Total MCQs = 200

NUST Past Paper
Computer

Time allotted = 3 hours

1. $\frac{dy}{dx}$ + 2x tan (x-y) = 1 ⇒ sin(x-y) =

   A. Ae^{-x2}
   B. Ae^{2x}
   C. Ae^{x2}
   D. Ae^{-2x}

2. The center of the circle $5x^2 + 5y^2 + 24x + 36y + 10 = 0$ is

   A. $[\frac{12}{5}.\frac{18}{5}]$
   B. $[-\frac{12}{5}.\frac{18}{5}]$
   C. $[\frac{12}{5}.-\frac{18}{5}]$
   D. $[-\frac{12}{5}.-\frac{18}{5}]$

3. If R → R^2 and g R^+ →R are such that

   G (f(x)) = |sin x| and f (g(x)) = $(\sin\sqrt{x})^2$, then a possible choice for f and b is

   A. $F(x) = x^2$, $g(x) = \sin\sqrt{x}$
   B. F(x) = sinx, g(x) = $|x\quad|$
   C. f(x) = sin x, g(x) = $\sqrt{x}$
   D. f(g(x)) = $(\sin\sqrt{x})^2$

4. If z → is f: z → is defined by f(x) = $\begin{cases}\frac{x}{2} if\ x\ is\ even\\ 0\ if\ x\ is\ odd\end{cases}$ then f is

   A. onto but not one to one
   B. one to one but not onto
   C. one to one and onto
   D. neither one to one nor onto

5. An equation of the form $Ax^2 + By^2 + Cx + Fy + G = 0$ represents a circle if

   A. A = 0 or B = 0
   B. A= B = 0

C. $A \neq B$
D. None of these

6. A regular polygon of n sides has 170 diagonals, then n =

A. 12
B. 17
C. 20
D. 25

7. A committee of 12 members is to be formed from 9 women and 8 men. The number of committees in which the women are in majority is

A. 2720
B. 2702
C. 2270
D. 2278

8. Circles $(x-7)^2 + (y-9)^2 = 3$ is not concentric to the circle.

A. $(x-7)^2 + (y-9)^2 = 3$
B. $(x+7)^2 + (y+9)^2 = \sqrt{3}$
C. $(x+7)^2 + (y+9)^2 = 3\sqrt{3}$
D. $(x+7)^2 + (y+9)^2 = 9$

9. $\sum_{k=1}^{x} \sum_{r=0}^{k} 1/3k$ (^kC_r) =

A. 13
B. 2/3
C. 1
D. 2

10. Equations of circle with center (h.k) and radius r is

A. $(x-h)^2 + (y+k)^2 = r^2$
B. $(x-h)^2 + (y-k)^2 = r^2$
C. $(x+h)^2 + (y+k)^2 = r^2$
D. $(x-h)^2 + (y-k)^2 = r^2$

11. $\frac{1}{x(x+1)(x+2)\ldots(x+n)} = \frac{A_0}{x} + \frac{A}{x+1} + \ldots\ldots\frac{A_n}{x=n}$, $0 \leq r \leq \Rightarrow A =$

A. $(-1)^r \frac{1r!}{(n-r)!}$

B. $(-1)^r \frac{1}{r!(n-r)!}$

C. $\frac{1}{r!(n-r)!}$

D. $\frac{r}{(n-r)!}$

12. $1 + 1/3.2^2 + 1/5.2^4 + 1/7.2^0 + \ldots\ldots\ldots =$

A. Log^2_e
B. Log^3_e
C. Log^4_e
D. Log^5_e

13. Circle is special use of

A. Parabola

B. Hyperbola

C. Ellipse

D. none

14. The product of real of the equation

$|x|^{6/5} - 26 |^{3/5} - 27 = 0$

A. -3^{10}
B. -3^{12}
C. $-3^{12/5}$
D. $-3^{21/5}$

15. If a, b, y are the roots of the equation $x+^3 + px^2 + qx + r = 0$ then the coefficient of x in the cubic equation whose roots are a (B + y), B, (y + a) and y (a + B) is

A. 2_q
B. $Q^2 + pr$
C. $P^2 - qr$
D. $r(pq - r)$

16. The extremities of the transverse axis of hyperbola are called its

A. foci
B. vertices
C. axis
D. none

17. $A = \begin{bmatrix} i & -i \\ -i & i \end{bmatrix}$, $B = \begin{bmatrix} i & -i \\ -i & i \end{bmatrix} \Rightarrow A^8$

A. 4B
B. 8B
C. 64B
D. 128B

18. Parametric equations of circle $x^2 + y^2 = r^+$ are

A. X = r cos θ, y = sin θ
B. X = r sec θ, y = r tan θ
C. X = r cosh θ , ysin θ
D. X = r cos θ , y= r sec θ

19. Equation of circle with center at origin and radius $\sqrt{5}$ is

A. $X^2 + y^2 = \sqrt{5}$

B. $X^2 + y^2 = 5$

C. $X^2 + y^2 = 25$

D. $(x - e)^2 + y^2 = 5$

20. If a, b, c, d ϵ R are such that $a^2 + b^2 = 4$ and $c^2 + d^2 = 2$ and if $(a+ib)^2 = (c+id)^2$ (x+iy) then $x^2 + y^2 =$

