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Question Booklet Series

A

MATHEMATICS

CODE :- 12

Time Allowed: Two Hours

Marks: 100

Name: ________________	Roll No. ________________

Read instructions given below before opening this booklet:

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1. Use only **BLUE Ball Point** Pen.
2. In case of any defect – Misprint, Missing Question/s Get the booklet changed. No complaint shall be entertained after the examination.
3. Before you mark the answer, read the instruction on the OMR Sheet (Answer Sheet) also before attempting the questions and fill the particulars in the ANSWER SHEET carefully and correctly.
4. There are FOUR options to each question. Darken only one to which you think is the right answer. There will be no Negative Marking.
5. Answer Sheets will be collected after the completion of examination and no candidate shall be allowed to leave the examination hall earlier.
6. The candidates are to ensure that the Answer Sheet is handed over to the room invigilator only.
7. Rough work, if any, can be done on space provided at the end of the Question Booklet itself. No extra sheet will be provided in any circumstances.
8. Write the BOOKLET SERIES in the space provided in the answer sheet, by darkening the corresponding circles.
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SEAL

Q.1: If A is a (3x3) non-singular matrix such that $AA^T = A^TA$ *and* $B = A^{-1}A^T$, *then* BB^T is

(A) I+B (B) I (C) A+B (D) AB

Q.2: If A is a (2x2) non-singular matrix, then the value of $adj(adj\ A)$ is

(A) A (B) I (C) A^2 (D) –A

Q.3: Let P and Q be (3x3) matrices with P≠ Q. If $P^3=Q^3$ and $P^2Q=Q^2P$, then the determinant of (P^2+Q^2) is

(A) 1 (B) 0 (C) 2 (D) -2

Q.4: If A & B are (nxn) matrices, then which of the following statements is generally invalid

(A) If A^4 has an inverse, so has A (B) If AB has an inverse, so has B

(C) $|\alpha A| = \alpha|A|$, for any positive value of α (D) $|A^{-1}BA^2| = |A||B|$

Q.5: Let $A = \begin{bmatrix} 1 & 0 & 0 \\ 2 & 1 & 0 \\ 3 & 2 & 1 \end{bmatrix}$. If u_1 & u_2 are column matrices such that $Au_1 = \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix}$ & $Au_2 = \begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix}$,

then $(u_1 + u_2)$ is

(A) $[-1, 1, 0]^T$ (B) $[-1,1,-1]^T$ (C) $[-1,-1,0]^T$ (D) $[1,-1,-1]^T$

Q.6: If A is the singular matrix then $A(adj\ A)$ is

(A) Identity matrix (B) null matrix (C) scalar matrix (D) symmetric matrix

Q.7: If A is skew symmetric matrix of order (n x n), then the trace of A is

(A) n (B) –n (C) 0 (D) n^2

Q.8: If $A = \begin{bmatrix} 2x & 0 \\ x & x \end{bmatrix}$ & $A^{-1} = \begin{bmatrix} 1 & 0 \\ -1 & 2 \end{bmatrix}$, then x is

(A) 1 (B) 2 (C) ½ (D) -2

Q.9: If $\begin{vmatrix} sin\alpha & cos\beta \\ cos\alpha & sin\beta \end{vmatrix} = \frac{1}{2}$, *where* α & β are acute angels, then the value of $(\alpha + \beta)$ is

(A) $2\pi/3$ (B) $\pi/3$ (C) $\pi/6$ (D) $-\pi/6$

Q.10: If A is a non-singular matrix of order 3 such that $|adj\ A| = 225$, then $|A'|$ is

(A) 225 (B) 25 (C) 15 (D) 20

Q.11: The largest value of a third order determinant, whose elements are 0 or 1 is

(A) 1 (B) 0 (C) 2 (D) 3

Q.12: If P(1,2), Q(4,6), R(5,7) and S(a ,b) are the vertices of a parallelogram PQRS, then (a , b) is

(A) (2, 4) (B) (3, 4) (C) (2, 3) (D) (3, 5)

Q.13: The distance between the parallel lines $y = 2x + 4$ *and* $6x = 3y + 5$ *is*

(A) $\frac{17}{\sqrt{3}}$ (B) 1 (C) 3 (D) $\frac{17\sqrt{5}}{15}$

Q.14: If the line $y = mx + \frac{4\sqrt{3}}{m}, (m \neq 0)$ is a common tangent to the parabola $y^2 = 16\sqrt{3}\,x$ and the ellipse $2x^2 + y^2 = 4$, then the value of m^2 is

