Sr No.	MSC Maths
1	Find the missing term in the following series: 3,15,?,63,99,143…?
Alt1	27
Alt2	35
Alt3	45
Alt4	56

2	Choose word from the given options which bears the same relationship to the third word, as the first two bears: Horse : Jockey :: Car : ?
Alt1	Mechanic
Alt2	Chauffeur
Alt3	Steering
Alt4	Brake

3	Food is to Fad as Religion is to……?.....
Alt1	Crucification
Alt2	Notion
Alt3	Superstition
Alt4	Mythology

4	Select the lettered pair that has the same relationship as the original pair of words: Fond: Doting
Alt1	Solicitous: Concern
Alt2	Verbose: Wordiness
Alt3	Flurry: Blizzard
Alt4	Magnificent: Grandiose

5	Which of the following is the same as Emancipate, Free, Release?
Alt1	Liberate
Alt2	Quit
Alt3	Pardon
Alt4	Ignore

6	Spot the defective segment from the following:
Alt1	I met one of the mountaineers
Alt2	that have returned
Alt3	to their base camp
Alt4	the last week

7	Choose the meaning of the idiom/phrase from among the options given: To call names
Alt1	to abuse
Alt2	to recall something
Alt3	to count the prisoners
Alt4	to take attendance

8	Our tour programme fell ------ because of inclement weather.
Alt1	through
Alt2	off
Alt3	out
Alt4	down

9	Choose the option closest in meaning to the given word: POIGNANT
Alt1	unbearable
Alt2	maximal
Alt3	pathetic
Alt4	sharp

10	Choose the antonymous option you consider the best: WANTON
Alt1	rational
Alt2	abstemious
Alt3	dearth
Alt4	deliberate

11	Six people K, L, M, N, O and P are sitting around a table as per the following conditions. i. N and O are opposite each other ii. K is to the right of M iii. L and K are opposite each other iv. N is to the left of P Who is to the left of L ?
Alt1	P
Alt2	M
Alt3	N
Alt4	O

12	Study the following table carefully to answer the questions that follow (15 to 17) :Total number of employees in different departments in an organisation and (of these) percentage of females and males Department Total number of employees Percentage of female employees Percentage of male employees IT 840 45 55 Accounts 220 35 65 Production 900 23 77 HR 360 65 35 Marketing 450 44 56 Customer Service 540 40 60 What is the total number of male employees in the IT and Customer Service departments put together?
Alt1	115
Alt2	786

Alt3	768
Alt4	85

13	Study the following table carefully to answer the questions that follow (15 to 17) :Total number of employees in different departments in an organisation and (of these) percentage of females and males Department Total number of employees Percentage of female employees Percentage of male employees IT 840 45 55 Accounts 220 35 65 Production 900 23 77 HR 360 65 35 Marketing 450 44 56 Customer Service 540 40 60 What is the total number of employees in all departments put together ?
Alt1	3260
Alt2	3310
Alt3	3140
Alt4	3020

14	Select the alternative that logically follows from the two given statements, but not from one statement alone: All Cats are dogs No dogs are rats
Alt1	All cats are rats
Alt2	Some cats are rats
Alt3	No cat is rat
Alt4	None of the above

15	In a certain code language, " When did you come" is written as 'ti na ki ja'. "Will you come again" is written as 'na pa sa ja' and "She will go" is written as 'pa da ra'. How is "again" written in that code language ?
Alt1	Na
Alt2	sa
Alt3	ja
Alt4	da

16	In each of the following questions some statements are followed by two conclusions (i) and (ii). Read the statements carefully and then decide which of the conclsions follow beyond a reasonable doubt. Mark your answer as Statement: The aspirants should apply through a proper channel for permission Conclusions: (i) Those who apply through proper channel will get permission (ii) Those who do not apply through proper channel will not get permission
Alt1	If only conclusion (i) follows

Alt2	If only conclusion (ii) follows
Alt3	If neither conclusion (i) nor (ii) follows
Alt4	If both the conclusions follow

17	The average height of 3 children is 115 cms. If the heights of 2 children are 117 cms. And 112 cms. Respectively, the height of the third child is
Alt1	112 cms.
Alt2	113 cms.
Alt3	115 cms.
Alt4	116 cms.

