IFAS PREVIOUS YEAR QUESTION PAPER – IIT JAM MATHS 2020

SECTION – A
MULTIPLE CHOICE QUESTIONS (MCQ)

Q.1 Let $s_n = 1 + \frac{(-1)^n}{n}, n \in \mathbb{N}$. Then the sequence $\{s_n\}$ is
(A) monotonically increasing and is convergent to 1
(B) monotonically decreasing and is convergent to 1
(C) neither monotonically increasing nor monotonically decreasing but is convergent to 1
(D) divergent

Q.2 Let $f(x) = 2x^3 - 9x^2 + 7$. Which of the following is true?
(A) f is one-one in the interval [- 1, 1]
(B) f is one-one in the interval [2, 4]
(C) f is NOT one-one in the interval [- 4, 0]
(D) f is NOT one-one in the interval [0, 4]

Q.3 Which of the following id FALSE ?
(A) $\lim_{x\to\infty} \frac{x}{e^x} = 0$
(B) $\lim_{x\to 0^+} \frac{1}{xe^{1/x}} = 0$
(C) $\lim_{x\to 0^+} \frac{\sin x}{1+2x} = 0$
(D) $\lim_{x\to 0^+} \frac{\cos x}{1+2x} = 0$

Q.4 Let $g: \mathbb{R} \to \mathbb{R}$ be a twice differentiable function. If $f(x,y) = g(y) + xg'(y)$, then
(A) $\frac{\partial f}{\partial x} + y\frac{\partial^2 f}{\partial x \partial y} = \frac{\partial f}{\partial y}$
(B) $\frac{\partial f}{\partial y} + y\frac{\partial^2 f}{\partial x \partial y} = \frac{\partial f}{\partial x}$
(C) $\frac{\partial f}{\partial x} + x\frac{\partial^2 f}{\partial x \partial y} = \frac{\partial f}{\partial y}$
(D) $\frac{\partial f}{\partial y} + x\frac{\partial^2 f}{\partial x \partial y} = \frac{\partial f}{\partial x}$

Q. 5 If the equation of the tangent plane to the surface $z = 16 - x^2 - y^2$ at the point $P(1,3,6)$ is $ax + by + cz + d = 0$, then the value of $|d|$ is
(A) 16
(B) 26
(C) 36
(D) 46

Q.6 If the directional derivative of the function $z = y^2e^{2x}$ at $(2,-1)$ along the unit vector $\vec{b} = \alpha\hat{\imath} + \beta\hat{\jmath}$ is zero, then $|\alpha + \beta|$ equals
(A) $\frac{1}{2\sqrt{2}}$
(B) $\frac{1}{\sqrt{2}}$
(C) $\sqrt{2}$
(D) $2\sqrt{2}$

Q.7 If $u = x^3$ *and* $v = y^2$ transformation given by $T(x,y) = (-x,y)$. Then

(A) $T^{2k} = T$ For all $k \geq 1$
(B) $T^{2k+1} = -T$ for all $k \geq 1$
(C) The range of T^2 is a proper subspace of the range of T
(D) the range of T^2 is equal to the range of T

Q.9 The radius of convergence of the power series

$\sum_{n=1}^{\infty} \left(\frac{n+2}{n}\right)^{n^2} x^n$ is

(A) e^2
(B) $\frac{1}{\sqrt{e}}$
(C) $\frac{1}{e}$
(D) $\frac{1}{e^2}$

Q. 10 Consider the following group under matrix multiplication:

$H = \left\{\begin{bmatrix} 1 & p & q \\ 0 & 1 & r \\ 0 & 0 & 1 \end{bmatrix} : p, q, r \in \mathbb{R}\right\}$.