(A) 4 (B) 16 (C) 2 (D) -2

Q.15: An equation of a plane parallel to the **plane** $x - 2y + 2z = 5$ and at a unit distance from origin is

(A) $x - 2y + 2z = 3$ (B) $x - 2y + 2z = -1$

(C) $x - 2y + 2z = 1$ (D) $x - 2y + 2z = -5$

Q.16: The length of the diameter of the circle which touches the x axis at the point (1,0) and passes through the point (2,3) is

(A) 10/3 (B) 3/5 (C) 6/5 (D) 5/3

Q.17: An ellipse is drawn by taking a diameter of the circle $(x-1)^2 + y^2 = 1$, as its semi minor axis and a diameter of the circle $x^2 + (y-2)^2 = 4$, as semi major axis. If the centre of the ellipse is the origin and its axis are the coordinate axis, then the equation of the ellipse is

(A) $4x^2 + y^2 = 4$ (B) $x^2 + 4y^2 = 8$

(C) $4x^2 + y^2 = 8$ (D) $x^2 + 4y^2 = 16$

Q.18: The equation of the tangent to the curve $y = x + \frac{4}{x^2}$, that is parallel to x axis is

(A) y=1 (B) y=2 (C) y=3 (D) y=0

Q.19: If two tangents are drawnfrom a point P to the parabola $y^2=4x$ are at right angles, then the locus of P is

(A) 2x+1=0 (B) x=-1 (C) 2x-1=0 (D) x=1

Q.20: If the vectors $\bar{a} = i - j + 2k, \bar{b} = 2i + 4j + k, \bar{c} = \lambda i + j + \mu k$ are mutually orthogonal, then (λ, μ) is

(A) (2,-3) (B) (-2,3) (C) (3,-2) (D) (-3,2)

Q.21: The line L is given by $\frac{x}{5} + \frac{y}{b} = 1$, passes through the point (13,32).The K is parallel to L and has the equation $\frac{x}{c} + \frac{y}{3} = 1$, then the distance between L and K is

(A) $\sqrt{17}$ (B) $\sqrt{17}/12$ (C) $23/\sqrt{17}$ (D) $\sqrt{17}/\sqrt{15}$

Q.22: The circle $x^2 + y^2 = 4x + 8y + 5$, intersect the line $3x - 4y = m$ at two distinct points if

(A) $-35 < m < 15$ (B) $15 < m < 65$ (C) $35 < m < 85$ (D) $-85 < m < -35$

Q.23: Let $\hat{a}$ and $\hat{b}$ are two unit vectors. If the vectors $\hat{c} = \hat{a} + 2\hat{b}$ and $\hat{d} = 5\hat{a} - 4\hat{b}$ are perpendicular to each other, then the angles between $\hat{a}$ and $\hat{b}$ is

(A) $\pi/6$ (B) $\pi/2$ (C) $\pi/3$ (D) $\pi/4$

Q.24: Let the line $\frac{x-2}{3} = \frac{y-1}{-5} = \frac{z+2}{2}$ lies in the plane $x + 3y - \alpha z + \beta = 0$, then (α, β) is

(A) (6,-17) (B) (-6,7) (C) (5,-15) (D) (5,-15)

Q.25: If $\bar{a}, \bar{b}, \bar{c}$ are three mutually perpendicular vectors each of magnitude unity, then $|\bar{a}+\bar{b}+\bar{c}|$ is equal to

(A) 3 (B) 1 (C) $\sqrt{3}$ (D) 2

Q.26: If θ is the angle between $\bar{a}$ and $\bar{b}$ such that $\bar{a}\cdot\bar{b} > 0$, then

(A) $0 \le \theta \le \pi$ (B) $\pi/2 \le \theta \le \pi$ (C) $0 \le \theta \le \pi/2$ (D) $0 \le \theta \le 2\pi$

Q.27: The point of intersection of the curves $r^2 = 4\cos\theta$ and $r = 1 - \cos\theta$ is

(A) $(2\sqrt{2}-2, 80^\circ)$ (B) $(2, 60^\circ)$ (C) $(3, 70^\circ)$ (D) $(-2\sqrt{2}, 80^\circ)$

Q.28: If $f: R \to R$ is given by $f(x) = 3x - 5$, then $f^{-1}(x)$ is

(A) $\frac{1}{3x-5}$ (B) $\frac{x+5}{3}$

(C) Does not exist because $f(x)$ is not one-one (D) Does not exist because $f(x)$ is not on to