18	What is the 30% of 40% of 2/5th of 5000?
Alt1	500
Alt2	800
Alt3	240
Alt4	720

19	There are n persons in a room. Each one is shaking hand with the other . Ultimately there are 66 hand-shakes. Then n=
Alt1	11
Alt2	12
Alt3	16
Alt4	33

20	A problem is given to students 10 students choose option A ; 6 students choose option B ; 2 students choose option C; Gopal choose option D; 5 students did not answer. which option is correct if the teacher tells that One-Twelth of the class gave the correct answer.
Alt1	B
Alt2	A
Alt3	C
Alt4	D

21	The solution of $\lim_{x \to 0} \frac{x - tanx}{x^3}$ is A: 1/3 B: 3 C: 2/3 D:−1/3

Alt1	A
Alt2	B
Alt3	C
Alt4	D

22	The Taylor series expansion of $f(x)=log(cosx)$ about the point $x=\pi/3$ *is* A: $\log(1/2)+\sqrt{3}(x-\pi/3)-2(x-\pi/3)^2-4/\sqrt{3}(x-\pi/3)^3$ B: $\log(1/2)-\sqrt{3}(x-\pi/3)-2(x-\pi/3)^2-4/\sqrt{3}(x-\pi/3)^3$ C: $\log(1/2)+\sqrt{3}(x-\pi/3)+2(x-\pi/3)^2+4/\sqrt{3}(x-\pi/3)^3$ D: $\log(1/2)+\sqrt{3}(x-\pi/3)-2(x-\pi/3)^2+4/\sqrt{3}(x-\pi/3)^3$
Alt1	A
Alt2	B
Alt3	C
Alt4	D

23	The solution of $u(x)=x-\int_0^x(x-t)u(t)dt$ is A: $x+\sin x$ B: $\sin x$ C: $\cos x$ D: e^x
Alt1	A
Alt2	B
Alt3	C
Alt4	D

24	If F{f(x)}=F(s) is the complex Fourier transform of f(x), then F{f(x-k)} is A: $e^{-iks}F(s)$ B: $e^{iks}F(s)$ C: $e^{is}F(s-k)$ D: $F(s-k)$

Alt1	A
Alt2	B
Alt3	C
Alt4	D

25	If the centre is $(1,-2,3)$ and radius is 3, then the equation of the sphere is A: $x^2+y^2+z^2-2x+4y-6z+5=0$ B: $x^2+y^2+z^2+2x-4y+6z-5=0$ C: $x^2+y^2+z^2+2x+4y-6z-5=0$ D: $x^2+y^2+z^2-2x-4y+6z+5=0$
Alt1	A
Alt2	B
Alt3	C
Alt4	D

26	Let C be a simple closed curve in three dimensional space and S be an open regular surface bounded by C, Then for a vector field **u** defined on V and on C is a A: Divergence Theorem B: Greens Theorem C: Stokes Theorem D: Cauchy Theorem
Alt1	A
Alt2	B
Alt3	C
Alt4	D

27	A vector u is solenoidal in a simply connects region if and only if A: $div\ u \neq 0$ B: $curl\ u = 0$ C: $div\ u = 0$ D: $div\ u + curl\ u \neq 0$
Alt1	A
Alt2	B
Alt3	C
Alt4	D

28	A sequence $\langle a_n \rangle$ is said to be _____, if there exist a number M>0 such that $\lvert a_n \rvert < M$ for all $n \in N$. A: Bounded sequence B: Unbounded sequence C: Divergent sequence D: Cauchy sequence
Alt1	A
Alt2	B
Alt3	C
Alt4	D

29	The series $\sum \frac{1}{4}\{1 + (-1)^{n+1}(2n+1)\}$ is A: convergent B: divergent C: oscillating infinitely D: oscillating finitely
Alt1	A
Alt2	B
Alt3	C

