GAT B Mathematics
Sample Paper – 4

Total Questions	Duration	Max Marks	Marking Scheme
15	23 Minutes	15	$+1$ correct / -0.5 wrong

Instructions

1. This paper contains **15 single-correct MCQ** questions from the Mathematics section of GAT B.
2. Each correct answer carries $+1$ mark. Each incorrect answer carries -0.5 mark (negative marking applies).
3. Questions left unattempted carry **0** marks.
4. Choose the **single best** option for each question.
5. Allowed time: **23 minutes**.

Questions

Q1. $\lim_{x \to 2} \frac{x^2 - 4}{x - 2}$ equals: *(Concept check)*

(A) 4
(B) 0
(C) ∞
(D) 2

Q2. Let $f(x) = x^4 + 3x^3 - 2x + 5$. The value of $f''(1)$ is: *(Application)*

(A) 25
(B) 28
(C) 30
(D) 32

Q3. $\int \frac{1}{x^2 - 1}\, dx$ equals: *(Application)*

(A) $\ln |x^2 - 1| + C$

(B) $\frac{1}{2}\ln|x+1|+C$
(C) $\arctan(x)+C$
(D) $\frac{1}{2}\ln\left|\dfrac{x-1}{x+1}\right|+C$

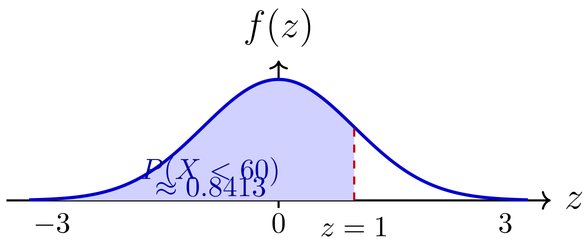
Q4. The eigenvalues of $A = \begin{pmatrix} 3 & 1 \\ 0 & 3 \end{pmatrix}$ are: *(Concept check)*

(A) 1 and 3
(B) 3 (repeated)
(C) 0 and 3
(D) -3 and 3

Q5. A system of 3 linear equations in 3 unknowns has a unique solution when the coefficient matrix A satisfies: *(Concept check)*

(A) $\det(A) \neq 0$
(B) $\det(A) = 0$
(C) $\text{rank}(A) < 3$
(D) The system is homogeneous

Q6. For $X \sim N(50, 10^2)$, the standardised value when $X = 60$ is $z = 1$. The figure below shows the shaded region $P(X < 60)$. Using standard normal tables, $P(X < 60) \approx$



(Application)

(A) 0.5000
(B) 0.6800
(C) 0.8413

(D) 0.9500

Q7. If the Pearson correlation coefficient between two variables is $r = 0.9$, the coefficient of determination r^2 is: *(Concept check)*

(A) 0.90
(B) 0.30
(C) 0.45
(D) 0.81

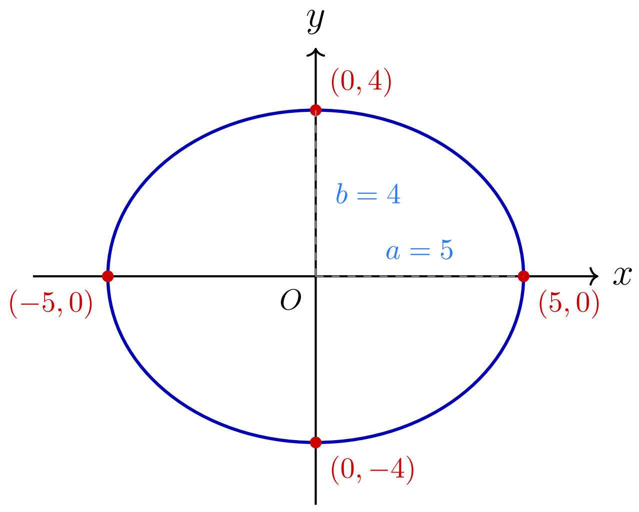
Q8. Determine whether $(2x+y)\,dx+(x+2y)\,dy = 0$ is exact. With $M = 2x+y$ and $N = x + 2y$: *(Application)*