Q.29: If $f(x) = \sin^2 x + \sin^2\left(x+\frac{\pi}{3}\right) + \cos x.\cos\left(x+\frac{\pi}{3}\right)$ and $g\left(\frac{5}{4}\right) = 1$, then $gof(x)$ is

(A) 1 (B) 0 (C) $\sin x$ (D) $\cos x$

Q.30: If the non-zero numbers x, y, z are in A.P. and $\tan^{-1}(x), \tan^{-1}(y), \tan^{-1}(z)$ are also in A.P., then

(A) $x = y = z$ (B) $xy = yz$ (C) $x^2 = yz$ (D) $z^2 = xy$

Q.31: If $a^x = b^y = c^z$ and a, b, c are in G.P., then x, y, z are in

(A) AP (B) GP (C) HP (D) x=y=z

Q.32: The HM of two numbers is 4. If the arithmetic mean A and geometric mean G satisfy the relation $2A+G^2=27$, then the numbers are

(A) 6, 3 (B) 5, 4 (C) 5,-5/2 (D) -3,1

Q.33: If $\lim_{n\to\infty}\left(\frac{x^2}{x+1} - ax - b\right) = 0$, then the value of (a, b) is equal to

(A) (1,-1) (B) (2,-1) (C) (-1,2) (D)(2,2)

Q.34: The value of $\lim_{x\to 0}\{\tan\left(\frac{\pi}{4}+x\right)\}^{1/x}$ is

(A) 1 (B) -1 (C) e^2 (D) e

Q.35: If $f(x) = a|\sin x| + be^{|x|} + c|x|^3$ and if $f(x)$ is differentiable at x=0, then

(A) a = b = c = 0 (B) a=b=0, c $\in R$ (C) b=c=0, a $\in R$ (D) a=c=0, b $\in R$

Q.36: Let $f(x) = \begin{cases} \frac{1}{|x|}, & |x| \ge 1 \\ ax^2 + b, & |x| < 1 \end{cases}$; if $f(x)$ is continuous and differentiable at any point, then

(A) a=1/2,b=-3/2 (B) a=-1/2,b=3/2 (C) a=1,b=-1 (D) a=-1, b=1

Q.37: Let $f(x)$ be a twice differentiable function such that $f''(x) = -f(x)$ and $f'(x) = g(x)$, $h(x) = \{f(x)\}^2 + \{g(x)\}^2$, If h (5) = 11, then h (10) is equal to

(A) 22 (B) 11 (C) 0 (D) -22

Q.38: If $f(x+y) = f(x).f(y), for\ all\ x, y\ \in R,\ \& f(5) = 2, f'(0) = 3, then\ f'(5)$ is

(A) 6 (B) 3 (C) 5 (D) 7

Q.39: If $y = 4x - 5$ is a tangent to the curve $y^2 = px^3 + q$ at (2, 3), then (p, q) is equal to

(A) (2,-7) (B) (-2, 7) (C) (-2,-7) (D) (2, 7)

Q.40: The length of the normal at t on the curve $x = a(t + sint), y = a(1 - cost)$ is

(A) $a\sin(t)$ (B)$2asin^3\left(\frac{t}{2}\right)\sec(t)$ (C)$2\,a\sin\left(\frac{t}{2}\right)\tan\left(\frac{t}{2}\right)$ (D)$a\cos(t)$

Q.41: If $f(x) = a\ \ln|x| + bx^2 + x$ has its extremum values at x=-1, x=2, then (a, b) is equal to

(A) (2,-1) (B) (2,-1/2) (C) (-2, 1/2) (D) (1, 1)

Q.42: Let $f(x) = |x-1| + |x-2|$, then the derivative of $f(x)$ at x=1/2 is

(A) -2 (B) -1/2 (C) ½ (D) 2

Q.43: If 2a+3b+6c=0, then at least one root of the equation $ax^2 + bx + c = 0$, lies in the interval

(A) (0, 1) (B) (1, 2) (C) (2, 3) (D) (3, 4)

Q.44: If $\int \frac{2x^3+3}{(x^2-1)(x^2+4)}dx = a\ \ln\frac{x+1}{x-1} + b\ tan^{-1}\left(\frac{x}{2}\right) + C$, then (a, b)

(A) (-1/2, ½) (B)(1/2, ½) (C) -1, 1) (D) (1, -1)

Q.45: The integral $\int[1 + x - 1/x]\,e^{x+1/x}dx$ is equal to

(A) $(x+1)e^{(x+1/x)}$+C (B)$xe^{(x+1/x)}$ +C (C)$(x-1)e^{(x+1/x)}$ +C (D)$e^{(x+1/x)}$ +C