Then the center of the group is isomorphic to
(A) $(\mathbb{R}\{0\}, \times)$
(B) $(\mathbb{R}, +)$
(C) $(\mathbb{R}^2, +)$
(D) $(\mathbb{R}, +) \times (\mathbb{R}\backslash\{0\}, \times)$

Q.11 Let $\{a_n\}$ be a sequence of positive real numbers, Suppose that $l = \lim_{n\to\infty} \frac{a_{n+1}}{a_n}$. Which of the following is true?
(A) If $l = 1, then \lim_{n\to\infty} a_n = 1$
(B) If $l = 1, then \lim_{n\to\infty} a_n = 0$
(C) If $l = 1, then \lim_{n\to\infty} a_n = 1$
(D) If $l = 1, then \lim_{n\to\infty} a_n = 0$

Q.12 Define $s_1 = \alpha > 0 \; and \; s_{n+1} = \sqrt{\frac{1+s_n^2}{1+\alpha}}, n \geq 1$ which of the following is true?
(A) If $s_n^2 < \frac{1}{\alpha}$, then $\{s_n\}$ is monotonically increasing and $\lim_{n\to\infty} s_n = \frac{1}{\sqrt{\alpha}}$
(B) If $s_n^2 < \frac{1}{\alpha}$, then $\{s_n\}$ is monotonically decreasing and $\lim_{n\to\infty} s_n = \frac{1}{\alpha}$
(C) If $s_n^2 < \frac{1}{\alpha}$, then $\{s_n\}$ is monotonically increasing and $\lim_{n\to\infty} s_n = \frac{1}{\sqrt{\alpha}}$
(D) If $s_n^2 < \frac{1}{\alpha}$, then $\{s_n\}$ is monotonically decreasing and $\lim_{n\to\infty} s_n = \frac{1}{\alpha}$

Q.13 Suppose that S is the sum of a convergent series $\sum_{n=1}^{\infty} a_n$. Define $t_n = a_n + a_{n+1} + a_{n+2}$. Then the series $\sum_{n=1}^{\infty} t_n$
(A) diverges
(B) converges to $3S - a_1 - a_2$
(C) converges to $3S - a_1 - 2a_2$
(D) converges to $3S - 2a_1 - a_2$

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Q.14 Let $a \in \mathbb{R}$. $IF\ f(x) = \begin{cases} (x+a)^2\ , & x \leq 0 \\ (x+a)^3\ , & x > 0, \end{cases}$ then

(A) $\frac{d^2f}{dx^2}$ does not exist at $x = 0$ for any value of a

(B) $\frac{d^2f}{dx^2}$ exists at $x = 0$ for exactly one value of a

(C) $\frac{d^2f}{dx^2}$ exists at $x = 0$ for exactly two value of a

(D) $\frac{d^2f}{dx^2}$ exists at $x = 0$ for infinitely many value of a

Q.15 Let $f(x,y) = \begin{cases} x^2 \sin\frac{1}{x} + y^2 \sin\frac{1}{y}, & xy \neq 0 \\ x^2 \sin\frac{1}{x}, & x \neq 0, y = 0 \\ y^2 \sin\frac{1}{y}, & y \neq 0, x = 0 \\ 0, & x = y = 0. \end{cases}$

Which of the following is true at (0; 0)?

(A) f is not continuous

(B) $\frac{\partial f}{\partial x}$ is continuous but $\frac{\partial f}{\partial y}$ is not continuous

(C) f is not differentiable

(D) f is differentiable but both $\frac{\partial f}{\partial x}$ and $\frac{\partial f}{\partial y}$ are not continuous

Q. 16 Let S be the surface of the portion of the sphere with centre at the origin and radius 4, above the xy-plane. Let $\vec{F} = y\hat{\imath} - x\hat{\jmath} + yx^3\hat{k}$ is the unit outward normal to S, then $\iint_S (\nabla \times \vec{F}).\hat{n}\, dS$ Equals

(A) -32π

(B) -16π

(C) 16π

(D) 32π

Q.17 Let $f(x,y,z) = x^3 + y^3 + z^3 - 3xyz$. A point at which the gradient of the function f is equal to zero is

(A) (-1,1,-1)

(B) (-1,-1,-1)

(C) (-1,1, 1)

(D) (1,-1, 1)

Q.18 The area bounded by the curves $x^2 + y^2 = 2x$ and $x^2 + y^2 = 4x$, and the straight lines $y = x$ and $y = 0$ is