(A) Not exact, since $\partial M/\partial y \neq \partial N/\partial x$
(B) Exact, since $\partial M/\partial y = \partial N/\partial x = 1$
(C) Separable but not exact
(D) Linear but not exact

Q9. To solve the Bernoulli equation $\frac{dy}{dx} + y = y^2$, the standard substitution that linearises it is: *(Application)*

(A) $v = y^{-1}$
(B) $v = y^2$
(C) $v = \ln y$
(D) $v = e^y$

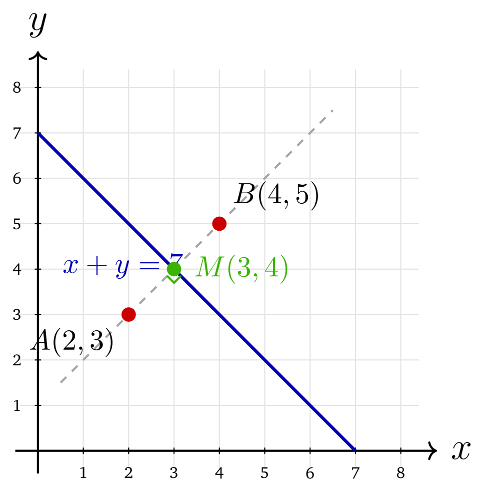
Q10. For the ellipse $\frac{x^2}{25} + \frac{y^2}{16} = 1$, shown below with its semi-axes labelled, the length of the major axis is:



(Concept check)

(A) 4
(B) 5
(C) 10
(D) 8

Q11. The locus of all points equidistant from $A(2, 3)$ and $B(4, 5)$ is the perpendicular bisector of AB. The diagram below shows points A, B, their midpoint M, line AB (dashed), and the perpendicular bisector. Its equation is:



(Application)

(A) $x - y = 1$

(B) $2x + 2y = 7$
(C) $x + y = 5$
(D) $x + y = 7$

Q12. Let $f(x) = 2x + 1$ and $g(x) = x^2$. Then $(g \circ f)(x)$ equals: *(Application)*

(A) $2x^2 + 1$
(B) $(2x + 1)^2$
(C) $4x^2 + 1$
(D) $4x^2 + 4x + 1$

Q13. The direction cosines of the vector $\mathbf{v} = (1, 2, 2)$ are: *(Application)*

(A) $\left(\frac{1}{3}, \frac{2}{3}, \frac{2}{3}\right)$
(B) $(1, 2, 2)$
(C) $\left(\frac{1}{\sqrt{3}}, \frac{2}{\sqrt{3}}, \frac{2}{\sqrt{3}}\right)$
(D) $\left(\frac{1}{9}, \frac{4}{9}, \frac{4}{9}\right)$

Q14. The sum $\displaystyle\sum_{k=0}^{n} \binom{n}{k} = 2^n$. For $n = 5$, this sum equals: *(Concept check)*

(A) 10
(B) 15
(C) 16
(D) 32

Q15. The sum of all three cube roots of unity ($1, \omega, \omega^2$ where $\omega = e^{2\pi i/3}$) equals: *(Concept check)*

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

Answer Key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	A	2	C	3	D	4	B	5	A
6	C	7	D	8	B	9	A	10	C
11	D	12	B	13	A	14	D	15	C

Solutions

Q1.

