1. Tensile stress
    2. Compressive stress
    3. Shear Stress
    4. No stress

104. Hookes Law holds good within

    1. Plastic limit
    2. Breaking Limit
    3. Elastic Limit
    4. None of the above

105. The Ultimate Compressive strength of a ductile material is _____ its Ultimate tensile strength

    1. More than
    2. Equal to
    3. Less than
    4. None of the above

106. The value of Poisson's ratio for mild steel is around

    1. 0.25
    2. 0.5
    3. 0.01
    4. 0.9

107. When the Youngs modulus of a material is twice that of rigidity modulus, then bulk modulus is (C is rigidity modulus)

    1. $\dfrac{3C}{2}$
    2. $\dfrac{4C}{3}$
    3. $\dfrac{1C}{2}$
    4. $\dfrac{2C}{3}$

Space For Rough Work

108. The unit of stress is same as that of

    1.   Youngs Modulus & strain   2.   Youngs modulus & pressure

    3.   Youngs modulus & force   4.   Pressure & Force

109. The Value of 1 GPa is equal to

    1. $1 KN/m^2$ 2. $1 KN/cm^2$ 3. $1 KN/mm^2$ 4. $10 KN/mm^2$

110. A beam which is fixed at its two ends is called

    1.   Built –in beam   2.   Simply supported beam

    3.   Continnous beam   4.   Over hanging beam

111. The maximum Value of Bending moment for a cantilever of length L and Laoded with, an UDL of W /unit length is

    1. $WL^2/8$ 2. $WL/8$ 3. $WL/2$ 4. $WL^2/2$

112. Thw shear force for a simply supported beam loaded with UDL

    1.   Varies linearly   2.   Varies parabolically

    3.   Varies inversely   4.   remains constant

113. The load which is constant for every unit length of the beam is called

    1.   Uniformly Varying Load   2.   Uniformly distributed Load

    3.   Point Load   4.   Concentrated Load

114. The Shear force diagram for a cantilever with point load at its free end is

    1.   A Triangle   2.   A parallelogram

    3.   A Curve   4.   A Rectangle

115. The Bending moment is called Sagging Bending moment, When _____ is created on the top face of the beam due to bending

    1.   Concavity   2.   Convexity

    3.   Both (1) and (2)   4.   None of the above

Space For Rough Work

116. The Shear force at the free end of a cantilever loaded with UDL is _____

    1.   Maximum
                  2.   50% of Maximum

    3.   Zero
                  4.   Both (1) and (2)

117. The charge of the Blast furnace consists of

    1.   Calcined ore (8 Parts), coke (4 Parts) and lime stone (1 Part)

    2.   Calcined ore (4Parts), coke (1 Part) and lime stone (8 Parts)

    3.   Calcined ore (1 Part), coke (8 Parts) and lime stone (4Parts)

    4.   Calcined ore, coke and lime stone all in equal parts

118. The creep is that property of a material by virtue of which

    1.   It fails at a stress below the yield point stress, when the material is subjected to repeated stress.

    2.   It undergoes a slow and permanent deformation at constant stress

    3.   It will fracture or break without any appreciable deformation

    4.   It stores energy and resists shock and impact loads

119. 18/8 steel contains

    1.   18 percent nickel and 08% chromium

    2.   18 percent chromium and 08% Nickel

    3.   18 percent Nickel and 18 % chromium

    4.   08 percent Nickel and 08% chromium

120. The steel widely used for motor car crankshaft is

    1.   Nickel steel
                  2.   Chrome steel

    3.   Nickel-Chrome steel
                  4.   Silicon steel

121. The process of adding carbon and nitrogen to the surface layer of steel to increase hardness is

    1.   Carburising
                  2.   Cyaniding

    3.   Flame hardening
                  4.   Induction hardening

Space For Rough Work

122. The red flame during the operation of a Bessemer converter indicates

    1. Air is burning out silicon and manganese

    2. Silicon and manganese has burned out and carbon has started oxidizing

    3. Converter must be tilted to remove the contents of the converter

    4. Red flame does not occur during the operation of a Bessemer converter

123. Heat treatment of steel is done primarly to change the

    1. Physical property
    2. Chemical composition
    3. Corrosion property
    4. Mechanical property

124. The Specific Gravity and Melting point of Aluminium

    1. 8.9 and 1083° C
    2. 2.7 and 658°C
    3. 11.36 and 326°C
    4. 7.1 and 420°C

