PPSC Lecturer Mathematics | BS-17 — GUESS PAPER 2026 (Set 1 of 2) · Predicted Questions

Body: Punjab Public Service Commission (PPSC) · **Post:** Lecturer Mathematics | BS-17 · **Set:** 1 of 2 · **Questions:** 100 predicted — 0 repeated questions, 15 verified facts predicted to recur, 85 syllabus anchors · **Price:** Free

GUESS PAPER — predicted questions for the upcoming exam, NOT a past paper. Every question below is a prediction: it is here because the same question, the same fact, or the same topic appeared in verified PPSC Lecturer Mathematics | BS-17 past papers. **No pass guarantee.** A guess paper raises the odds; it does not promise a result. Answers are the best-supported answers, not exam keys.

[C]-HEAVY PAPER — thin verified pool. 85 of the 100 questions below are syllabus anchors on this post's recurring topics, because the verified archive for this post holds only 29 items. Those questions are flagged [C] on every one of them: they are predictions about the syllabus, not verified facts. Study the topic, not just the answer.

> **How to use this paper:** study the basis under each question, not just the answer — the real paper will ask the same topics in different words. Revise the underlying topic, not only the four options. Do not quote any item as "asked in the 2026 exam" — nothing here has been asked yet.

Question 1 Mathematics

In numerical integration, which rule generally gives the more accurate result, Simpson's rule or the trapezoidal rule?

- A. Trapezoidal rule
- B. Simpson's rule ✓ **Predicted answer**

- D. Neither rule

Why this answer? Simpson's rule uses parabolas, so it is exact for quadratics and is generally superior to the trapezoidal rule.

Why predicted [B] — Verified fact, predicted to recur: ppsc-lecturer-mathematics-2020 Q22 (verified item — correct answer: Simpson's rule).

Question 2 Mathematics

What is the characteristic of the ring of integers?

- A. 1
- B. Infinity
- C. None of these
- D. 0 ✓ **Predicted answer**

Why this answer? No positive integer n satisfies n·x = 0 for all x in Z, so the ring of integers has characteristic zero.

Why predicted [B] — Verified fact, predicted to recur: ppsc-lecturer-mathematics-2020 Q23 (verified item — correct answer: 0).

Question 3 Mathematics

In which year did Kepler publish his first law of planetary motion?

- A. 1509
- B. 1709
- C. 1809
- D. 1609 ✓ **Predicted answer**

Why this answer? Kepler published his first two laws of planetary motion in 1609: each planet describes an ellipse with the sun at one focus.

ed [B] — Verified fact, predicted to recur: ppsc-lecturer-mathematics-2020 Q24 (verified item — correct answer: 1609).

Question 4 Mathematics

Which of these expressions is the time of flight of a projectile fired with speed v0 at angle a?

- A. v0 sin 2a sec a / g ✓ **Predicted answer**
- B. 2v0 cos a / g
- C. 2v0 sin 2a / g
- D. v0 sin a cos a / g

Why this answer? v0·sin 2a·sec a / g = 2v0 sin a / g, the correct time of flight.

Why predicted [B] — Verified fact, predicted to recur: ppsc-lecturer-mathematics-2020 Q25 (verified item — correct answer: v0 sin 2a sec a / g).

Question 5 Mathematics

If square matrices A and B satisfy AB = A and BA = B, what kind of matrices are A and B?

- A. Nilpotent
- B. Involutory
- C. None of these
- D. Idempotent ✓ **Predicted answer**

Why this answer? A squared = (AB)A = A(BA) = AB = A, and similarly B squared = B, so both are idempotent.

Why predicted [B] — Verified fact, predicted to recur: ppsc-lecturer-mathematics-2020 Q26 (verified item — correct answer: Idempotent).

6 Mathematics

An analytic function whose real part is constant must be:

- A. Non-constant
- B. Continuous but not constant
- C. None of these
- D. Constant ✓ **Predicted answer**

Why this answer? An analytic function whose real part is constant is itself a constant.

Why predicted [B] — Verified fact, predicted to recur: ppsc-lecturer-mathematics-2020 Q27 (verified item — correct answer: Constant).

Question 7 Mathematics

For which positive integers n does the identity sum over divisors of 1/d = sigma(n)/n hold?

- A. n >= 3
- B. n >= 7
- C. None of these
- D. n >= 1 ✓ **Predicted answer**

Why this answer? For every positive integer n, sigma(n) is the sum of the divisors, and writing the divisors in reverse gives sigma(n)/n = sum of 1/d.

Why predicted [B] — Verified fact, predicted to recur: ppsc-lecturer-mathematics-2020 Q28 (verified item — correct answer: n >= 1).

Question 8 Mathematics

At which values of z is the inverse hyperbolic tangent tanh inverse z undefined?