(A) $3\left(\frac{\pi}{2} + \frac{1}{4}\right)$

(B) $3\left(\frac{\pi}{4} + \frac{1}{2}\right)$

(C) $2\left(\frac{\pi}{4} + \frac{1}{3}\right)$

(D) $2\left(\frac{\pi}{3} + \frac{1}{4}\right)$

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Q.19 Let M be a real 6×6 matrix. Let 2 and -1 be two eigenvalues of M. If $M^5 = aI + bM$, where $a, b \in \mathbb{R}$, then

(A) $a = 10, b = 11$
(B) $a = -11, b = 10$
(C) $a = -10, b = 11$
(D) $a = 10, b = -11$

Q.20 Let M be an $n \times n (n \geq 2)$ non-zero real matrix with $M^2 = 0$ and let $\alpha \in \mathbb{R}\{0\}$. Then

(A) α is the only eigenvalue of $(M + \alpha I)$ and $(M - \alpha I)$
(B) α is the only eigenvalue of $(M + \alpha I)$ and $(\alpha I - M)$
(C) $-\alpha$ is the only eigenvalue of $(M + \alpha I)$ and $(M - \alpha I)$
(D) $-\alpha$ is the only eigenvalue of $(M + \alpha I)$ and $(\alpha I - M)$

Q. 21 Consider the differential equation $L[y] = (y - y^2)dx + xdy = 0$. The function $f(x, y)$ is said to be an integrating factor of the equation if $f(x; y)L[y] = 0$ becomes exact. $If\ f(x, y) = \frac{1}{x^2 y^2}$, then

(A) f is an integrating factor and $y = 1 - kxy;\ k \in \mathbb{R}$ is NOT its general solution
(B) f is an integrating factor and $y = -1 + kxy, k \in \mathbb{R}$ is its general solution
(C) f is an integrating factor and $y = -1 + kxy, k \in \mathbb{R}$ is NOT its general solution
(D) f is NOT an integrating factor and y $y = 1 + kxy, k \in \mathbb{R}$ is its general solution

Q.22 A solution of the differential equation $2x^2 \frac{d^2y}{dx^2} + 3x \frac{dy}{dx} - y = 0, x > 0$ that passes through the point (1,1) is

(A) $y = \frac{1}{x}$
(B) $y = \frac{1}{x^2}$
(C) $y = \frac{1}{\sqrt{x}}$
(D) $y = \frac{1}{x^{3/2}}$

Q.23 Let M ne a 4×4 real matrix and let $\{e_1, e_2, e_3\}$ be the standard basis of $\mathbb{R}^3$, Which of the following is true?

(A) If rank$(M) = 1$, then $\{Me_1, Me_2\}$ is a linearly independent set
(B) If rank$(M) = 2$, then $\{Me_1, Me_2\}$ is a linearly independent set
(C) If rank$(M) = 2$, then $\{Me_1, Me_3\}$ is a linearly independent set
(D) If rank$(M) = 3$, then $\{Me_1, Me_3\}$ is a linearly independent set

Q.24 The value of the triple integral $\iiint_V (x^2 y + 1)dxdydz$, where V is the region given by $x^2 + y^2 \leq 1, 0 \leq z \leq 2$ is

(A) π
(B) 2π
(C) 3π
(D) 4π

Q.25 Let S be the part of the cone $z^2 = x^2 + y^2$ between the plane $z = 0$ and $z = 1$. Then the value of the surface integral $\iint_S (x^2 + y^2)ds$ is

(A) π
(B) $\frac{\pi}{\sqrt{2}}$

(C) $\frac{\pi}{\sqrt{3}}$
(D) $\frac{\pi}{2}$

Q.26 Let $\vec{a} = \hat{\imath} + \hat{\jmath} + \hat{k}$ and $\vec{r} = x\hat{\imath} + y\hat{\jmath} + z\hat{k}, x, y, z \in \mathbb{R}$. Which of the following is FALSE?
(A) $\nabla(\vec{a} \cdot \vec{r}) = \vec{a}$
(B) $\nabla \cdot (\vec{a} \times \vec{r}) = 0$
(C) $\nabla \times (\vec{a} \times \vec{r}) = \vec{a}$
(D) $\nabla \cdot ((\vec{a} \cdot \vec{r})\vec{r}) = 4(\vec{a} \cdot \vec{r})$