A. 4

B. 3

C. 2

D. 1

21. If z is complex number such that

$|z - \frac{4}{z}| = 2$, then the greatest value of $|z|$ is

A. $1+\sqrt{2}$

B. $\sqrt{2}$

C. $\sqrt{23}$

D. $1+\sqrt{5}$

22. If a is a non-real root of the equation $x^6 - 1 = 0$ then $\frac{a2+a3+x4+a5}{a+1}$

A. a
B. 1
C. 0
D. -1

23. The minimum value of $27\tan^2\theta + 3\cot^2\theta$ is

A. 15
B. 18
C. 24
D. 30

24. Cos 36^0 – cos 72^0 =

A. 1
B. 1/2
C. 1/4
D. 1/8

25. Tan x + tan (x + $\pi/3$) + tan (x + $2\pi/3$) = 3 $\Rightarrow$ tan $3x$ =

A. 3
B. 2
C. 1
D. 0

26. 3sin x + 4 cos x = 5 $\Rightarrow$ 6 tan x/2 -9 $\tan^2$ x/2 =

A. 0
B. 1
C. 3
D. 4

27. If ½ $\leq$ x $\leq$ 1 $then\ cos - 1$ ($\frac{x}{2} + \frac{1}{2}\sqrt{3-3x^2}$) =

A. $\frac{\pi}{6}$
B. $\frac{\pi}{3}$
C. π
D. 0

28. If a, b, c form a geometric

Progress with common ratio r, then the sum of the ordinates of the points of intersection of the line ax + $2y^2$ = 0 is

A. -r^2/2
B. -r/2
C. r/2
D. r

29. The point (3.2) undergoes the following three transformations in the order given reflection about the line y = x translation by the distance 1 unit in the positive direction of x-axis rotation by an angle $\frac{\pi}{4}$about the origin in the anticlockwise direction.

Then the final position of the point is

A. (-$\sqrt{18}$, $\sqrt{18}$)

B. (-2, 3)
C. $(0\sqrt{18})$
D. $3\sqrt{2}$

30. If x is a poission variate such that a = p(x=1) = p(x=2) then p(x = 4) =

A. 2a
B. a/3
C. ae^{-2}
D. ae^{2}

31. Suppose x follows binomial distribution with parameters n and p where $0< p < 1$. If $\frac{p(x=r)}{p(x=n-r)}$ is independent of n for every r, then p =

A. 1/2
B. 1/3
C. 1/4
D. 1/8

32. In an entrance test three are multiple choice questions. There are four possible answers to each questions, or which one is correct. The probability that a student knows the answer to a question is 9/10. If he gets the correct answer to a question, then the probability that he was guessing is

A. 37/40
B. 1/37
C. 36/37
D. 1/8

33. There are four machines and it is known that exactly two of them are faulty. They are tested on by one, in a random order till both the faulty machines are identified. Then the probability that only two tests are needed is

A. 1/3
B. 1/6
C. 1/2
D. 1/4

34. A fair coin is tossed 100 times. The probability of getting tails an odd number of times is

A. 1/2

B. 1/4
C. 1/8
D. 3/8

35. The radius of the circle

$X^2 + y^2$ 2gx + 2 fy + c = 0 is

A. $\sqrt{g^2 + f^2 + c}$
B. $\sqrt{g^2 - f^2 - c}$
C. $\sqrt{g^2 + f^2 - c}$
D. $g^2 + f^2 - c$

36. Let a, b and c be three non-coplanar vectors and let p, q and r be the vectors defined by

P = $\frac{b \times c}{[abc]}$, q = $\frac{c \times a}{[abc]}$, r = $\frac{a \times b}{[abc]}$, then (a +b) , p(b + c) , q(c + a) r =

A. 0
B. 1
C. 2
D. 3

37. Let

a = i + 2j + k, b = I - j + k, c = I j – k.

A vector in the plane of a and b has projection $1/\sqrt{3}$ on c. then, one such vector is

A. 4i + j – 4k
B. 3i + j – ek
C. 4i – j + 4k
D. 2i + j – 2k

38. The point if intersection of the lines

l_1: r (t) = (I – 6j + 2k) +1 (I + 2j + k)

l_2: R (u) = (4j + k) + u (2i + j 2k) is

A. (4,4,5)

B. (6,4,7)
C. (8,8,9)
D. (10,12,11)

39. The vectors AB = 3i – 2j + 2k and BC = I – 2k

Are the adjacent sides of a parallelogram? The angle between its diagonals is

A. $\frac{\pi}{2}$
B. $\frac{\pi}{3}$ or $\frac{2\pi}{3}$
C. $\frac{3\pi}{4}$ or $\frac{\pi}{4}$
D. $\frac{5\pi}{6}$ or $\frac{\pi}{6}$

40. If P^{th} ,q^{th}, r^{th} terms of a geometric progression are the positive numbers a,b,c respectively, then the angle between the vectors

$(\log a^2)$ I + $(\log b^2)$ j + $(\log c^2)$ k and (q-r) I + (r-p) j + (p-q) k is