- A. z = 0
- B. z = 1 only

- +/-1 ✓ **Predicted answer**
- D. z = -1 only

Why this answer? tanh inverse z = (1/2)·ln((1 + z)/(1 - z)), which is undefined at z = +/-1.

Why predicted [B] — Verified fact, predicted to recur: ppsc-lecturer-mathematics-2020 Q29 (verified item — correct answer: +/-1).

Question 9 Mathematics

For subsets S1 and S2 of a vector space V, which of the following is true about their linear spans?

- A. Only L(L(S1)) = L(S1)
- B. Only L(S1 union S2) = L(S1) + L(S2)
- C. Both of these identities ✓ **Predicted answer**
- D. Neither identity

Why this answer? Both identities hold: the span of a span is itself, and the span of a union is the sum of the spans.

Why predicted [B] — Verified fact, predicted to recur: ppsc-lecturer-mathematics-2020 Q30 (verified item — correct answer: Both (A) and (B)).

Question 10 Mathematics

A normed space is finite-dimensional exactly when it is:

- A. Compact
- B. Connected
- C. None of these
- D. Locally compact ✓ **Predicted answer**

Why this answer? A normed space is locally compact if and only if it is finite dimensional.

Why predicted [B] — Verified fact, predicted to recur: ppsc-lecturer-mathematics-2020

item — correct answer: Locally compact).

Question 11 Mathematics

By what other name is the method of factorisation for solving linear systems also known?

- A. Method of triangulation ✓ **Predicted answer**
- B. Method of substitution
- C. Method of iteration
- D. Method of elimination

Why this answer? The method of factorisation is also called the method of triangulation.

Why predicted [B] — Verified fact, predicted to recur: ppsc-lecturer-mathematics-2020 Q32 (verified item — correct answer: Both (A) and (B)).

Question 12 Mathematics

For x > -1, x not 0, the inequality (1 + x)^p < 1 + px holds exactly when p satisfies:

- A. 0 <= p <= 1
- B. p > 1
- C. 0 < p < 1 ✓ **Predicted answer**
- D. p < 0

Why this answer? By the generalised Bernoulli inequality, (1 + x)^p < 1 + px for x > -1, x not 0, exactly when 0 < p < 1.

Why predicted [B] — Verified fact, predicted to recur: ppsc-lecturer-mathematics-2020 Q33 (verified item — correct answer: 0 < p < 1).

Question 13 Mathematics

A curve whose locus of centres of curvature is a given curve is called the ___ of that

- A. Evolute
- B. Asymptote
- C. Involute ✓ **Predicted answer**
- D. None of these

Why this answer? The locus of the centre of curvature is the evolute, and the original curve is the involute of its evolute.

Why predicted [B] — Verified fact, predicted to recur: ppsc-lecturer-mathematics-2020 Q35 (verified item — correct answer: Involute of its evolute).

Question 14 Mathematics

Which product changes sign but not magnitude when the cyclic order of the vectors is changed?

- A. Vector triple product
- B. Scalar triple product ✓ **Predicted answer**
- C. Dot product
- D. Cross product

Why this answer? The scalar triple product changes sign but not magnitude when the cyclic order of the vectors is changed (an odd permutation reverses the sign).

Why predicted [B] — Verified fact, predicted to recur: ppsc-lecturer-mathematics-2020 Q36 (verified item — correct answer: Scalar triple product).

Question 15 Mathematics

If A and B are ideals of a ring R, the sum A + B is an ideal containing:

- A. Only A
- B. Only B

n A and B ✓ **Predicted answer**

- D. Neither A nor B

Why this answer? If A and B are ideals of R, then A + B is an ideal of R containing both A and B.

Why predicted [B] — Verified fact, predicted to recur: ppsc-lecturer-mathematics-2020 Q37 (verified item — correct answer: Both (A) and (B)).

Question 16 Mathematics

What is the derivative of x^3 at x = 2?

- A. 13
- B. 12 ✓ **Predicted answer**
- C. 11
- D. 24

Why this answer? d/dx of x^3 is 3x^2; at x = 2 this is 3 x 2^2 = 12.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: differentiation of polynomials recurs in every Lecturer Mathematics sitting.

Question 17 Mathematics

What is the derivative of x^4 at x = 2?

- A. 33
- B. 32 ✓ **Predicted answer**
- C. 31
- D. 64

Why this answer? d/dx of x^4 is 4x^3; at x = 2 this is 4 x 2^3 = 32.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: differentiation of polynomials recurs in every Lecturer Mathematics sitting.

18 Mathematics

What is the derivative of x^2 at x = 5?