Q.27 Let $D = \{(x, y) \in \mathbb{R}^2 : |x| + |y| \leq 1\}$ and $f : D \to \mathbb{R}$ be a non-constant continuous function. Which of the following is TRUE?
(A) The range of f is unbounded
(B) The range of f is a union of open intervals
(C) The range of f is a closed interval
(D) The range of f is a union of at least two disjoint closed intervals

Q.28 Let $f : [0,1] \to \mathbb{R}$ be a continuous function such that $f\left(\frac{1}{2}\right) = -\frac{1}{2}$ and $|f(x) - f(y) - (x - y)| \leq \sin(|x - y|^2)$ For all $x, y \in [0,1]$. Then $\int_0^1 f(x)dx$ is
(A) $-\frac{1}{2}$
(B) $-\frac{1}{4}$
(C) $\frac{1}{4}$
(D) $\frac{1}{2}$

Q.29 Let $S^1 = \{z \in \mathbb{C} : |z| = 1\}$ be the circle group under multiplication and $i = \sqrt{-1}$. Then the set $\{\theta \in \mathbb{R} : \langle e^{i2\pi\theta} \rangle$ is infinite$\}$ is
(A) empty
(B) non-empty and finite
(C) countably infinite
(D) uncountable

Q.30 Let $F\{\omega \in \mathbb{C} : \omega^{2020} = 1\}$. Consider the groups
$G = \left\{\begin{pmatrix} \omega & z \\ 0 & 1 \end{pmatrix} : \omega \in F, z \in \mathbb{C}\right\}$ and
$H = \left\{\begin{pmatrix} 1 & z \\ 0 & 1 \end{pmatrix} : z \in \mathbb{C}\right\}$
under matrix multiplication. Then the number of cosets of H in G is
(A) 1010
(B) 2019
(C) 2020
(D) infinite

Q.31 Let $a, b, c \in \mathbb{R}$ such that $a < b < c$. Which of the following is/are true for any continuous function $f : \mathbb{R} \to \mathbb{R}$ satisfying $f(a) = b, f(b) = c$ and $f(c) = a$?
(A) There exists $\alpha \in (a, c)$ such that $f(\alpha) = \alpha$
(B) There exists $\beta \in (a, c)$ such that $f(\beta) = \beta$

(C) There exists $\gamma \in (a,b)$ such that $(f \circ f)(\gamma) = \gamma$
(D) There exists $\delta \in (a,c)$ such that $(f \circ f \circ f)(\delta) = \delta$

Q.32 If $s_n = \frac{(-1)^n}{2^n+3}$ and $t_n = \frac{(-1)^n}{4n-1}$, $n = 0,1,2, \ldots \ldots$, then
(A) $\sum_{n=0}^{\infty} s_n$ is absolutely convergent
(B) $\sum_{n=0}^{\infty} t_n$ is absolutely convergent
(C) $\sum_{n=0}^{\infty} s_n$ is conditionally convergent
(D) $\sum_{n=0}^{\infty} t_n$ is conditionally convergent

Q. 33 Let $a, b \in \mathbb{R}$ and $a < b$. Which of the following statement(s) is/are true?
(A) There exists a continuous function $f : [a,b] \to (a,b)$ such that f is one-one
(B) There exists a continuous function $f : [a,b] \to (a,b)$ such that f is onto
(C) There exists a continuous function $f : (a,b) \to [a,b]$ such that f is one-one
(D) There exists a continuous function $f : (a,b) \to [a,b]$ such that f is onto