Solution

Concept — Limits by factoring: When direct substitution of $x = 2$ yields the indeterminate form $0/0$, factor the numerator and cancel the common factor with the denominator before substituting. **Chapter:** Limits/Continuity

Step 1 — Factor the numerator:

$$x^2 - 4 = (x-2)(x+2).$$

Step 2 — Cancel and evaluate:

$$\lim_{x\to 2} \frac{x^2-4}{x-2} = \lim_{x\to 2} \frac{(x-2)(x+2)}{x-2} = \lim_{x\to 2}(x+2) = 2+2 = 4.$$

Why other options are wrong:

- Option A: Correct — $\lim_{x\to 2}(x+2) = 4$.
- Option B: 0 would arise only if the numerator itself equalled zero at $x = 2$, which it does after cancellation gives $x+2 = 4 \neq 0$.
- Option C: ∞ occurs when the denominator tends to 0 without cancellation; here the $(x-2)$ factors cancel.
- Option D: 2 is the value of x at the limit point, not the value of the limit.

Final Answer: $\lim_{x\to 2} \dfrac{x^2-4}{x-2} = 4 \Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q 1

Q2.

Solution

Concept — Higher-order derivatives: Differentiate the polynomial twice using the power rule, then evaluate the result at the given point. **Chapter:** Differential Calculus

Step 1 — First derivative:

$$f(x) = x^4 + 3x^3 - 2x + 5 \implies f'(x) = 4x^3 + 9x^2 - 2.$$

Step 2 — Second derivative:

$$f''(x) = 12x^2 + 18x.$$

Step 3 — Evaluate at $x = 1$:

$$f''(1) = 12(1)^2 + 18(1) = 12 + 18 = 30.$$

Why other options are wrong:

- Option A: 25 results from a coefficient error when differentiating $3x^3$ (e.g. treating it as $3x^2$).
- Option B: 28 results from omitting the coefficient of x^2 in the second derivative of $3x^3$.
- Option C: Correct — $f''(1) = 30$.
- Option D: 32 results from an error in applying the power rule to the x^4 term.

Final Answer: $f''(1) = 30 \Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q 2

Q3.

Solution

Concept — Partial fraction decomposition: Factor the denominator $x^2 - 1 = (x-1)(x+1)$ and write the integrand as a sum of simpler fractions. **Chapter:** Integral Calculus

Step 1 — Decompose:

$$\frac{1}{(x-1)(x+1)} = \frac{A}{x-1} + \frac{B}{x+1}.$$

Multiplying through: $1 = A(x+1) + B(x-1)$. Setting $x = 1$: $A = \frac{1}{2}$. Setting $x = -1$: $B = -\frac{1}{2}$.

Step 2 — Integrate:

$$\int \frac{1}{x^2-1}\,dx = \frac{1}{2}\int \frac{dx}{x-1} - \frac{1}{2}\int \frac{dx}{x+1} = \frac{1}{2}\ln|x-1| - \frac{1}{2}\ln|x+1| + C = \frac{1}{2}\ln\left|\frac{x-1}{x+1}\right| + C.$$

Why other options are wrong:

- Option A: $\ln|x^2-1|+C$ corresponds to $\int \frac{2x}{x^2-1}\,dx$ (substitution $u=x^2-1$), not the given integral.
- Option B: $\frac{1}{2}\ln|x+1|+C$ keeps only the B term and discards the A term.
- Option C: $\arctan(x)+C$ is the antiderivative of $\frac{1}{x^2+1}$, not $\frac{1}{x^2-1}$.
- Option D: Correct — the standard partial-fraction result.

Final Answer: $\frac{1}{2}\ln\left|\frac{x-1}{x+1}\right|+C \Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q 3

Q4.

Solution

Concept — Eigenvalues of triangular matrices: For any upper or lower triangular matrix, the eigenvalues are precisely the diagonal entries. **Chapter:** Linear Algebra

Step 1 — Identify the structure:

$$A=\begin{pmatrix}3 & 1\\ 0 & 3\end{pmatrix}$$

is upper triangular with diagonal entries 3 and 3.