Q.46: The value of the integral $\int_0^{\pi}\sqrt{(1 + 4\,sin^2\,x/2 - 4\sin x/2)}\,dx$ is

(A)$\pi - 4$ (B)$\frac{2\pi}{3} - 4 - 4\sqrt{3}$ (C)$-4 + 4\sqrt{3}$ (D)$-\frac{\pi}{3} - 4 + 4\sqrt{3}$

Q.47: The value of the integral $\int_{-1}^{1}\sqrt{(1+x)/(1-x)}dx$ is

(A) π (B) $-\pi$ (C) $\frac{\pi}{2}$ (D) Does not exist

Q.48: The line segment $x = sin^2(t), y = cos^2(t);\ 0 \le t \le \pi/2$, is revolved about the y axis, Then the surface area of the solid generated is

(A) $\pi\sqrt{2}$ (B) $2\sqrt{\pi}$ (C) $\sqrt{2\pi}$ (D) 2π

Q.49: The curvature of the curve $r = sin2\theta\ at\ \theta = \pi/4$ is

(A) 5 (B) -5 (C) 5/2 (D) 2/5

Q.50: The area bounded between the parabolas $x^2 = \frac{y}{4}\ and\ x^2 = 9y$and the straight line y=2 is

(A)$\frac{10\sqrt{2}}{3}$ (B)$\frac{20\sqrt{2}}{3}$ (C)$(10\sqrt{2})$ (D)$(20\sqrt{2})$

Q.51: An asymptote to the curve $x^3 + y^3 - 3xy = 0$is x+ y+a = 0, then the value of a is

(A) -1 (B) 1 (C) ½ (D) 2

Q.52: The order and degree of differential equation $[\frac{d^2y}{dx^2} + y]^{3/2} = [\frac{dy}{dx}]^{2/3} + yx$ is

(A) 2, 3 (B) 2, 9 (C) 2, ¾ (D) not defined

Q.53: The general solution of the first order equation $x^2y' - 2xy = 3$ is

(A) $3/2+\frac{c}{x^2}$ (B) $-3/2+\frac{c}{x^2}$ (C) $cx^2 - 1/x$ (D) $cx^2 + 1/x$

Q.54: The particular integral of $y'' + y = \tan(x)$ is

(A) $-\cos(x)\ln(secx + tanx)$ (B) $\cos(x)\ln(secx + tanx)$

(C) $-\sin(x)\ln(secx + tanx)$ (D) $\sin(x)\ln(secx + tanx)$

Q.55: The singular solution of the differential equation $y = xy' + y'^2$ is

(A) $x^2 + 4y = 0$ (B) $x^2 - 4y = 0$ (C) $-x^2 - 4y = 0$ (D) $-x^2 + 4xy = 0$

Q.56: The curve in which the slope of the tangent at any point equal to the ratio of abscissa to the ordinate of the point is an

(A) Ellipse (B) Parabola (C) Rectangular hyperbola (D) Circle

Q.57: If $f'(x) = f(x)$ & $f(1) = 2$, then $f(3)$ is equal to

(A) e^2 (B) $2e^2$ (C) $3e^2$ (D) $3e^3$

Q. 58: The value of $i^{14} + i^{20} + i^{333} + i^{403}$ ($where\ i = \sqrt{-1}$) is

(A) 1 (B) -1 (C) 0 (D) 2

Q. 59: The number of real solutions of the equation $|x|^2 + 2|x| + 2 = 0$ are

(A) 4 (B) 3 (C) 2 (D) 0

Q. 60: If the ratio of the roots of the equation $ax^2 + bx + c = 0$ $is\ r$ then $\frac{(r+1)^2}{r}$ is equal to

(A) $\frac{a^2}{bc}$ (B) $\frac{b^2}{ca}$ (C) $\frac{c^2}{ab}$ (D) $\frac{1}{abc}$

Q. 61: If Z is a complex number, then the greatest and lowest value of $|Z + 1|$, if $|Z + 1| \leq 3$ are

(A) 5, 0 (B) 8, 0 (C) 6, 0 (D) 9, 0

Q. 62: The smallest positive integral value of n for which $\left(\frac{1+i}{1-i}\right)^n = 1$ is

(A) 8 (B) 12 (C) 16 (D) 4

Q.63: If $1, \omega, \omega^2, \dots \dots \dots \dots \dots \dots \dots \omega^{n-1}$ are the n, n[th] roots of unity, then the value of $(1-\omega)(1-\omega^2)\dots\dots\dots(1-\omega^{n-1})$ is