Q. 34 Let V be a non-zero vector space over a field F. Let $S \subset V$ be a non-empty set. Consider the following properties of S:
(I) For any vector space W over F, any map $f : S \to W$ extends to a linear map from V to W.
(II) For any vector space W over F and any two linear maps $f, g : V \to W$ satisfying $f(s) = g(s)$ for all $s \in S$, we have $f(v) = g(v)$ for all $v \in V$.
(III) S is linearly independent.
(IV) The span of S is V:
Which of the following statement(s) is /are true?
(A) (I) implies (IV)
(B) (I) implies (III)
(C) (II) implies (III)
(D) (II) implies (IV)

Q. 35 Let $L[y] = x^2 \frac{d^2y}{dx^2} + px\frac{dy}{dx} + qy$, where p, q are real constants. Let $y_1(x)$ and $y_2(x)$ be two solutions of $L[y] = 0;\ x > 0$, that satisfy $y_1(x_0) = 1, y_1'(x_0) = 0, y_2(x_0) = 0$ and $y_2'(x_0) = 1$ for some $x_0 > 0$. Then,
(A) $y_1(x)$ is not a constant multiple of $y_2(x)$
(B) $y_1(x)$ is a constant multiple of $y_2(x)$
(C) 1, ln x are solutions of $L[y] = 0$ when $p = 1;\ q = 0$
(D) x, ln x are solutions of $L[y] = 0$ when $p + q \neq 0$

Q. 36 Consider the following system of linear equations
$x + y + 5z = 3, x + 2y + mz = 5$ and $x + 2y + 4z = k$.
The system is consistent if
(A) $m \neq 4$
(B) $k \neq 5$
(C) $m = 4$
(D) $k = 5$

Q. 37 Let $a = \lim_{n\to\infty} \left(\frac{1}{n^2} + \frac{2}{n^2} + \ldots + \frac{(n-1)}{n^2}\right)$ and $b = \lim_{n\to\infty} \left(\frac{1}{n+1} + \frac{1}{n+2} + \ldots + \frac{1}{n+n}\right)$
Which of the following is/are true ?
(A) $a > b$

(B) $a < b$
(C) $ab = In\sqrt{2}$
(D) $\frac{a}{b} = In\sqrt{2}$

Q. 38 Let S be that part of the surface of the paraboloid $z = 16 - x^2 - y^2$ which is above the plane $z = 0$ and D be its projection on the xy-plane. Then the area of S equals
(A) $\iint_D \sqrt{1 + 4(x^2 + y^2)}dxdy$
(B) $\iint_D \sqrt{1 + 2(x^2 + y^2)}dxdy$
(C) $\int_0^{2\pi}\int_0^4 \sqrt{1 + 4r^2}drd\theta$
(D) $\int_0^{2\pi}\int_0^4 \sqrt{1 + 4r^2}rdrd\theta$

Q. 39 Let f be a real valued function of a real variable, such that $\left|f^{(n)}(0)\right| \leq K$ for all $n \in \mathbb{N}$, where $K > 0$. Which of the following is/are true?
(A) $\left[\frac{f^{(n)}(0)}{n!}\right]^{\frac{1}{n}} \to 0$ as $n \to \infty$
(B) $\left[\frac{f^{(n)}(0)}{n!}\right]^{\frac{1}{n}} \to \infty$ as $n \to \infty$
(C) $f^{(n)}(x)$ exists for all $x \in \mathbb{R}$ and for all $n \in \mathbb{N}$
(D) The series $\sum_{n=1}^{\infty} \frac{f^{(n)}(0)}{(n-1)!}$ Is absolutely convergent

Q. 40 Let G be a group with identity e. Let H be an abelian non-trivial proper subgroup of G with the property that $H \cap gHg^{-1} = \{e\}$ for all $g \notin H$.
If $K = \{g \in G: gh = hg \; for \; all \; h \in H\}$, then
(A) K is a proper subgroup of H
(B) H is a proper subgroup of K
(C) $K = H$
(D) there exists no abelian subgroup $L \subseteq G$ such that K is a proper subgroup of L

SECTION – C
NUMERICAL ANSWER TYPE (NAT)
Q. 41 – Q. 50 carry one mark each.

Q. 41 Let $x_n = n^{\frac{1}{n}}$ and $y_n = e^{1-x_n}, n \in \mathbb{N}$. Then the value of $\lim_{n\to\infty} y_n$ is_____.