A. $\frac{\pi}{3}$
B. $\frac{\pi}{2}$
C. $\text{Sin}^{-1}\frac{1}{\sqrt{a2}+b2+c2}$
D.
E. $\frac{\pi}{4}$

41. If a,b,y are length of the altitudes of a triangle ABC with area Δ , then

Δ^2/R^2 ($1/a^2 + 1/b^2 + 1/y^2$) =

A. Sin^2 A + $\sin^2$ B + $\sin^2$ C
B. Cos^2 A + $\cos^2$ B + $\cos^2$ C
C. Tan^2 A + $\tan^2$ + B + $\tan^2$ C
D. Cot^2 A + $\cot^2$ B + $\cot^2$ C

42. In an acute-angled triangle, cot B cot C + cot A cot C + cot A cot B =

A. -1
B. 0
C. 1
D. 2

43. X= log (1/y + $\sqrt{1} + 1/y2$) ⇒ y =

A. Tanhx
B. Cothx
C. Sechx
D. Cosechx

44. The center of the circle

$X^2 + Y^2 + 2gx + c = 0$

A. (g , f)
B. (f , g)
C. (-f , -g)
D. (-g , -f)

45. The equation $x^2 – 5xy + py^2$ 3x – 8y + 2 = 0 represents a pair of straight lines. If q is the angle between them, then sin q =

A. $1/\sqrt{50}$
B. 1/7
C. 1/5
D. $1/\sqrt{10}$

46. The equation of the pair of lines passing through the origin whose sun and product of slopes are respectively the arithmetic mean and geometric mean of 4 and 9 is

A. $12x^2 – 13xy + 2y^2 = 0$
B. $12x^2 + 13xy + 2y^2 = 0$
C. $12x^2 – 15xy + 2y^2 = 0$
D. $12x^2 + 15xy - 2y^2 = 0$

47. If the point (1, 2) and (3, 4) lie on the same side of the straight line 3x – 5y +a = 0 then a lies in the set

A. [7,11]
B. R - [7,11]
C. [7 , y]
D. [-y , 11]

48. If p and q are the perpendicular distances from the origin to the straight lines

Xsec q – ycos ecq + ysin q = acos2q, then

A. $4p^2 + q^2 = a^2$
B. $p^2 + q^2 = a^2$
C. $p^2 + 2q^2 = a^2$
D. $4p^2 + q^2 = 2a^2$

49. Point (x_1,y_1) lies inside the circle $x^2 + y^2 + 2gx + 2fy + c = 0$, if

A. $X_1^2 + y_1^2 + 2gx_1 + 2fy_1 + c < 0$
B. $X_1^2 + y_1^2 + 2gx_1 + 2fy_1 + c = 0$
C. $X_1^2 + y_1^2 + 2gx_1 + 2fy_1 + c > 0$
D. $X_1^2 + y_1^2 = 0$

50. The random variable takes the values 1, 2, 3……, m. if P(X = n) = 1/m to each n, then the variance of X is

A. $\frac{(m+1)(2m+1)}{6}$
B. $\frac{m2}{12}$
C. $\frac{m+1}{12}$
D. $\frac{m2+1}{12}$

51. A bag contains 2n + 1 coins. It is known that n of these coins have a head on both sides, whereas the remaining n + 1 coins are fair. A coin is picked up at random from the bag and tossed. If the probability that the toss results in a head is 31/24, then n =

A. 10
B. 11
C. 12
D. 13

52. Two fair dice are rolled. The probability of the sum of digits on their faces to be greater than or equal to 10 is

A. 1/5
B. 1/4
C. 1/8
D. 1/6

53. Two numbers are chosen at random from {1, 2, 3, 4, 5, 6, 7, and 8} at a time. The probability that smaller of the two numbers is less than 4 is

A. 7/14
B. 8/14
C. 9/14
D. 10/14

54. If a and b are two non-zero perpendicular vector then a vector y satisfying equations a× y = c (c scalar and a^1 × y = b is

A. | a^2 | (ca – (ab))
B. | a^2 | (ca + (ab))
C. | $1/a^2$ | (ca – (ab))
D. | $1/a^2$ | (ca + (ab))

55. The length of the diameter of the circle represented by the equation $2x^2 + 2y^2 – 8 = 0$, is

A. 8
B. 4
C. 2
D. 16

56. The shortest distance between lines r = 3i + 5j + 7k + l (i+2j+ k

And r = I – j + k+ m (7i + 6j + k)

A. $16/5\sqrt{5}$
B. $26/5\sqrt{5}$
C. $36/5\sqrt{5}$
D. $5\ \frac{46}{\sqrt{5}}$

57. A 0, b 0, c 0, a b =0, b c =0 Ø a c =

A. B
B. A
C. 0
D. I+j+k

58. P, Q, R and S are four pints with the positions vectors

-3i+4j+3k respectively. Then the line PQ meets the line RQ at the pint.