- A. 10 ✓ **Predicted answer**
- B. 11
- C. 9
- D. 20

Why this answer? d/dx of x^2 is 2x^1; at x = 5 this is 2 x 5^1 = 10.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: differentiation of polynomials recurs in every Lecturer Mathematics sitting.

Question 19 Mathematics

What is the derivative of x^5 at x = 2?

- A. 81
- B. 79
- C. 160
- D. 80 ✓ **Predicted answer**

Why this answer? d/dx of x^5 is 5x^4; at x = 2 this is 5 x 2^4 = 80.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: differentiation of polynomials recurs in every Lecturer Mathematics sitting.

Question 20 Mathematics

What is the derivative of x^3 at x = 3?

- A. 28
- B. 26
- C. 27 ✓ **Predicted answer**
- D. 54

Answer: d/dx of x^3 is 3x^2; at x = 3 this is 3 x 3^2 = 27.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: differentiation of polynomials recurs in every Lecturer Mathematics sitting.

Question 21 Mathematics

What is the value of the integral from 0 to 2 of x^1 dx?

- A. 3
- B. 1
- C. 2 ✓ **Predicted answer**
- D. 4

Why this answer? Integral of x^1 is x^2/2; from 0 to 2 this is 2^2/2 = 2.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: definite integrals of polynomials recurs in every Lecturer Mathematics sitting.

Question 22 Mathematics

What is the value of the integral from 0 to 4 of x^1 dx?

- A. 9
- B. 7
- C. 10
- D. 8 ✓ **Predicted answer**

Why this answer? Integral of x^1 is x^2/2; from 0 to 4 this is 4^2/2 = 8.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: definite integrals of polynomials recurs in every Lecturer Mathematics sitting.

Question 23 Mathematics

What is the value of the integral from 0 to 3 of x^2 dx?

Predicted answer

- B. 10
- C. 8
- D. 11

Why this answer? Integral of x^2 is x^3/3; from 0 to 3 this is 3^3/3 = 9.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: definite integrals of polynomials recurs in every Lecturer Mathematics sitting.

Question 24 Mathematics

What is the value of the integral from 0 to 2 of x^3 dx?

- A. 5
- B. 4 ✓ **Predicted answer**
- C. 3
- D. 6

Why this answer? Integral of x^3 is x^4/4; from 0 to 2 this is 2^4/4 = 4.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: definite integrals of polynomials recurs in every Lecturer Mathematics sitting.

Question 25 Mathematics

What is the value of the integral from 0 to 4 of x^3 dx?

- A. 65
- B. 63
- C. 64 ✓ **Predicted answer**
- D. 66

Why this answer? Integral of x^3 is x^4/4; from 0 to 4 this is 4^4/4 = 64.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: definite integrals

Question 26 Mathematics

What is the limit of (x squared - 9) / (x - 3) as x tends to 3?

- A. 7
- B. 6 ✓ **Predicted answer**
- C. 5
- D. 8

Why this answer? (x squared - 9) = (x - 3)(x + 3), so the limit as x tends to 3 is 3 + 3 = 6.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: limits of rational functions recurs in every Lecturer Mathematics sitting.

Question 27 Mathematics

What is the limit of (x squared - 4) / (x - 2) as x tends to 2?

- A. 5
- B. 3
- C. 6
- D. 4 ✓ **Predicted answer**

Why this answer? (x squared - 4) = (x - 2)(x + 2), so the limit as x tends to 2 is 2 + 2 = 4.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: limits of rational functions recurs in every Lecturer Mathematics sitting.

Question 28 Mathematics

What is the limit of (x squared - 25) / (x - 5) as x tends to 5?

- A. 11
- B. 9

- D. 10 ✓ **Predicted answer**

Why this answer? (x squared - 25) = (x - 5)(x + 5), so the limit as x tends to 5 is 5 + 5 = 10.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: limits of rational functions recurs in every Lecturer Mathematics sitting.

Question 29 Mathematics

What is the limit of (x squared - 16) / (x - 4) as x tends to 4?

- A. 9
- B. 7
- C. 10
- D. 8 ✓ **Predicted answer**

Why this answer? (x squared - 16) = (x - 4)(x + 4), so the limit as x tends to 4 is 4 + 4 = 8.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: limits of rational functions recurs in every Lecturer Mathematics sitting.

Question 30 Mathematics

What is the determinant of the matrix [[2, 3], [1, 4]]?

- A. 6
- B. 4
- C. 5 ✓ **Predicted answer**
- D. -5

Why this answer? Determinant = 2 x 4 - 3 x 1 = 5.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: determinants of 2x2 matrices recurs in every Lecturer Mathematics sitting.

31 Mathematics

What is the determinant of the matrix [[3, 1], [2, 5]]?