125. The portion of the blast furnace above its widest cross section is called

    1. Hearth
    2. Stack
    3. Bosh
    4. Throat

126. A steel with 0.8 % Carbon is known as

    1. Eutectoid steel
    2. Hyper Eutectoid steel
    3. Hypo Eutectoid steel
    4. None of these

127. The length of the side of a square is 300mm its length in isometric projection is

    1. 244.8mm
    2. 144.8mm
    3. 300mm
    4. 344.8mm

128. A line 75 mm long lying in HP and inclined at 50° to VP. The end nearer to VP is 20 mm infront of it. Its front view is

    1. Straight line of reduced length on XY line

    2. Straight line of reduced length 20 mm above XY line

    3. Inclined line with one end 20 mm above XY line

    4. Inclined line with one end 20 mm below XY line

Space For Rough Work

129. If a point is in the HP and 20 mm behind the VP, its front view lies

1. 20 mm above XY line
2. 20 mm below XY line
3. on XY line
4. 10 mm above XY line

130. Octahedron has

1. Four equilateral triangular faces
2. Eight equal equilateral triangular faces
3. Four equal square faces
4. Eight equal square faces

131. A solid generated by the revolution of a rectangle about one of its sides which remains fixed is called

1. Cylinder
2. Cone
3. Sphere
4. None of these

132. Uses of 'T' Square, set square, scale and Protractor are combined in the

1. Divider
2. Drafting Machine
3. Compass
4. None of the above

133. The surface area of A0 Size Drawing sheet is

1. $2m^2$
2. $3m^2$
3. $4m^2$
4. $1m^2$

134. The horizontal line shown in surface finish symbol indicates

1. Machining
2. No material is removed
3. Sampling length
4. Roughness Value N12

135. If the surface of a triangular lamina is parallel to VP and perpendicular to HP, its front view is a

1. Triangle above XY Line
2. Line above and paralle to XY line
3. Line below and Parallel to XY Line
4. Traingle beloiw XY Line

Space For Rough Work

136. Leader Lines are shown by
  1. Continuous thick line
  2. Chain thin Line
  3. Continuous thin line
  4. Dashed thick line

137. If the inspection of products is carried out in a room where all the tools required for inspection is there is called
  1. Centralized Inspection
  2. Decentralized Inspection
  3. Floor Inspection
  4. Shop Inspection

138. The selection of path over which each material should flow during production activity is
  1. Dispatching
  2. Productivity
  3. Inventory
  4. Routing

139. The card authorizes the Work Center to take up production
  1. Bin Card
  2. Labor card
  3. Job card
  4. Inspection

140. A type of Production generally adopted in medium size enterprise is
  1. Job production
  2. Mass production
  3. Batch production
  4. Unit production

141. A process of getting members acquainted with one another and starts feeling themselves as part of a group is called as.
  1. Storming
  2. Forming
  3. Adjourning
  4. Performing

142. ISO – 9000 refers to
  1. Vocabulary
  2. Guidelines for selection and use of standards on quality systems
  3. Model for quality assurance in design / development, production, installation and servicing
  4. Model for quality assurance in production and installation

143. Safety in industry helps in
  1. Increase rate of production
  2. Reduction in production cost
  3. Reducing damage to equipment
  4. All of the above

Space For Rough Work

144. PPC departments normally do not consist of
    1. Planning cell
    2. Control Cell
    3. Inventory Section
    4. Printing Section

145. TQM Focusses on
    1. Customer, employee
    2. Employer, employee
    3. Employer, Quality
    4. None of the above

146. SDE analysis is based on
    1. Consumption Values
    2. Criticality of items
    3. Availability of each item
    4. None of the above

147. Vital commodities such as food grains and oils are transported by
    1. Road
    2. Rail
    3. Air
    4. Water

148. Effective TQM results in
    1. Customer Satisfaction
    2. Increased productivity
    3. Less Waste
    4. All of the above

149. Age, Experience, physical condition and Fatigue are
    1. Factors Responsible for accidents
    2. Factors required for recruitment
    3. Factors required for giving promotion to an employee
    4. None of the above

150. Inter-Workstation, Inter-facility and inter-Corporate logistic is called
    1. Workplace logistics
    2. Facility logistics
    3. Corporate logistics
    4. Supply Chain logistics

151. Bin Card Shows
    1. The materials received
    2. The materials issued
    3. The materials left in balance
    4. All the above