A. 3i+4j+3k
B. -3i+4j+3k
C. -i+4j+k
D. I+j+k

59. The circumstance of the circle represented by

$X^2+2x+1+y^2+2y+1 = 25$ is

A. 2π
B. $25\ \pi$
C. $10\ \pi$
D. $5\ \pi$

60. A person observes the top of a tower from a point A on the ground. The elevation of the tower from this point is 60^0. He moves 60^0 m in the direction perpendicular to the line joining A and base of the tower. The angle of elevation of the tower from this point is 45^{0+}. Then the height of the tower (in meters) is

A. $60\ \frac{\sqrt{3}}{2}$
B. $60\ \sqrt{2}$
C. $60\ \sqrt{3}$
D. $60\ \frac{\sqrt{2}}{3}$

61. If in D ABC, $\frac{1}{a+b}.\ \frac{1}{b+c} = \frac{3}{a+b+}$ then the angle C =

A. 30^0
B. 45^0
C. 60^0
D. 90^0

62. In any triangle ABC, $r_1r_2+ r_2r_3+ r_3r_1$ =

A. D^2/r^2
B. D/r
C. D^2/r
D. D^2

63. Sin q + cos q = $\sin^3 q + \cos^3 q = q \phi$ p $(p^2 - 3)$ =

A. Q
B. 2q
C. -q
D. -2q

64. If $f(x) = (p-x^n)^{1/n}$, p>0 and n is a positive integer, then f(f(x)) =

A. X
B. x^n
C. $p^{1/n}$
D. p^{-n}

65. 10 men and 6 women are to be seated in a row so that no two women sit together. The number of ways they can be seated is:

A. 11! 10!
B. 11! /6! 5!
C. 10! 9! /5!
D. 11! 10! /5!

66. If a point P is outside the circle then from this point we can draw

A. One tangent to the circle
B. Two tangent to the circle
C. Three tangent to the circle
D. No tangent to the circle

67. If x is small so that x^2 and higher powers can be neglected, then the approximate value for $\frac{(1-2x)-1\ (1-3x)-2}{(1-4x)-3}$ Is

A. 1-4x
B. 1-3x
C. 1-4x
D. 1-5x

68. If $g^2 + f^2 - c = 0$ then the circle reduces to

A. A line
B. A point

C. Two points
D. None of these

69. If the harmonic mean between the roots $(5=\sqrt{2})x^2 - bx + (8+2\sqrt{5}) = 0$ is 4, then the value of b.

A. 2
B. 3
C. $4-\sqrt{5}$
D. $4+\sqrt{5}$

70. The set of solutions satisfying both $x^2 + 5x + 6^3 0$ and $x^2 + 3x - 3 < 0$ is

A. (-4,1)
B. (-4,-3) JE (-2,1)
C. (-4,-3) E (-2,1)
D. (-4,-3) E(-2,1)

71. If the roots of $x^3 - 42x^2 + 336x - 512 = 0$, are in increasing geometric progression, then its common ratio is

A. 2
B. 3
C. 4
D. 6

72. If a and b are the roots of the equation $x^2 - 2x + 4 = 0$, then $a^9 + b^9$ =

A. -2^8
B. 2^9
C. -2^{10}
D. 2^{10}

73. $\begin{matrix} x+2 & x+3 & x+5 \\ x+4 & x+6 & x+9 \\ x+8 & x+11 & x+15 \end{matrix}$

A. $3x^2 + 4x + 5$
B. $X^3 + 8x + 2$
C. 0
D. -2

74. The system of equations 3x +2y + z = 6,3x + 4y +3z = 14, 6x + 10y + 8z = a, has infinite number of solutions, if a =

A. 8
B. 12
C. 23
D. 36

75. The number of real value of t such that the system of homogeneous equations

Tx + (t = 1) y + (t -1) z = 0
(t + 1) x + ty + (t + 2) z = 0

(t-1) x + (t+2) y+ tz = 0

Has non-trivial solutions, is

A. 3
B. 2
C. 1
D. 4

76. $(\frac{1+i}{1-i})^4 + (\frac{1-i}{1+i})^4$ =

A. 0
B. 1
C. 2
D. 4

77. If a complex number z satisfies $|z^2-1|\ |z\ \ |^2+1$, then z lies on:

A. The real axis
B. The imaginary axis
C. Y=x
D. A circle

78. The solution of the differential equation $\frac{dy}{dx}$ – 2y tan 2x = e^x sex2x is:

A. Y sin 2x = e^2 + c
B. Y cos 2x = e^x + c
C. Y = e^x cos2x + c

D. Y cos2x + e^x =c

79. An integration factor of the equation

(1=y=x^2y) dx + (x+x^3) dy = 0 is

A. e^x
B. x^2
C. 1/x
D. X

80. The approximate value of $\int_1^3 \frac{dx}{2+3x}$ using simpson's rule and dividing the interval [1,3] into two parts is

A. 1/3 log (11/5)
B. 107/110
C. 29/110
D. 119/440

81. The manifestation of band structure in solids is due to
A. Heisenberg's uncertainty principle
B. Pauli's exclusion principle
C. Bohr's correspondence principle
D. Boltzmann's law

82. When p-n junction diode is forward biased
A. The depletion region is reduced and barrier height is increased
B. The depletion region is widened and barrier height is reduced
C. Both the depletion region and barrier height reduced
D. Both the depletion region and barrier height increased