Step 2 — Confirm via characteristic equation:

$$\det(A-\lambda I)=\det\begin{pmatrix}3-\lambda & 1\\ 0 & 3-\lambda\end{pmatrix}=(3-\lambda)^2=0 \implies \lambda=3 \text{ (with algebraic multiplicity 2)}.$$

Why other options are wrong:

- Option A: 1 and 3 — $\lambda=1$ does not satisfy $(3-\lambda)^2=0$.
- Option B: Correct — $\lambda=3$ is the only eigenvalue, repeated twice.
- Option C: 0 and 3 — $\lambda=0$ would require $\det(A)=0$, but $\det(A)=9\neq 0$.
- Option D: -3 and 3 — $\lambda=-3$ does not satisfy the characteristic equation.

Final Answer: $\lambda=3$ (repeated) $\Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q 4

Q5.

Solution

Concept — Unique solution of linear systems: A square system $A\mathbf{x} = \mathbf{b}$ has a *unique* solution if and only if A is invertible, which is equivalent to $\det(A) \neq 0$ (equivalently, $\operatorname{rank}(A) = n$). **Chapter:** Linear Algebra

Key theorem: For $n \times n$ matrix A:

$$\text{unique solution} \iff A \text{ is invertible} \iff \det(A) \neq 0 \iff \operatorname{rank}(A) = n.$$

Why other options are wrong:

- Option A: Correct — $\det(A) \neq 0$ guarantees A is invertible and the unique solution is $\mathbf{x} = A^{-1}\mathbf{b}$.
- Option B: $\det(A) = 0$ means A is singular; the system either has no solution or infinitely many solutions.
- Option C: $\operatorname{rank}(A) < 3$ for a 3×3 system means A is rank-deficient and a unique solution is impossible.
- Option D: A homogeneous system always has the trivial solution $\mathbf{x} = \mathbf{0}$; for this to be the *only* solution we still require $\det(A) \neq 0$.

Final Answer: $\det(A) \neq 0 \Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q 5

Q6.

Solution

Concept — Standardisation of a normal variable: If $X \sim N(\mu, \sigma^2)$, then $Z = \dfrac{X-\mu}{\sigma} \sim N(0,1)$. Probabilities are read from the standard normal table. **Chapter:** Probability & Statistics

Step 1 — Compute the z-score:

$$z = \frac{X-\mu}{\sigma} = \frac{60-50}{10} = \frac{10}{10} = 1.$$

Step 2 — Read standard normal table:

$$P(X < 60) = P(Z < 1) \approx 0.8413.$$

The shaded region in the bell-curve diagram covers approximately 84.13% of the total area.

Why other options are wrong:

- Option A: $0.5000 = P(Z < 0)$; this is the median ($z = 0$), not $z = 1$.
- Option B: $0.6800 \approx P(-1 < Z < 1)$, the probability within one standard deviation of the mean.
- Option C: Correct — $P(Z < 1) \approx 0.8413$ from standard tables.
- Option D: $0.9500 \approx P(Z < 1.645)$, corresponding to the 95th percentile.

Final Answer: $P(X < 60) \approx 0.8413 \Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q 6

Q7.

Solution

Concept — Coefficient of determination: The coefficient of determination r^2 is the square of the Pearson correlation coefficient r. It measures the proportion of variance in one variable that is explained by the other. **Chapter:** Probability & Statistics

Step 1 — Compute r^2:

$$r = 0.9 \implies r^2 = (0.9)^2 = 0.81.$$

This means 81% of the variance in the response variable is explained by the predictor.

Why other options are wrong:

- Option A: 0.90 is r itself, not r^2.
- Option B: 0.30 is approximately $1 - r^2 = 0.19...$ (this is the unexplained fraction); 0.30 has no direct meaning here.
- Option C: $0.45 = r/2$, which has no standard statistical interpretation in this context.
- Option D: Correct — $r^2 = (0.9)^2 = 0.81$.

Final Answer: $r^2 = 0.81 \Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q 7

Q8.