Alt4	D

30	The general solution of the equation $dy/dx = 1+x^2+y^2+x^2y^2$ is A: $\tan^{-1}(x)=y-y^3/3+c$ B: $\tan^{-1}(x)=y+y^3/3+c$ C: $\tan^{-1}(y)=x-x^3/3+c$ D: $\tan^{-1}(y)=x+x^3/3+c$
Alt1	A
Alt2	B
Alt3	C
Alt4	D

31	The differential equation $y'' + y = 0$ has A: only one solution B: two solutions C: infinitely many solutions D: no solution
Alt1	A
Alt2	B
Alt3	C
Alt4	D

32	The initial value problem $\frac{dy}{dx} + \lvert y \rvert = 0, y(0) = 1$ has A: Unique solution B: Infinite number of solution C: No solution D: finite number of solution
Alt1	A

Alt2	B
Alt3	C
Alt4	D

33	The partial differential equation corresponding $(x-h)^2+(y-k)^2+z^2=c^2$ is A: $z^2(p^2-q^2-1)=0$ B: $z^2(p^2+q^2+1)=c^2$ C: $z^2(p^2-q^2+1)=c^2$ D: $z^2(p^2-q^2-1)=c^2$ Here $p=\frac{\partial z}{\partial x}, q=\frac{\partial z}{\partial y}$
Alt1	A
Alt2	B
Alt3	C
Alt4	D

34	Solution of the differential equation $\frac{\partial^2 z}{\partial x^2}+\frac{\partial^2 z}{\partial y^2}-\left(\frac{\partial^2 z}{\partial x^2}\frac{\partial^2 z}{\partial y^2}-\left(\frac{\partial^2 z}{\partial x\partial y}\right)^2\right)=1$ is A: $z=\frac{1}{2}(x^2+y^2)+ax+by+c$ B: $z=\frac{1}{2}(x^2-y^2)+ax+by+c$ C: $z=\frac{1}{2}(x^2-y^2)+ax$ D: $z=\frac{1}{2}(x^2-y^2)$
Alt1	A
Alt2	B
Alt3	C
Alt4	D

35	If H is a subgroup of finite group G and order of H and G are respectively m and n, then A: $m \mid n$ B: $n \mid m$ C: mn D: m+n
Alt1	A
Alt2	B
Alt3	C
Alt4	D

36	If G is the group of non-zero complex number under multiplication and G^1 is the group of non-zero real numbers under multiplication, then the f: $G \rightarrow G^1$ defined by $f(z)=\mid z \mid$ is a A: Isomorphism B: Non-isomorphism C: Automorphism D: Endomorphism
Alt1	A
Alt2	B
Alt3	C
Alt4	D

37	The number of sylow p-subgroups is of the 1+kp (where k is non- negative integer) is. A: $o(N(P)) \mid o(G)$ B: $o(G) \mid o(N(P))$ C: $o(N(P))$ D: $o(G)$
Alt1	A
Alt2	B
Alt3	C
Alt4	D

38	Let R= C[0, 1] be the ring of real valued continuous functions on [0,1]. Then A: I={x∈R: x(1)=0} is an ideal of R. B: I={x∈R: x(0)=1} is an ideal of R. C: I={x∈R: x(1/2)=0} is an ideal of R. D: I={x∈R: x(1/2)=1/2} is an ideal of R.
Alt1	A
Alt2	B
Alt3	C
Alt4	D

39	A polynomial $f(x)=x^2-2$ is irreducible over Q and $f(\sqrt{2})=0$ and thus x^2-2 is the minimal polynomial of $\sqrt{2}$ over Q and $\deg_Q(\sqrt{2})=2$. Thus $[Q(\sqrt{2}):Q]=$ A: $\sqrt{2}$ B: 2 C: 1 D: 0
Alt1	A
Alt2	B
Alt3	C
Alt4	D

40	Let P be a matrix of order $m \times n$ and Q be a matrix of order $n \times p$, $n \neq p$. If rank (P)=n and rank (Q) =p, then rank (PQ) is A: n B: p C: np D: $n+p$