83. Ohm x farad is equivalent to:
A. Second
B. weber
C. Henry
D. Tesla

84. An angular ring inner and outer radii R_1 and R_2 is rolling without slipping with a uniform angular speed. The ratio of the forces experienced by the two particles situated on the inner and outer parts of the ring, F_1/F_2 is
A. R_2/R_1

B. $(R_2/R_{1)}$
C. 1
D. R_1/R_2

85. A smooth block is released at rest on a 45^0 incline and then slides a distanced. The time taken slide is n times as much to slide on rough incline than on a smooth incline. The coefficient of friction is
A. $\mu_k = 1 - \frac{1}{n2}$
B. $\mu_k = \sqrt{1 - \frac{1}{n2}}$
C. $\mu_s = 1 - \frac{1}{n2}$
D. $\mu_s = \sqrt{1 - \frac{1}{n2}}$

86. The upper half of an inclined plane with inclination $\boldsymbol{\phi}$ is perfectly smooth while the lower half is rough. A bogy starting from rest at the top will again come to rest at the bottom if the coefficient of friction for the lower half is given by
A. $2\sin \boldsymbol{\phi}$
B. $2\cos \boldsymbol{\phi}$
C. $2\tan \boldsymbol{\phi}$
D. $\tan \boldsymbol{\phi}$

87. A bullet fired into a fixed target loses half of its velocity after penetrating 3 cm. how much further it will penetrate before coming to rest assuming that it faces constant resistant to motion?
A. 3.0cm
B. 2. 0cm
C. 1.5cm
D. 1.0cm

88. A wire of uniform cross section A, length l and resistance R is cut into two equal pieces. The resistivity of each piece will be
A. The same
B. One forth
C. Double
D. One half

89. Two metallic conductor have the same value of resistivity. These conductors can be differentiated from the values of their:
A. Temperature coefficient
B. Resistances
C. Conductance
D. Conductivity

90. When a horse pulls a wagon, the force that causes the horse to move forward is the force
    A. The ground exerts on him
    B. The exerts on the ground
    C. The wagon exerts on him
    D. He exerts on the wagon
91. A particle is moving eastwards with a velocity of 5m/s in 10 seconds the celocity changes to 5m/s northwards. The average acceleration in this time is
    A. $1/\sqrt{2}$ m /s^2 towards north-east
    B. ½ m/s^2 towards north
    C. Zero
    D. $1/\sqrt{2}$ m /s^2 towards northwest
92. A parachutist after bailing out fails 50 m without friction. When parachute opens. It decelerates at 2 m/s^2. He reaches the ground with speed of 3 m/s. at what height, did he bail out?
    A. 91m
    B. 182m
    C. 293m
    D. 111m
93. A spherical ball of mass 20 kg is stationary at the top of a hiss of height 100m. it rolls down a smooth surface to the ground, then climbs up another hill of height 30 m and finally rolls down to a horizontal base at a height of 20 m above the ground. The velocity attained by the ball is:
    A. 40m/s
    B. 20m/s
    C. 10m/s
    D. $10\sqrt{30}\ m/s$
94. A bogy A of mass M while falling vertically downwards under gravity breaks into two parts; a body B of mass 1/3 and a body C of mass 2/3 M. the center of mass of bodies B and C taken together shifts compared to that of body A towards
    A. Depends on height of breaking
    B. Does not shift
    C. Body C
    D. Body B
95. Moment of inertia of a thin ring or hoop is
    A. Mr^2
    B. 1/2 mr^2

C. $5/6\ mr^2$

D. $2/5\ mr^2$

96. A particular of mass 0.3kg is subjected to a force F= -kx with k =15 N/m. what will be its initial acceleration if it is released from a point 20 cm away from the origin?

A. $3m/s^2$

B. $15m/s^2$

C. $5m/s^2$

D. $10m/s^2$

97. A 20 cm long capillary tube dipped in water. The water rises up to 8 cm. if the entire arrangement is put in a freely falling elevator the length of water column in the capillary tube will be

A. 8cm

B. 10cm

C. 4cm

D. 20cm

98. If S is stress and Y is young's modules of material of a wire, the energy stored in the wore per unit volume is

A. $2S^2y$

B. $S^2/2y$

C. $2y/s^2$

D. s/2y

99. The metallic wires are laying parallel. If the current in these wires be following in the same direction, the wires will:

A. Attract each other

B. Repel each other

C. Have no force of attraction or repulsion

D. Remain stationary

100. A body of mas m is accelerated uniformly from rest to a speed v in a time T. the instantaneous power delivered to the body as a function time is given by

A. $\frac{mv2}{T2}.t$

B. $\frac{mv2}{T2}.t^2$

C. $\frac{1}{2}\frac{mv2}{T2}.t$

D. $\frac{1}{2}\frac{mv2}{T2}.t^2$

101. Consider a car moving on a straight road with a speed of 100 m/s. The distance at which car be stops in [μ_k = 0.5]

A. 800m

B. 1000m
C. 100m
D. 400m

102. The SI unit of magnetic flux is weber which is equal to :
A. NmA^{-1}
B. $Nm^2 A^{-1}$
C. NAm^{-1}
D. NmA^{-2}

103. The change in the value of g at a height h above the surface of the earth is the same as at a depth d below the surface of earth. When both d and h are much smaller than the radius of earth, then which one of the following is correct?
A. d = h/2
B. d = 34/2
C. d =2hD
D. d = h