Q. 42 Let $\vec{F} = x\hat{\imath} + y\hat{\jmath} + z\hat{k}$ and S be the sphere given by $(x-2)^2 + (y-2)^2 + (z-2)^2 = 4$. If $\hat{n}$ is the unit outward normal to S, then
$\frac{1}{\pi}\iint_S \vec{F} \cdot \hat{n}\, dS$
Is_____.

Q. 43 Let $f : \mathbb{R} \to \mathbb{R}$ be such the f, f', f'' are continuous functions with $f > 0, f' > 0$ and $f'' > 0$. Then
$\lim_{x\to-\infty} \frac{f(x)+f'(x)}{2}$
Is_____.

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Q.44 Let $S = \left\{\frac{1}{n} : n \in \mathbb{N}\right\}$ and $f : S \to \mathbb{R}$ be defined by $f(x) = \frac{1}{x}$. Then
$\max\left\{\delta: \left|x - \frac{1}{3}\right| < \delta \Rightarrow \left|f(x) - f\left(\frac{1}{3}\right)\right| < 1\right\}$
Is_____. (rounded off to two decimal places)

Q. 45 Let $f(x,y) = e^x \sin y, x = t^3 + 1$ and $y = t^4 + t$. Then $\frac{df}{dt}$ at $t = 0$ is_____. (rounded off to two decimal places)

Q. 46 Consider the differential equation
$\frac{dy}{dx} + 10y = f(x), x > 0,$
where $f(x)$ is a continuous function such that $\lim_{x\to\infty} f(x) = 1$. Then the value of
$\lim_{x\to\infty} y(x)$
Is_____.

Q. 47 If $\int_0^1 \int_{2y}^2 e^{x^2} dxdy = k(e^4 - 1)$, then k equals_____.

Q. 48 Let $f(x\ ;\ y) = 0$ be a solution of the homogeneous differential equation
$(2x + 5y)dx - (x + 3y)dy = 0$
If $f(x + \alpha, y - 3) = 0$ is a solution of the differential equation
$(2x + 5y - 1)dx + (2 - x - 3y)dy = 0,$
Then the value of α is_____.

Q. 49 Consider the real vector space $P_{2020} = \left\{\sum_{i=0}^n a_i x^i : a_i \in \mathbb{R}\ and\ 0 \le n \le 2020\right\}$. Let W be the subspace given by
$W = \left\{\sum_{i=0}^n a_i x^i \in P_{2020} :\ a_i = 0\ \ for\ all\ odd\ i\right\}$
Then, the dimension of W is_____.

Q. 50 Let $\phi : S_3 \to S^1$ be a non-trivial non-injective group homomorphism. Then, the number of elements in the kernel of ϕ is_____ .

Q. 51 – Q. 60 carry two marks each.

Q. 51 The sum of the series $\frac{1}{2(2^2+1)} + \frac{1}{3(3^2-1)} + \frac{1}{4(4^2-1)} + \cdots$ is_____.

Q. 52 Consider the expansion of the function $f(x) = \frac{3}{(1-x)(1+2x)}$ in powers of x, that is valid in $|x| < \frac{1}{2}$. Then the coefficient of x^4 is_____.

Q. 53 The minimum value of the function $f(x,y) = x^2 + xy + y^2 - 3x - 6y + 11$ is_____.

Q. 54 Let $f(x) = \sqrt{x} + \alpha x, x > 0$ and
$g(x) = a_0 + a_1(x-1) + a_2(x-1)^2$
be the sum of the first three terms of the Taylor series of $f(x)$ around $x = 1$. If $g(3) = 3$, then α is_____.