Solution

Concept — Exactness condition for ODEs: The equation $M(x, y)\,dx + N(x, y)\,dy = 0$ is *exact* if and only if $\dfrac{\partial M}{\partial y} = \dfrac{\partial N}{\partial x}$ throughout a simply-connected domain. **Chapter:** Differential Equations

Step 1 — Identify M and N:

$$M = 2x + y, \quad N = x + 2y.$$

Step 2 — Compute partial derivatives:

$$\frac{\partial M}{\partial y} = \frac{\partial}{\partial y}(2x + y) = 1, \qquad \frac{\partial N}{\partial x} = \frac{\partial}{\partial x}(x + 2y) = 1.$$

Step 3 — Check: Since $\dfrac{\partial M}{\partial y} = \dfrac{\partial N}{\partial x} = 1$, the equation **is exact**.

Why other options are wrong:

- Option A: Incorrect — the partials are equal $(= 1)$, so the equation *is* exact.
- Option B: Correct — exactness condition holds.
- Option C: The equation cannot be written as $f(x)\,dx = g(y)\,dy$, so it is not separable.
- Option D: The equation is not linear in y in standard ODE form; the correct classification is *exact*.

Final Answer: Exact, $\partial M/\partial y = \partial N/\partial x = 1 \Rightarrow \boxed{\text{B}}$

Answer: (B) **Go Back to Q 8**

Q9.

Solution

Concept — Bernoulli equation: An ODE of the form $\dfrac{dy}{dx} + P(x)y = Q(x)y^n$ is called a Bernoulli equation. The substitution $v = y^{1-n}$ reduces it to a linear first-order ODE in v. **Chapter:** Differential Equations

Step 1 — Identify n:

$$\frac{dy}{dx} + y = y^2 \implies n = 2.$$

Step 2 — Apply substitution:

$$v = y^{1-n} = y^{1-2} = y^{-1} = \frac{1}{y}.$$

Then $\frac{dv}{dx} = -y^{-2}\frac{dy}{dx}$. Dividing the original ODE by y^2 and substituting converts it to the linear equation $\frac{dv}{dx} - v = -1$.

Why other options are wrong:

- Option A: Correct — $v = y^{-1}$ is the standard Bernoulli substitution for $n = 2$.
- Option B: $v = y^2$ does not linearise the equation; it leads to a nonlinear ODE in v.
- Option C: $v = \ln y$ is useful for certain separable equations, not Bernoulli equations.
- Option D: $v = e^y$ does not correspond to any standard linearising substitution for this ODE.

Final Answer: $v = y^{-1} \Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q 9

Q10.

Solution

Concept — Ellipse geometry: For $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ with $a > b > 0$, the semi-major axis is a (along the x-axis), the semi-minor axis is b, and the *full* major axis has length $2a$. **Chapter:** Coordinate Geometry

Step 1 — Identify a^2 and b^2:

$$\frac{x^2}{25} + \frac{y^2}{16} = 1 \implies a^2 = 25,\ b^2 = 16 \implies a = 5,\ b = 4.$$

Since $a = 5 > b = 4$, the major axis lies along the x-axis.

Step 2 — Length of major axis:

$$2a = 2 \times 5 = 10.$$

Why other options are wrong:

- Option A: 4 is b, the semi-minor axis length.

- Option B: 5 is a, the semi-major axis; the *full* major axis is $2a = 10$.
- Option C: Correct — major axis $= 2a = 10$.
- Option D: $8 = 2b$ is the length of the *minor* axis, not the major axis.

Final Answer: Length of major axis $= 10 \Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q 10

Q11.