(A) 0 (B) 1 (C) n (D) n^2

Q. 64: The complex numbers Sin x + i Cos2x and Cos x - i Sin2x are conjugate to each other for

(A) x = (n+1/2) π (B) x = π/2 (C) x = 0 (D) no value of x

Q. 65: Let $f(x) = \sqrt{2}x^2 + 3x - \sqrt{3}$ and $g(x) = x - \sqrt{2}$ are two polynomials in x with real coefficients, when $f(x)$ is divided by $g(x)$ the remainder is $5\sqrt{2} - \sqrt{3}$. The quotient is given by

(A) $\sqrt{2}x - 5$ (B) $\sqrt{2}x + 5$ (C) $\sqrt{2}x - 3$ (D) $\sqrt{2}x + 3$

Q. 66: Let $(a*B)^2 = a^2*b^2$ for 'a' and 'b' are in a group G, then a*b equals

(A) b*a (B) e (C) a*e (D) b*c

Q. 67: The sum of 23 and 31 modulo 45 is

(A) 5 (B) 6 (C) 7 (D) 9

Q. 68: If 'a' is a generator of a finite cyclic group G of order n, then the other generators of G are the elements of the form a^r, where r is a

(A) Prime number (B) Composite number (C) Relatively prime to n (D) Zero

Q. 69: What is the order of the cyclic (1, 4, 5, 7)

(A) 4 (B) 1 (C) 3 (D) 2

Q. 70: How many different signals can be given with 5 different flags by hosting any number of them at a time

(A) 325 (B) 626 (C) 253 (D) 352

Q. 71: What is the chance of getting multiple of 2 on one and multiple of 3 on the other in a single throw of dice

(A) 1/3 (B) 7/36 (C) 11/36 (D) 13/36

Q. 72: A person draws two cards with replacement from a pack of 52 cards. What is the probability that he gets both the cards of same suit.

(A) 1/4 (B) 3/13 (C) 1/16 (D) 5/16

Q. 73: The value of P(x=2) in a binomial distribution when p= 1/6 and n= 5 is

(A) $\frac{3125}{7776}$ (B) $\frac{250}{7776}$ (C) $\frac{1250}{7776}$ (D) $\frac{25}{7776}$

Q.74: A purse contains 4 copper coins and 3 silver coins; the second purse contains 6 copper coins and 2 silver coins. A coin is taken out of any purse, the probability that it is a copper coin is

(A) 4/7 (B) 3/4 (C) 3/7 (D) 37/56

Q.75: If the probability of a defective bolt is $\frac{1}{10}$, then the moment of coefficient of skewness is

(A) 0.0178 (B) 0.178 (C) 1.78 (D) 0.00178

Q.76: A car hire firm has 2 cars, which hires out day by day. The number of demands for a car on each Day is distributed as a poisson distribution with mean 1.5. The value of the proportion of days on which neither car is used.

(A) 0.2231 (B) 0.2131 (C) 0.2321 (D) 0.223

Q.77: Area of the normal curve between mean ordinate and ordinates at 3 sigma distances from the mean percentage of the total area is

(A) 48.865 (B) 49.865 (C) 47.865 (D) 46.865

Q.78: The numbers 3.2, 5.8, 7.9, and 4.5 have the frequencies x, (x+2), (x-3) and (x+6) respectively. If the arithmetic mean is 4.876, then the volume of x is

(A) 4 (B) 3 (C) 0 (D) 5

Q.79: If the mean and median of moderately asymmetrical series are 26.8 and 27.9 respectively what would be its most probable mode

(A) 31.1 (B) 30.1 (C) 32.1 (D) 33.1

Q.80: If mean 30, S.D = 8, Karl Pearson's coefficient of skewness = + 0.40 the value of Mode is

(A) 26.8 (B) 24.8 (C) 22.8 (D) 28.8

Q.81: In a frequency distribution the coefficients of skewness based on quartiles is 0.6. If the sum of the upper and lower quartiles is 100 and median is 38, then the value of upper quartile is

(A) 50 (B) 70 (C) 60 (D) 80

Q.82: Given $\mu_1 = 0, \mu_2 = 40, \mu_3 = -100, \mu_4 = 200$, then the value of the skewness in the distribution is

(A) 3/64 (B) 1/64 (C) 5/64 (D) 7/64

Q.83: If the value of coefficient of correlation between two series is + 0.9 and its probable errors is 0.0128, what would be the value of n