Space For Rough Work

152. A universal dividing head is used to perform a milling operation by

   1. Plain Indexing
   2. Direct indexing
   3. Differential indexing
   4. Compound Indexing

153. The width of cutting edge of a parting off tool varies from

   1. 3 to 12 mm
   2. 5 to 20 mm
   3. 8 to 30 mm
   4. 15 to 40 mm

154. The lead screw of a lathe has

   1. Single start thread
   2. Double start thread
   3. Multi start thread
   4. None of the above

155. Grinding operation is used for which of the following ?

   1. Finishing
   2. Shaping
   3. Forming
   4. Dressing

156. The code M08 stands for

   1. Tool change
   2. Coolant on
   3. Coolant off
   4. Program Start

157. A Control system features used for generating circular profiles in CNC machines is called

   1. Circular Interpolation
   2. Linear Interpolation
   3. Cutter Compensation
   4. None of the above

158. The Voltage range in case of Electro Discharge Machining is

   1. 25 V to 380V
   2. 50 V to 380 V
   3. 75 V to 380 V
   4. 100 V to 380 V

159. In abrasive jet-Machining process, inside diameter of nozzle through which abrasive particle flow is about

   1. 10mm
   2. 5 mm
   3. 1 mm
   4. 0.04mm

Space For Rough Work

160. In Ultrasonic Machining Process, the water slurry concentrations vary between

   1. 50 % to 60% by Volume
   2. 20% to 60% by Volume
   3. 30% to 80% by Volume
   4. 40% to 80 % by Volume

161. LBM stands for

   1. Laser best method
   2. Light beam method
   3. Laser beam machining
   4. Light beam machining

162. The Spark gap in Electro discharge Machining process normally varies from

   1. 0.005 mm to 0.50 mm
   2. 0.05 mm to 0.005 mm
   3. 0.01 mm to 0.001 mm
   4. 0.001 mm to 0.1 mm

163. Which of the following joining methods finds extensive applications in electronic industry ?

   1. Gas Welding
   2. Arc Welding
   3. Resistance Welding
   4. Soldering

164. A taper provided on the pattern for its easy and clean withdrawal from the mould is

   1. Machining allowance
   2. Draft allowance
   3. Shrinkage allowance
   4. Distortion allowance

165. The process of pushing the heated billet or slug of metal through an orifice provided into a die and forming an elongated part of uniform cross - section is known as

   1. Extrusion
   2. Forging
   3. Casting
   4. Piercing

166. Metal Patterns are used for

   1. Small Castings
   2. Large Castings
   3. Complicated Castings
   4. Large Scale production of Castings

Space For Rough Work

167. The adhesiveness is the property of a sand due to which

   1. It evolves a great amount of steam and other gases

   2. The Sand grains stick together

   3. It clings to the sides of a moulding box

   4. None of the above

168. Cast iron and steel pipes are produced by

   1. Slush Casting
   2. Investment Casting
   3. True Centrifugal Casting
   4. Die Casting

169. In Ultrasonic Machining the tip of the tool vibrates at a frequency of

   1. 10 KHz
   2. 20KHz
   3. 30 KHz
   4. 40 KHz

170. Which of the following belongs to resistance welding ?

   1. Spot welding
   2. Projection welding
   3. Seam welding
   4. All the above

171. Which of the following welding Processes uses non consumable electrodes?

   1. TIG welding
   2. MIG welding
   3. Manual arc welding
   4. Submerged arc welding

172. When two bodies are in thermal equilibrium with a third body they are also in thermal equilibrium with each other. This statement is called

   1. Zeroth Law of Thermodynamics
   2. Firist Law of Thermodynamics
   3. Second Law of Thermodynomics
   4. Kelvin Plank's Law

173. A system changes its state from one equilibrium state to another equilibrium state then the path followed by successive states is called

   1. Thermodynamic system
   2. Thermodynamic process
   3. Thermodynamic Cycle
   4. Thermodynamic Law

Space For Rough Work

174. First Law of Thermodynamics deals with conservation of

    1.   Mass   2. Momentum   3. Energy   4. Inertia

175. Joules Law states that the specific internal energy of a gas depends only on

    1.   The pressure of the gas   2.   The volume of the gas

    3.   The tempetature of the **gas**   4.   None of the **above**

176. Adiabatic process is one in which

    1.   Temperature is constant   2. Volume is Constant

    3.   Enthalpy is constant   4. Entropy is Constant

177. What type of compressor is used for gas turbines ?

    1.   Sliding Vane

    2.   Centrifugal

    3.   Axial Flow

    4.   None of the above

178. The thermal efficiency of a petrol engine as compared to diesel engine is

    1.   Lower   2. Higher

    3.   Same for same output   4. Same for same speed

179. Thermal efficiency of IC Engine on weak mixture is

    1.   Lower   2. Higher

    3.   Unaffected   4. Unpredictable

180. Compression ratio for a diesel engine as Compared to petrol engine is

    1.   Higher   2. Lower

    3.   Same   4. None of the above

Space For Rough Work