Solution

Concept — Perpendicular bisector as a locus: The set of all points equidistant from two fixed points A and B is the perpendicular bisector of segment AB. It passes through the midpoint M of AB and is perpendicular to AB. **Chapter:** Coordinate Geometry

Step 1 — Midpoint of AB:

$$M = \left(\frac{2+4}{2}, \frac{3+5}{2}\right) = (3, 4).$$

Step 2 — Slope of AB:

$$m_{AB} = \frac{5-3}{4-2} = \frac{2}{2} = 1.$$

Step 3 — Slope of perpendicular bisector:

$$m_{\perp} = -\frac{1}{m_{AB}} = -1.$$

Step 4 — Equation through $M(3, 4)$ with slope -1:

$$y - 4 = -1 \cdot (x - 3) \implies y - 4 = -x + 3 \implies x + y = 7.$$

Check: $3 + 4 = 7\checkmark$.

Why other options are wrong:

- Option A: $x - y = 1$ has slope $+1$, parallel to AB, not perpendicular to it.
- Option B: $2x + 2y = 7 \Rightarrow x + y = 3.5$; this does not pass through $M(3, 4)$ since $3 + 4 = 7 \neq 3.5$.
- Option C: $x + y = 5$ has the correct slope (-1) but does not pass through M: $3 + 4 = 7 \neq 5$.
- Option D: Correct — $x + y = 7$ passes through $M(3, 4)$ with slope -1.

Final Answer: $x + y = 7 \Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q 11

Q12.

Solution

Concept — Composition of functions: $(g \circ f)(x) = g(f(x))$. Apply f first, then apply g to the result. The order matters: $g \circ f \neq f \circ g$ in general. **Chapter:** Functions

Step 1 — Apply f:

$$f(x) = 2x + 1.$$

Step 2 — Apply g to $f(x)$:

$$(g \circ f)(x) = g(f(x)) = g(2x + 1) = (2x + 1)^2.$$

Step 3 — Note on options B and D: $(2x + 1)^2 = 4x^2 + 4x + 1$, so options (B) and (D) represent the same value. The question lists (B) as the direct compositional form; (D) is its expanded form.

Why other options are wrong:

- Option A: $2x^2 + 1 = f(g(x)) = f(x^2) = 2x^2 + 1$, which is $f \circ g$, not $g \circ f$.
- Option B: Correct — $(g \circ f)(x) = (2x + 1)^2$ is the direct composition.
- Option C: $4x^2 + 1 = (2x)^2 + 1$; this omits the cross-term $+4x$ from the expansion of $(2x + 1)^2$.
- Option D: $4x^2 + 4x + 1 = (2x + 1)^2$, which equals option (B) exactly; (B) is the canonical compositional form.

Final Answer: $(g \circ f)(x) = (2x + 1)^2 \Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q 12

Q13.

Solution

Concept — Direction cosines: For a vector $\mathbf{v} = (a, b, c)$ with magnitude $|\mathbf{v}| = \sqrt{a^2 + b^2 + c^2}$, the direction cosines are the components of the unit vector: $\left(\frac{a}{|\mathbf{v}|}, \frac{b}{|\mathbf{v}|}, \frac{c}{|\mathbf{v}|}\right)$. **Chapter:** Vectors

Step 1 — Compute the magnitude:

$$|\mathbf{v}| = \sqrt{1^2 + 2^2 + 2^2} = \sqrt{1 + 4 + 4} = \sqrt{9} = 3.$$

Step 2 — Divide each component by $|\mathbf{v}|$:

$$\text{Direction cosines} = \left(\frac{1}{3}, \frac{2}{3}, \frac{2}{3}\right).$$

Verification: $\left(\frac{1}{3}\right)^2 + \left(\frac{2}{3}\right)^2 + \left(\frac{2}{3}\right)^2 = \frac{1}{9} + \frac{4}{9} + \frac{4}{9} = \frac{9}{9} = 1\checkmark$

Why other options are wrong:

- Option A: Correct — $\left(\frac{1}{3}, \frac{2}{3}, \frac{2}{3}\right)$ is the unit vector in the direction of $\mathbf{v}$.
- Option B: $(1, 2, 2)$ are the raw components of $\mathbf{v}$; they are not normalised $(|(1, 2, 2)| = 3 \neq 1)$.
- Option C: $\left(\frac{1}{\sqrt{3}}, \frac{2}{\sqrt{3}}, \frac{2}{\sqrt{3}}\right)$ would be correct if $|\mathbf{v}| = \sqrt{3}$, but $|\mathbf{v}| = 3$.
- Option D: $\left(\frac{1}{9}, \frac{4}{9}, \frac{4}{9}\right)$ squares the components instead of dividing by the magnitude.