Alt1	A
Alt2	B
Alt3	C
Alt4	D

41	Which one of the following is not a subspace of the vector space of n ×n matrices over a field F. A: The set of all upper (lower) triangular matrices of order n. B: The set of all non-singular (singular) matrices of order n. C: The set of all symmetric (skew-symmetric) matrices of order n. D: The set of all diagonal matrices of order n
Alt1	A
Alt2	B
Alt3	C
Alt4	D

42	Let T be a linear transformation of U into V. If U has finite dimension, then in dimension theorem, the $rank\,(T)$ is A: nullity(T). B: dim(U) C: dim(U) – nullity(T). D: dim(U) + nullity(T).
Alt1	A
Alt2	B
Alt3	C
Alt4	D

43	If V is finite dimensional vector space over a field F and if $T \in A(V)$ is non-invertible (singular), then there exists an $S \neq 0$ in $A(V)$ such that A: ST = 0 and TS = 1 B: ST = 1 and TS = 0 C: ST = TS = 1 D: ST = TS = 0
Alt1	A
Alt2	B
Alt3	C
Alt4	D

44	Let V be an inner product space over a field F. Then for all $x, y \in V$ and $\|\langle x, y\rangle\| = \|x\| \cdot \|y\|$ is A: Triangle inequality B: Cauchy-Schwarz inequality C: Holder's inequality D: Minkowski's inequality
Alt1	A
Alt2	B
Alt3	C
Alt4	D

45	If $\{v_1, v_2, \ldots\ldots .v_n\}$ is an orthonormal set in an inner product space V and $v \in V$, then the Bessel's inequality is A: $\sum_{i=1}^{n} \|\langle v, v_i\rangle\|^2 \leq \|v + v_n\|^2$ B: $\sum_{i=1}^{n} \|\langle v, v_i\rangle\|^2 \leq \|v - v_n\|^2$ C: $\sum_{i=1}^{n} \|\langle v, v_i\rangle\|^2 \leq \|v\|^2$ D: $\sum_{i=1}^{n} \|\langle v, v_i\rangle\|^2 \geq \|v\|^2$
Alt1	A
Alt2	B

Alt3	C
Alt4	D

46	Mobius transformation takes A: circle into circle B: circle into line C: circle into square D: line into square
Alt1	A
Alt2	B
Alt3	C
Alt4	D

47	If z=a is an isolated singularity of f and $f(z) = \sum_{-\infty}^{\infty} a_n (z-a)^n$ is its Laurent expansion in ann(a; 0, R), then if a_n =0 for n<−1, z=a is _____ A: a pole of order m B: an essential singularity C: isolated singularity D: non-isolated singularity
Alt1	A
Alt2	B
Alt3	C
Alt4	D

48	What is the radius of convergence for power series $f(z) = \sum \frac{1}{n^p} z^n$? A: 1 B: 2 C: 3 D: ∞
Alt1	A
Alt2	B
Alt3	C
Alt4	D

49	$f(z) = \frac{\sin z}{(z-\pi)^2}$ have the pole of order_____ A: 1 B: 2 C: 3 D: 0
Alt1	A
Alt2	B
Alt3	C
Alt4	D

50	A coin is tossed 5 times and its outcomes are noted in a sequence . The total number of event points in this case is A: 10 B: 5 C: 32 D: 16
Alt1	A

Alt2	B
Alt3	C
Alt4	D

51	Two cards are drawn at random from a well shuffled pack of 52 playing cards. The probability that the both cards are of the same suit is A: 4/17 B: 3/17 C: 2/17 D: 1/17
Alt1	A
Alt2	B
Alt3	C
Alt4	D

52	Which of the following distribution does not have mean? A: Binomial distribution B: Poisson distribution C: Cauchy distribution D: Normal distribution
Alt1	A
Alt2	B
Alt3	C
Alt4	D

53	For a free particle (moving) A: kinetic energy is always constant B: potential energy is always constant C: Lagrangian is always constant D: Hamiltonian is always constant
Alt1	A
Alt2	B
Alt3	C
Alt4	D