104. An electron and proton are projected with same velocity normal to magnetic field which one will suffer greater deflection?
A. Proton
B. Electron
C. Both will suffer greater deflection
D. None of these

105. A gaseous mixture consists of 16kg of helium and 16kg of oxygen. The ratio C/C_v of the mixture is
A. 1.59
B. 1.62
C. 1.4
D. 1.54

106. The intensity of gamma radiation from a given source is I. on passing through 36 mm of lead, it reduced to 1/8. The thickness of lead which will reduces the intensity to ½ will be
A. 6mm
B. 9mm
C. 18mm
D. 12mm

107. The motional e. m. f depends upon

A. Strength of magnetic field
B. Length of conductor
C. Speed of conductor
D. All of these

108. A photocell is illuminated by a small bright source placed 1m away. When the same source of light is placed ½ m away, the number of electrons emitted by photo cathode would

A. Decreased by factor of 4
B. Increased by factor of 4
C. Decreased by factor of 2
D. Increased by factor of 2

109. $\frac{voltxsecond}{ampere}$ is equal to

A. Gauss
B. Weber
C. Henry
D. Tesla

110. If radius of $^{24}_{13}$Al nucleus is estimated to be 3.6 Fermi the radius $^{125}_{52}$Te nucleus is nearly

A. 6 Fermi
B. 8 Fermi
C. 4 Fermi
D. 5 Fermi

111. The function $\sin^2(wt)$ represents

A. A periodic, but not simple harmonic motion with a period $2\pi\ \omega$
B. A periodic, but not simple harmonic motion with a period $\pi\ \omega$
C. A simple harmonic motion with a period $2\pi/\omega$
D. A simple harmonic motion with a period $\pi\ \omega$

112. A young's double slit experiment uses a monochromatic source. The shape of the interference fringes formed on a screen is

A. Hyperbola
B. circle
C. Straight line
D. Parabola

113. The counter torque produced in the moving coil of generator is called:
A. Restoring torque
B. Deflection torque
C. Back motor effect
D. All of these

114. A fish looking up through the water see the outside world contained in a circular horizon. If the reflective index of water is 4/3 and the fish is 12cm below the surface, the radius if this circle in cm is
A. $36\sqrt{7}$
B. $36/\sqrt{7}$
C. $36\sqrt{5}$
D. $4\sqrt{5}$

115. Two points white dots are 1 mm apart on a black paper. They are viewed by eye of pupil diameter 3 mm approximately. What is the maximum distance at which these dots can be resolved by the eye? [take wavelength of light = 500 nm]
A. 5m
B. 1m
C. 6m
D. 3m

116. When U^{235} is bombarded with one neutron the fission course and the products are tree neutrons, $_{36}kr^{94}$
A. $_{53}I^{142}$
B. $_{56}Ba^{139}$
C. $_{58}Ce^{139}$
D. $_{54}Xe^{139}$

117. The inductive reactance of the coil having inductance of 0.5 henry in which AC of 50 Hz flows is:

A. 94.2Ω
B. 1.57 Ω
C. 157 Ω
D. 9.42 Ω

118. In a common base amplifier, the phase difference between the input single voltage and output voltage is
A. $\pi/4$
B. π
C. 0
D. $\pi/2$

119. In a full wave rectifier circuit operating from 50Hz mains frequency, the fundamental frequency in the ripple would be
A. 50 Hz
B. 25 Hz
C. 100 Hz
D. 70.7 Hz

120. 1 A nuclear transformation is denoted by X (n, a) $^{7}_{6}$Li, which of the following is the nucleus
2
0
.
of element X?
A. $^{12}C_6$
B. $_5{}^{10}B$
C. $_5{}^{9}B$
D. $_4{}^{9}B$

121. A moving coil galvanometer has 150 equal divisions per mill ampere and voltage sensitivity is 2 divisions per millivolt,. In order that each division reads 1 volt, the resistance in ohms needed to be connected in series with the coil will be
A. 10^3
B. 10^5
C. 99995
D. 9995

122. In RLC series circuit when the frequency of AC source is very low, the circuit is a / an:
A. Resistive circuit
B. Capacitive circuit
C. Inductive circuit
D. Resonant circuit

123. Which of the following makes the motion of a perpetual motion machine a physical impossibility?

A. First law of thermodynamics
B. Second law of thermodynamics
C. Third law of thermodynamics
D. None of these

124. A heater coil is cut into two equal parts and only one part is now used in the heater. The heat generated will now be

A. Doubled
B. Four times
C. One fourth
D. Halved

125. Two thin long parallel wires separated by a distances carry a current f "I" A in the same direction. They will

A. Attract each other with a force of $\mu_0 i/(2\pi d)$
B. Repel each other with a force of $\mu_0 i/(2\pi d)$
C. Attract each other with a force of $\mu_0 i/(2\pi d^2)$
D. Repel each other with a force of $\mu_0 i/(2\pi d^2)$