Q. 55 Let C be the boundary of the square with vertices $(0,0), (1,0), (1,1)$ and $(0,1)$ oriented in the counter clockwise sense. Then, the value of the line integral
$\oint_C x^2y^2 dx + (x^2 - y^2)dy$

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Is _____. (rounded off to two decimal places)

Q. 56 Let $f : \mathbb{R} \to \mathbb{R}$ be a differentiable function with $f'(x) = f(x)$ for all x. Suppose that $f(\alpha x)$ and $f(\beta x)$ are two non-zero solutions of the differential equation

$4\frac{d^2y}{dx^2} - p\frac{dy}{dx} + 3y = 0$

Satisfying

$f(\alpha x)\, f(\beta x) = f(\alpha x) f(-\beta x) = f(x)$

Then, the value of p is_____.

Q. 57 If $x^2 + xy^2 = c$, where $c \in \mathbb{R}$, is the general solution of the exact differential equation

$M(x, y)dx + 2xy\, dy = 0$

Then $M(1, 1)$ is _____.

Q. 58 Let $M = \begin{bmatrix} 9 & 2 & 7 & 1 \\ 0 & 7 & 2 & 1 \\ 0 & 0 & 11 & 6 \\ 0 & 0 & -5 & 0 \end{bmatrix}$. Then, the value of det $((8I - M)^3)$ is_____.

Q. 59 Let $T : \mathbb{R}^7 \to \mathbb{R}^7$ be a linear transformation with Nullity$(T) = 2$. Then, the minimum possible value for Rank(T^2) is_____.

Q. 60 Suppose that G is a group of order 57 which is NOT cyclic. If G contains a unique subgroup H of order 19, then for any $g \notin H, o(g)$ is_____.

END OF THE QUESTION PAPER

Mathematics (MA)					
Q. No.	Session	QT	Section	Key	Marks
1	2	MCQ	A	C	1
2	2	MCQ	A	D	1
3	2	MCQ	A	D	1
4	2	MCQ	A	C	1
5	2	MCQ	A	Marks To All	1
6	2	MCQ	A	C	1
7	2	MCQ	A	D	1
8	2	MCQ	A	D	1
9	2	MCQ	A	D	1
10	2	MCQ	A	B	1
11	2	MCQ	A	D	2
12	2	MCQ	A	A	2
13	2	MCQ	A	D	2
14	2	MCQ	A	A	2
15	2	MCQ	A	D	2
16	2	MCQ	A	A	2
17	2	MCQ	A	B	2
18	2	MCQ	A	B	2
19	2	MCQ	A	A	2

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20	2	MCQ	A	B	2
21	2	MCQ	A	C	2
22	2	MCQ	A	A	2
23	2	MCQ	A	D	2
24	2	MCQ	A	B	2
25	2	MCQ	A	B	2
26	2	MCQ	A	C	2
27	2	MCQ	A	C	2
28	2	MCQ	A	A	2
29	2	MCQ	A	D	2
30	2	MCQ	A	C	2
31	2	MCQ	B	A;C;D	2
32	2	MCQ	B	A;D	2
33	2	MCQ	B	A;C;D	2
34	2	MCQ	B	B;D	2
35	2	MCQ	B	A;C	2
36	2	MCQ	B	A;D	2
37	2	MCQ	B	B;C	2
38	2	MCQ	B	A;D	2
39	2	MCQ	B	A;D	2
40	2	MCQ	B	C;D	2
41	2	MCQ	C	1 to 1	1
42	2	MCQ	C	32 to 32	1
43	2	MCQ	C	0 to INF	1
45	2	MCQ	C	0.08 to 0.09	1
46	2	MCQ	C	2.70 to 2.72	1
47	2	MCQ	C	0.1 to 0.1	1
48	2	MCQ	C	0.25 to 0.25	1
49	2	MCQ	C	7 to 7	1
50	2	MCQ	C	1011 to 1011	1
51	2	MCQ	C	3 to 3	2
52	2	MCQ	C	0.25 to 0.25	2
53	2	MCQ	C	33 to 33	2
54	2	MCQ	C	2 to 2	2
55	2	MCQ	C	0.65 to 0.67	2
56	2	MCQ	C	8 to 8	2
57	2	MCQ	C	3 to 3	2
58	2	MCQ	C	-216 to -216	2
59	2	MCQ	C	3 to 3	2
60	2	MCQ	C	3 to 3	2