54	The number of integral values of k for which the equation 7 cos x + 5 sin x=2k+1 has a solution is A: 4 B: 8 C: 10 D: 12
Alt1	A
Alt2	B
Alt3	C
Alt4	D

55	For linear congruence equation $ax \equiv b(\text{mod } m)$, where d=gcd (a, m), if d does note divide b, then the equation has A: unique solution B: no solution C: three solution D: exactly two solution
Alt1	A
Alt2	B

Alt3	C
Alt4	D

56	The common solution of $x \equiv 3 (\mathrm{mod}\ 5)$ and $x \equiv 4 (\mathrm{mod}\ 7)$ is A: $x \equiv 3 (\mathrm{mod}\ 35)$ B: $x \equiv 4 (\mathrm{mod}\ 35)$ C: $x \equiv 12 (\mathrm{mod}\ 35)$ D: $x \equiv 18 (\mathrm{mod}\ 35)$
Alt1	A
Alt2	B
Alt3	C
Alt4	D

57	Forces are called coplanar when all of them acting on body lie in A: parallel planes B: one position C: different planes D: one plane
Alt1	A
Alt2	B
Alt3	C
Alt4	D

58	Which model follows the changes over time that results from the system activates A: stationary model B: analytical model C: dynamic model D: numerical model
Alt1	A
Alt2	B

Alt3	C
Alt4	D

59	The angle between the two lines whose direction cosines are given by the equation l+m+n=0 and $l^2+m^2+n^2=0$ is A: $\pi/3$ or $2\pi/3$ B: $\pi/2$ or $3\pi/2$ C: $\pi/2$or $\pi/4$ D: π or 2π
Alt1	A
Alt2	B
Alt3	C
Alt4	D

60	If the function $x^4 - 62x^2 + ax + 9$ at $x = 1$ attains its maximum value in the interval $[0, 2]$, then the value of a. A: 9 B: 62 C: 120 D: 124
Alt1	A
Alt2	B
Alt3	C
Alt4	D

61	Degree of the differential equation $[1+(dy/dx)^3]^{2/3}= 2x(d^2y/dx^2)$ is A: 2 B: 3 C: 4 D: 6
Alt1	A
Alt2	B
Alt3	C
Alt4	D

62	The relation _____ is an implicit solution of the differential equation $\frac{dy}{dx} = -\frac{x}{y}$ on the interval defined by $-5 < x < 5$. A: $x^2 + y^2 + xy = 5$ B: $x^2 + y^2 - xy = 5$ C: $x^2 - y^2 = 10$ D: $x^2 + y^2 = 25$
Alt1	A
Alt2	B
Alt3	C
Alt4	D

63	What is the Cardinality of the Power set of the set {0, 1, 2}. A: 8 B: 7 C: 6 D: 5
Alt1	A
Alt2	B
Alt3	C

Alt4	D

64	Which one of the following is not a bipartite graph A: Even cycle B: odd cycle C: path D: tree
Alt1	A
Alt2	B
Alt3	C
Alt4	D

65	The equation of the plane passing through the three non-collinear points with position vectors $\vec{a}, \vec{b}, \vec{c}$ in vector form and $\vec{r}$ is the position vector of an arbitrary point on the plane is A: $[\vec{r}-\vec{a}, \vec{b}-\vec{a}, \vec{c}-\vec{a}] = 0$ B: $(\vec{r}-\vec{a}).(\vec{b}\times\vec{a}) = 0$ C: $[\vec{r}-\vec{a}, \vec{b}-\vec{a}, \vec{c}] = 0$ D: $[\vec{a}, \vec{b}, \vec{c}] = 0$
Alt1	A
Alt2	B
Alt3	C
Alt4	D

66	The Cayley-Hamilton theorem states that A: The eigen values of any matrix are linearly independent. B: Every square matrix satisfies its own characteristic equation. C: The characteristic equation of a matrix admits a non-zero solution D: Every characteristic roots of a non-singular matrix are distinct.
Alt1	A
Alt2	B
Alt3	C
Alt4	D