126. When a polarized light of intensity 1_0 is incident on a polarizing sheet, the intensity of the light which does not get transmitted is

A. $\frac{1}{2}1_0$
B. $\frac{1}{4}1_0$
C. Zero
D. 1_0

127. A parallel plate capacitor is made by stalking n equally spaced plates connected alternatively. If the capacitance between any two adjacent plates in C then the resultant capacitance is

A. (n-1)C
B. (n+1)C
C. C
D. NC

128. When the tuning forks (fork 1 and fork 2) are sounded simultaneously, 4 beats per second are heard. Now, some tape attached on the prong of the fork 2. When the tuning forks are sounded again, 6 beats per second are heard. If the frequency of fork 1 is 200 Hz, then what was the original frequency of fork 2?
A. 200 Hz
B. 202 Hz
C. 19 Hz
D. 204 Hz

129. The process of combining low frequency signal with high frequency carriers waves is called
A. Rectification
B. Amplification
C. Modulation
D. Magnification

130. The Bob of a simple pendulum is a spherical hollow ball filled with water. A plugged near the bottom of the oscillation bob gets suddenly unplugged. During observation ,till water is coming, out the time period of oscillation would
A. First increase and then decrease to the original value.
B. First decrease and then increase to the original value
C. Remain unchanged
D. Increase towards a saturation value

131. An observer moves towards a stationary source of a sound with a velocity one fifth of the velocity of sound. What is the percentage increase in the apparent frequency?
A. Zero
B. 0.5%
C. 5%
D. 20%

132. The ratio of volumetric strain to volumetric stress is called:
A. Compressibility
B. Young's modulus
C. Bulk's modulus
D. Shear's modulus

133. Tow concentric coal each of radius is to 2 π are placed at right angles to each other. 3 ampere and 4 ampere are the current following in each coil respectively. The magnetic induction in weber/m² at the center of the coils will be ($\mu_0 = 4\pi \times 10^{-7}$WB/A m)

A. 12×0^{-5}
B. 10^{-5}
C. 5×10^{-5}
D. 7×10^{-5}

134. A coil of inductance 300 MH and resistance 2 Ώ is connected to a source of voltage 2V. the current reaches half of its steady state calue in

A. 0.05s
B. 0.1s
C. 0.15s
D. 0.3s

135. The self-inductance of the motor of an electric fan is 10 h. in order to impart maximum power at 50 Hz. it should be connected to a capacitance of

A. 4μF
B. 8 μF
C. 1 μF
D. 2 μF

136. An energy source will supply a constant resistance is

A. Equal to the resistance of the load
B. Very large as compared to the load resistance
C. Zero
D. Non-zero but less that the resistance of the load

137. A circuit has a resistance of 12 Ώ and an impedance of 15Ώ. The power factor of the circuit will be

A. 0.8
B. 0.4
C. 1.5
D. 0.125

138. The substance which undergoes plastic deformation until it breaks is:

A. Ductile substance
B. Brittle substance
C. Plastic substance
D. All of these

139. A uniform electric field and a uniform magnetic field are acting along the same direction in a certain region, if an electron is projected along the direction of the fields with a certain velocity the

A. Its velocity will decrease
B. Its velocity will increase
C. It will remain turn towards right of direction of motion
D. It will turn towards left of direction of motion

140. Which of the following when added as an impurity into the silicon produces n-type semi-conductor?

A. P
B. AI
C. B
D. Mg

141. The first digital computer built with IC chip known as

A. IBM 7090
B. Apple-1
C. IBM/360
D. VAX-790

142. Which is the main part of the computer system???

A. Moniter
B. CPU
C. Printer
D. Scanner

143. A piece of computer hardware that is physically placed between two devices each of which manages data in different ways is called

A. Modem
B. Interface
C. Cluge
D. Data bus

144. The monitor of the computer is connected to it by

A. Cable
B. Wire
C. Bus
D. Modem

145. _____is used for drawing & graphics.

A. Photoshop
B. Win Word
C. Excel

D. Access

146. The function of status register is to

A. Transfer data or programs form the input unit to the main memory
B. Transfer data or programs from the main memory to the output.
C. Check the operation or ALU
D. Take data values from RAM through MBR during program execution.

147. DOS stand for

A. Dual operating system
B. Double operating system
C. Disk operating system
D. Disk operation system

148. Four bytes can store any number between

A. 0 to 1
B. 0 to 255
C. 0 to 65535
D. 0 to 4.924, 967.295

149. One day computer all over the world can talk to each other. Which one of the special accessories is essential for this purpose?