Final Answer: $\left(\frac{1}{3}, \frac{2}{3}, \frac{2}{3}\right) \Rightarrow \boxed{\text{A}}$

Answer: (A) **Go Back to Q 13**

Q14.

Solution

Concept — Binomial theorem: Substituting $x = 1$ into $(1+x)^n = \sum_{k=0}^{n} \binom{n}{k} x^k$ gives

Chapter: Combinatorics

$$\sum_{k=0}^{n} \binom{n}{k} = 2^n.$$

Step 1 — Apply for $n = 5$:

$$\sum_{k=0}^{5} \binom{5}{k} = 2^5 = 32.$$

Step 2 — Verification by listing terms:

$$\binom{5}{0} + \binom{5}{1} + \binom{5}{2} + \binom{5}{3} + \binom{5}{4} + \binom{5}{5} = 1 + 5 + 10 + 10 + 5 + 1 = 32.$$

Why other options are wrong:

- Option A: $10 = \binom{5}{2}$; this is just one of the six terms in the sum.
- Option B: $15 = 1 + 5 + 10 - 1 = \sum_{k=0}^{2} \binom{5}{k} + \binom{5}{3} - \binom{5}{5}$; not the complete sum.
- Option C: $16 = 2^4$; this is the correct answer for $n = 4$, not $n = 5$.
- Option D: Correct — $2^5 = 32$.

Final Answer: $\sum_{k=0}^{5} \binom{5}{k} = 32 \Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q 14

Q15.

Solution

Concept — Cube roots of unity: The three cube roots of unity are the roots of $z^3 = 1$, which factors as $(z-1)(z^2+z+1) = 0$. They are 1, $\omega = e^{2\pi i/3}$, and $\omega^2 = e^{4\pi i/3}$. **Chapter:** Complex Numbers

Step 1 — Sum via Vieta's formulas: For $z^3 - 1 = z^3 + 0 \cdot z^2 + 0 \cdot z - 1 = 0$, the sum of all roots equals the negative of the coefficient of z^2, which is 0.

$$1 + \omega + \omega^2 = 0.$$

Step 2 — Direct verification:

$$\omega = -\frac{1}{2} + \frac{\sqrt{3}}{2}i, \quad \omega^2 = -\frac{1}{2} - \frac{\sqrt{3}}{2}i.$$

$$1 + \omega + \omega^2 = 1 + \left(-\tfrac{1}{2} + \tfrac{\sqrt{3}}{2}i\right) + \left(-\tfrac{1}{2} - \tfrac{\sqrt{3}}{2}i\right) = 1 - \tfrac{1}{2} - \tfrac{1}{2} + 0 \cdot i = 0.$$

Why other options are wrong:

- Option A: 3 would be the sum only if all three roots were equal to 1; they are not.
- Option B: 1 is the *product* of the three roots ($1 \cdot \omega \cdot \omega^2 = \omega^3 = 1$), not the sum.
- Option C: Correct — $1 + \omega + \omega^2 = 0$.
- Option D: $-1 = \omega + \omega^2$ alone (the two complex roots sum to -1); adding the root 1 gives 0.

Final Answer: $1 + \omega + \omega^2 = 0 \Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q 15

Answer Summary (click answer letter to jump to solution)

1	A	2	C	3	D	4	B	5	A
6	C	7	D	8	B	9	A	10	C
11	D	12	B	13	A	14	D	15	C