67	The value of $\lim_{x\to 0}\left(\frac{tanx}{x}\right)^{\frac{1}{x^2}}$ is A. 1 B: $e^{\frac{1}{3}}$ C: 0 D: ∞
Alt1	A
Alt2	B
Alt3	C
Alt4	D

68	The maximum value of $f(x) = sinx\ (1+\cos x)$ is A: $\frac{\pi}{2}$ B: $-\frac{\pi}{2}$ C: $-\frac{\pi}{3}$ D: $\frac{\pi}{3}$
Alt1	A
Alt2	B
Alt3	C

Alt4	D

69	The value of $\int \frac{dx}{x\cos^2(1+\log x)}$ is A: $\tan\ (1-\log x)\ + c.$ B: $\sec\ (1+\log x)\ +$ c. C: $\text{cosec}\ (1+\log x) +$ c. D: $\tan\ (1+\log x)\ +\ c.$
Alt1	A
Alt2	B
Alt3	C
Alt4	D

70	The value of $\int cos^{-1}(x)\ dx$ is A: $xcos^{-1}(x)-\sqrt{1-x^2}\ +\ c.$ B: $x\ cos^{-1}(x)\ +\ \sqrt{1-x^2}\ +\ c.$ C: $x\ sin^{-1}(x)-\sqrt{1-x^2}\ +\ c.$ D: $xtan^{-1}(x)-\sqrt{1-x^2}\ +\ c$
Alt1	A
Alt2	B
Alt3	C
Alt4	D

71	The value of $\int sech(x)\ dx$ is A: $cos^{-1}(e^x)\ +\ c.$ B: $sin^{-1}\ (e^x)\ + c.$ C: $2\ tan^{-1}(e^x)\ + c.$ D: $tan^{-1}(x)\ +\ c.$
Alt1	A
Alt2	B
Alt3	C

Alt4	D

72	If the points $(0,-1,\lambda)$, $(4,5,1,)$, $(3,9,4)$ and $(-4,4,4)$, are coplanar, then the value of λ is A: 2 B: 3 C: -2 D: -1
Alt1	A
Alt2	B
Alt3	C
Alt4	D

73	The equation of the plane passing through the point $(3,-3,1)$ and normal to the join of the points $(3,4,-1)$ and $(2,-1,5)$, is A: $2x+4y-4z+11=0$. B: $2x+y-6z+15=0$. C: $x+5y-6z+18=0$. D: $x+y-4z+7=0$
Alt1	A
Alt2	B
Alt3	C
Alt4	D

74	The equation of the sphere with centre at $(1, -1, 2)$ and touching the plane $2x - 2y + z = 3$, is A: $x^2 + y^2 + z^2 - 2x + 2y - 4z + 5 = 0$. B: $x^2 + y^2 + z^2 + 2x + y - 6z + 6 = 0$. C: $x^2 + y^2 + z^2 - x + 5y - 6z + 12 = 0$. D: $x^2 + y^2 + z^2 + x + y - 4z + 16 = 0$
Alt1	A
Alt2	B
Alt3	C
Alt4	D

75	The value of a such that $\vec{F} = (axy - z^2)\hat{\imath} + (x^2 + 2yz)\hat{\jmath} + (y^2 - axz)\hat{k}$, being irrotational is, A: -2. B: 1. C: 2. D: -1
Alt1	A
Alt2	B
Alt3	C
Alt4	D

76	If $\vec{A}$ and $\vec{B}$ are irrotational vectors ,then $\vec{A} \times \vec{B}$ is, A: rotational. B: irrotational. C: solenoidal. D: constant.
Alt1	A
Alt2	B
Alt3	C

Alt4	D

77	The solution of the differential equation $\frac{dy}{dx} + \frac{1+y^2}{1+x^2} = 0$, is A: $tan^{-1}(y) + sec^{-1}(x) = c.$ B: $sin^{-1}(y) + tan^{-1}(x) = c.$ C: $cos^{-1}(y) + tan^{-1}(x) = c.$ D: $tan^{-1}(y) + tan^{-1}(x) = c.$
Alt1	A
Alt2	B
Alt3	C
Alt4	D