A. Keyboard
B. Modem
C. Scanner
D. Fax

150. The speed of any communications between any two devices on on Ethernet LAN is

A. 10 mbps
B. 100mhps
C. 1000 Mbps
D. 10000mhps

151. ISO stand for

A. International system organization
B. International small organization
C. International standards organization
D. International supers organization

152. Most satellites providing points to point service today use frequency_____bandwidth in the range for transmission from satellite to earth

A. 3.65 to 6.0Ghz
B. 4.0'to7.0 GHz
C. 5.92 to 6.4 GHz
D. 4.5 to 6.54Ghz

153. MAC stand for

A. Mass access control
B. Media access control
C. Modulator access control
D. Multiple access control

154. TCP stand for

A. Terminal control protocol
B. Telecommunications control protocol
C. Transmission control protocol
D. Transport control protocol

155. An agreement in which data can be receive or sent simultaneously is called:

A. Simples
B. Full-duplex
C. Half-duplex
D. Multi-duplex

156. _____system use very high frequency radio signal to transmit data through space.

A. Fiber optics cable
B. Microwave
C. Co-axial ~able
D. fiberglass-cable

157. Permission to use computer software on a fixed number of computer in an office is called

A. Software licenses
B. Site licenses
C. Software copyright
D. Site copyright

158. Easiest way of burning out your computer is

A. Poor electricity connection
B. Lack of proper grounding for the computer
C. Overloading of a power point
D. All of the above

159. Operating system can do which of the following options?

A. It control the hardware
B. It provide user an interface to control the computer
C. It provide users interface to use the resources of the computer
D. All the above

160. Folders are containers that arrange the data files and other information in

A. A systematic way B.
B. For easy access C.
C. For easy management
D. All of these

161. Which of the shortcut key is use to cut off a selected item in the windows environment?

A. Ctrl + A
B. Ctrl + X
C. Ctrl + C
D. Ctrl + V

1622. In order to set all the items when desktop is active, which of the following short key is used?

A. Ctrl + A
B. Alt + A
C. Shift + Alt + A
D. Alt + Ctrl + A

163. From the start menu, which of the following work you can do?

A. Open recently use documents
B. Customize the look and feel of the window
C. Hide all files and folder
D. All the above

164. Desktop has the responsibility for which of the following?

A. Enables you to enter internet addresses for the site that open in the default browser.
B. For the selection of a program
C. Display a button for each item on the desktop
D. To contains Links to Internet resources

165. Shift + Ctrl + D is used for which of the following purpose?

A. To change the case or selected text
B. To format the selected text as all capitals
C. To underline words only
D. To double underline text

166. Shift + Ctrl + = is used for which of the following purpose?

A. To format selected letters as small capital
B. To apply subscript format
C. To apply superscript format
D. To display non printing characters

167. When you select entire document, then which of the following key is passed?

A. Ctrl +W
B. Alt + A
C. Ctrl + W
D. Alt + A

168. Text tool is used for which of the following purpose?

A. For typing the text
B. Works by pointing and clicking
C. To create a arc
D. To create a polygon

169. Which of the following statement is correct, related with By Type, in order to arrange the listing of the files?

A. Sorts in ascending alphabetical order by file type
B. Sort in ascending alphanumerical order by file type
C. Sort in descending alphabetical order by file type
D. Sort in descending alphanumerical order by file type

170. To delete file completely with using the recycle bin, which of the following key is pressed?

A. Del
B. Ctrl + Del
C. Alt + Del
D. Shift + Del

171. That overhead projector_____thousand rupees.

A. Nearly cost sixty
B. Cost sixty nearly
C. Cost nearly sixty
D. Cost sixty nearly

172. The lady in the dining room is a_____woman.

A. Extremely pleasant
B. Extreme pleasantly
C. Extreme pleasant
D. Pleasant extremely

173. He looks_____.

A. In black handsomely
B. Handsomely in black
C. Handsome in black
D. Black handsomely

174. The songs of new age sound_____me.

A. Badly to
B. Badly
C. Bad
D. Bad to

175. He appeared_____began to take the exam.

A. Nervous as he
B. Nervously when he
C. Nervously as he
D. None

176. ABHOR: DISLIKE:: (Analogy)

A. Calcify : Petrify
B. Rebuke : Ridicule
C. Torture : Discomfort
D. Fodder : Cattle

177. Argument: Debate:: (Analogy)

A. Violence : Peace
B. Fight : Contest
C. Challenge : opponent
D. Doe : stag

178. Anger: Insult:: (Analogy)

A. Business : Judgment
B. Admiration : Happiness
C. Conduct : Behavior

D. Appreciation : Kindness

179. Author: Inventor ::(Analogy)

A. Copyright : Patent
B. Plot : Machine
C. Technology : Gadget
D. Book : Factory

180. ABOLITIONIST: SLAVERY:: (Analogy)

A. Prohibitionist : Liquor
B. Capitalist : Commerce
C. Peace : War
D. Glass : jug

181. ALLURGING (synonym)

A. Deceptive
B. Contentious
C. Sensible
D. Enticing

182. SOMNABULIST (Synonym)

A. Sleepwalker
B. Escapist
C. Soothsayer
D. Hypnotist

183. Occult (Antonym)

A. Intelligible
B. Crooked
C. Sectary
D. Medieval

184. Resolved (Antonym)

A. Circumnutated
B. Normalized
C. Decided
D. Stable

185. CAPTURE (Antonym)

A. Confined
B. Free
C. Apprehend
D. Seize