(A) 100 (B) 10 (C) 105 (D) 95

Q.84: The coefficient of correlation between the debenture prices and share prices of a company was + 0.8. If the sum of the squares of the differences in ranks was 33, then the value of n is

(A) 10 (B) 11 (C) 9 (D) 8

Q.85: Given that the regression equations of 'Y' on 'X' and 'X' on 'Y' are respectively Y=X and 4X = 3+Y, and that the second moment of x about the origin is 2. Then the S.D of Y is

(A) 0 (B) 1 (C) 2 (D) -2

Q.86: The angle between two forces each equal to 'P' when their resultant is also equal to P is

(A) 60^0 (B) 180^0 (C) 120^0 (D) 90^0

Q.87: The components of a force of magnitude 10 N in the direction making angles of 30^0 and 60^0 on its sides are

(A) $5\sqrt{3}\,N,$ (B) $5\,N,$ (C) $5\sqrt{2}\,N, 5N$ (D) $5\sqrt{5}N\,,5N$

Q.88: Three coplanar forces acting on a particle are in equilibrium. The angle between the first and the second is $60^0$and that between the second and the third is 150^0, then the ratio of the magnitudes of forces is

(A) $1:2:\sqrt{3}$ (B) $1:3:\sqrt{3}$ (C) $1:1:\sqrt{3}$ (D) $2:1:\sqrt{3}$

Q.89: The resultant of two unlike parallel forces of magnitude 10N and 18N acts along a line at a distance of 12 cm. from the line of action of the smaller forces, then the distance between the lines of actions of the two forces is.

(A) $\frac{16}{3}$ cm (B) $\frac{17}{3}$cm (C) $\frac{14}{3}$ cm (D) $\frac{13}{3}$cm

Q.90: The moment of a force of magnitude 25N acting along the positive direction of x-axis about the point (-1,3) is

(A) 75 Units (B) 65 Units (C) 55 Units (D) 45 Units

Q.91: A couple of moment -60 units act in the plane of the paper. The arm of the couple if each force is of magnitude 10 units is

(A) 6 Units (B) 5 Units (C) 4 Units (D) 3 Units

Q.92: The average speed of a bicycle over a journey of 5o Km, if it travels the first 10 Km. at 20 km/hr, second 12 km in 1 hr and third 24 km at 8 km/hr. is

(A) 09 km/hr (B) 10 km/hr (C) 08 km/hr (D) 06 km/hr

Q.93: A particle starts with a velocity of 30m/s and moves in a straight live with constant acceleration. If its velocity at the end of 6 seconds be 18 m/s, then the distance traveled by the particle before it comes to rest is

(A) 224m (B) 225m (C) 220m (D) 215m

Q.94: A ball is projected vertically upward with a velocity of 112 m/s. How high will it rise

(A) 640m (B) 630m (C) 635m (D) 639m

Q.95: A man walking at the rate of 6 km/h towards east, rain appears to fall vertically downward. Actual direction of the rain if its actual velocity is 12 km/h is

(A) 50^0 (B) 60^0 (C) 45^0 (D) 55^0

Q.96: The path of projectile in vacuum is a

(A) Circle (B) Straight line (C) Parabola (D) Ellipse

Q.97: A particle is projected with a velocity of 24m/s. at an angle of elevation of 60^0, then its time of flight is

(A) $(2.4)\sqrt{3}$ Seconds (B) $(2.3)\sqrt{3}$ Seconds

(C) $(2.2)\sqrt{3}$ Seconds (D) $(2.1)\sqrt{3}$ Seconds

Q.98: A particle is projected up a smooth inclined plane of inclination 60^0 along the line of greatest slope. If it comes to instantaneous nest after 2 seconds, then the velocity of projection is ($g=9.8m/s^2$)

(A) 9.8 m/se (B) 10 m/se (C) 16.97 m/se (D) 19.6 m/se

Q.99: Like parallel forces act at the vertices A, B, C of a triangle and are proportional to the lengths BC, CA and AB respectively. The centre of the forces is at the

(A) Centroid (B) Circum Centre

(C) In-Centre (D) None of these

Q.100: A horizontal rod AB is suspended at its ends by two vertical strings. The rod is of length 0.6 meter and weight 3 units. Its centre of gravity is at a distance 0.4 meter from force A, then the tension of the string at A in the same unit, is

(A) 0.2 (B) 1.4 (C) 0.8 (D) 1.0