78	The solution of the differential equation $e^y\,dx + (xe^y + 2y)dy = 0$, is A: $x\,e^y + y^2 = c.$ B: $x\,e^y - y^2 = c.$ C: $ye^x - x^2 = c.$ D: $ye^x + x^2 = c.$
Alt1	A
Alt2	B
Alt3	C
Alt4	D

79	The singular solution of $y = px + {}^{a}/_{p}$, is A: $x^2 + y^2 = a^2.$ B: $y^2 = 4ax.$ C: $x^2 = 4ay.$ D: $x^2 - y^2 = a^2.$
Alt1	A
Alt2	B
Alt3	C
Alt4	D

80	The value of $\lim_{x\to\infty}[sinh^{-1}(x) - \log(x)]$ is A: log 2 B: 1 C: 0. D: ∞.
Alt1	A
Alt2	B
Alt3	C
Alt4	D

81	If each element of a group G except the identity element is of order 2, then A: G is a non-abelian group. B: G is a Hamiltonian group. C: G is an abelian group. D: G is an additive group.
Alt1	A
Alt2	B
Alt3	C
Alt4	D

82	If G is a finite group with two conjugate classes only, then O(G) is, A: 1. B: 0. C: 2. D: ∞.
Alt1	A
Alt2	B
Alt3	C

Alt4	D

83	If v_1 and v_2 are elements of an inner product space V, then $\|(v_1 + v_2)\|^2 + \|(v_1 - v_2)\|^2$ is equal to A: $2(\|v_1\|^2 - \|v_2\|^2)$ B: $2(\|v_1\|^2 + \|v_2\|^2)$ C: $\mathbf{2}(\|v_1\|^2$ D: $\mathbf{2}(\|v_2\|^2$
Alt1	A
Alt2	B
Alt3	C
Alt4	D

84	If $T : V \to V$ is a linear transformation and $n(T) = \dim(\ker T)$ and $r(T) = \dim [V(T)]$, then $r(T)+n(T)$, is equal to A: dim(ker T). B: dim [V(T)]. C: ϕ D: dim (V).
Alt1	A
Alt2	B
Alt3	C
Alt4	D

85	If C is the field of complex numbers, then the vectors (a_1, a_2) and (b_1, b_2) in V_2C:, are linearly dependent if A: $a_1 b_2 + a_2 b_1 = 0$. B: $a_1 b_2 + a_2 b_1 \neq 0$. C: $a_1 b_2 - a_2 b_1 = 0$. D: $a_1 a_2 + b_1 b_2 \neq 0$,
Alt1	A
Alt2	B
Alt3	C
Alt4	D

86	The value of $c \int \frac{e^z}{z} dz$,where C is the unit circle $\|z\| = 1$, is A: $2\pi i$. B: πi C: 1. D: $1 + \pi i$.
Alt1	A
Alt2	B
Alt3	C
Alt4	D

87	The residue of $\frac{z+1}{z^2-2z}$ at its poles are A: $(\frac{1}{2}, \frac{3}{2})$. B: $(-\frac{1}{2}, \frac{3}{2})$. C: $(-\frac{1}{2}, \frac{3}{4})$. D: $(\frac{1}{2}, \frac{3}{4})$.Ans : [b]
Alt1	A
Alt2	B

Alt3	C
Alt4	D

88	If the function $u(x,y) = ax^2 - y^2 + xy$, is harmonic, then the value of a , is A: 0. B: -1. C: -2. D: 1.
Alt1	A
Alt2	B
Alt3	C
Alt4	D

89	The invariant (or) fixed points of the bilinear transformation $\omega = \frac{1+z}{1-z}$ are A: $i,\ i$. B: $1,\ i$. C: $i,\ -i$. D: $-i, -i$.
Alt1	A
Alt2	B
Alt3	C
Alt4	D

90	P and Q are two unlike parallel forces .When P is doubled , it is found that the line of action of Q is midway between the lines of action of P and the new resultant. Then P:Q is A: 1 : 4. B: 2 : 1. C: 2 : 3. D: 3 : 2 .
Alt1	A
Alt2	B
Alt3	C
Alt4	D

91	For a particle executing a Simple Harmonic Motion, the period required to move from the position of maximum displacement to one in which the displacement is one-half the amplitude , is A: $\frac{1}{4}$ (period). B: $\frac{1}{2}$ (period). C: $\frac{1}{3}$(period). D: $\frac{1}{6}$. (period).
Alt1	A
Alt2	B
Alt3	C
Alt4	D

92	If one of the roots of the equation $3x^5 - 4x^4 - 42x^3 + 56x^2 + 27x - 36 = 0$, is $\sqrt{2} + \sqrt{5}$, then the roots of the equation are A: $\pm\sqrt{2} \pm \sqrt{5}, \frac{3}{4}$. B: $\pm\sqrt{2} \pm \sqrt{5}, \frac{1}{4}$. C: $\pm\sqrt{2} \pm \sqrt{5}, \frac{4}{3}$. D: $\pm\sqrt{2} \pm \sqrt{5}, \frac{3}{2}$.
Alt1	A
Alt2	B
Alt3	C
Alt4	D

93	If α, β, γ are the roots of the equation $x^3 + px^2 + qx + r = 0$, then the value of $\sum \alpha(\beta + \gamma)$ is A: $2p$. B: $2q$. C: $p + q$. D: $p - q$.
Alt1	A
Alt2	B
Alt3	C
Alt4	D

94	The probability that a company director will travel by train is $\frac{1}{5}$ and byplane is $\frac{2}{3}$. The probability of his travel by train or plane is, A: $\frac{1}{6}$. B: $\frac{3}{5}$. C: $\frac{13}{15}$. D: $\frac{3}{7}$.
Alt1	A
Alt2	B
Alt3	C
Alt4	D

95	The two regression equations of the variables x and y are $x = 19.13 - 0.87\,y$ and $y = 11.64 - 0.50\,x$. Then mean of x and mean of y are A: 10.20 , 11.04. B: 15.79, 3.74. C: 2.70, 3.40. D: 6.00 , 4.00.
Alt1	A
Alt2	B
Alt3	C
Alt4	D

96	The sequence $\{a_n\}$ defined by $a_1 = \frac{3}{2}, a_{n+1} = 2 - \frac{1}{a_n}$, for all n ≥ 1, is convergent, then the limit of the sequence is, A: 0 B: -1 C: 1 D: 2
Alt1	A
Alt2	B
Alt3	C
Alt4	D

97	The series $\frac{1}{1+x} + \frac{x}{1+x^2} + \frac{x^2}{1+x^3} + \cdots$ to ∞ A: converges if $x > 1$ and diverges if $x \leq 1$. B: converges if $x > 1$. C: converges if $x < 1$ and diverges if $x \geq 1$. D: diverges if $x < 1$.
Alt1	A
Alt2	B
Alt3	C
Alt4	D

98	The function $f: (0,2) \to R$ defined by $f(x) = \lvert x - 1 \rvert$, is A: continuous at $x = 1$ and differentiable at $x = 1$. B: not continuous at $x = 1$ and differentiable at $x = 1$. C: not continuous at $x = 1$ and not differentiable at $x = 1$. D: continuous at $x = 1$ and not differentiable at $x = 1$.
Alt1	A
Alt2	B

Alt3	C
Alt4	D

99	A body originally at 80°C cools down to 60°C in 20 minutes, the temperature of the air being 40°C. The temperature of the body after 40 minutes from the original is A: 45°C. B: 50°C. C: 53°C. D: 48°C
Alt1	A
Alt2	B
Alt3	C
Alt4	D

100	Bacteria in a certain culture increase at a rate proportional to the number present. If the number N increases from 1000 to 2000 in 1 hour. At the end of 1.5 hours, the number of bacteria present is A: 2256.76 B: 2356.76 C: 2828.42 D: 2528.42
Alt1	A
Alt2	B
Alt3	C
Alt4	D