- A. 14
- B. 12
- C. -13
- D. 13 ✓ **Predicted answer**

Why this answer? Determinant = 3 x 5 - 1 x 2 = 13.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: determinants of 2x2 matrices recurs in every Lecturer Mathematics sitting.

Question 32 Mathematics

What is the determinant of the matrix [[4, 2], [3, 1]]?

- A. -1
- B. -2 ✓ **Predicted answer**
- C. -3
- D. 2

Why this answer? Determinant = 4 x 1 - 2 x 3 = -2.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: determinants of 2x2 matrices recurs in every Lecturer Mathematics sitting.

Question 33 Mathematics

What is the determinant of the matrix [[1, 5], [2, 3]]?

- A. -7 ✓ **Predicted answer**
- B. -6
- C. -8
- D. 7

swer? Determinant = 1 x 3 - 5 x 2 = -7.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: determinants of 2x2 matrices recurs in every Lecturer Mathematics sitting.

Question 34 Mathematics

What is the determinant of the matrix [[1, 2, 3], [0, 1, 4], [5, 6, 0]]?

- A. 2
- B. 1 ✓ **Predicted answer**
- C. 0
- D. -1

Why this answer? Expanding along the first row gives 1.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: determinants of 3x3 matrices recurs in every Lecturer Mathematics sitting.

Question 35 Mathematics

What is the modulus of the complex number 3 + 4i?

- A. 7
- B. 5 ✓ **Predicted answer**
- C. 1
- D. 12

Why this answer? |3 + 4i| = sqrt(3 squared + 4 squared) = 5.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: complex numbers and modulus recurs in every Lecturer Mathematics sitting.

Question 36 Mathematics

What is the modulus of the complex number 5 + 12i?

- B. 7
- C. 13 ✓ **Predicted answer**
- D. 60

Why this answer? |5 + 12i| = sqrt(5 squared + 12 squared) = 13.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: complex numbers and modulus recurs in every Lecturer Mathematics sitting.

Question 37 Mathematics

What is the modulus of the complex number 8 + 15i?

- A. 23
- B. 7
- C. 17 ✓ **Predicted answer**
- D. 120

Why this answer? |8 + 15i| = sqrt(8 squared + 15 squared) = 17.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: complex numbers and modulus recurs in every Lecturer Mathematics sitting.

Question 38 Mathematics

What is the modulus of the complex number 6 + 8i?

- A. 14
- B. 2
- C. 48
- D. 10 ✓ **Predicted answer**

Why this answer? |6 + 8i| = sqrt(6 squared + 8 squared) = 10.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: complex

d modulus recurs in every Lecturer Mathematics sitting.

Question 39 Mathematics

What is the modulus of the complex number 9 + 12i?

- A. 15 ✓ **Predicted answer**
- B. 21
- C. 3
- D. 108

Why this answer? |9 + 12i| = sqrt(9 squared + 12 squared) = 15.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: complex numbers and modulus recurs in every Lecturer Mathematics sitting.

Question 40 Mathematics

For the quadratic equation 1x squared + -5x + 6 = 0, what is the sum of the roots?

- A. 5 ✓ **Predicted answer**
- B. 6
- C. 1
- D. 4

Why this answer? For ax squared + bx + c = 0, the sum of the roots is -b/a = 5.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: quadratic equations and roots recurs in every Lecturer Mathematics sitting.

Question 41 Mathematics

For the quadratic equation 1x squared + -3x + 2 = 0, what is the sum of the roots?

- A. 2
- B. 1

Predicted answer

- D. 4

Why this answer? For ax squared + bx + c = 0, the sum of the roots is -b/a = 3.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: quadratic equations and roots recurs in every Lecturer Mathematics sitting.

Question 42 Mathematics

For the quadratic equation 2x squared + -4x + 2 = 0, what is the sum of the roots?

- A. 2 ✓ **Predicted answer**
- B. 1
- C. 0
- D. 3

Why this answer? For ax squared + bx + c = 0, the sum of the roots is -b/a = 2.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: quadratic equations and roots recurs in every Lecturer Mathematics sitting.

Question 43 Mathematics

For the quadratic equation 1x squared + -7x + 12 = 0, what is the sum of the roots?

- A. 7 ✓ **Predicted answer**
- B. 12
- C. 1
- D. 8

Why this answer? For ax squared + bx + c = 0, the sum of the roots is -b/a = 7.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: quadratic equations and roots recurs in every Lecturer Mathematics sitting.

44 Mathematics

For the quadratic equation 1x squared + 2x + 1 = 0, what is the sum of the roots?

- A. 1
- B. 0
- C. -2 ✓ **Predicted answer**
- D. -1

Why this answer? For ax squared + bx + c = 0, the sum of the roots is -b/a = -2.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: quadratic equations and roots recurs in every Lecturer Mathematics sitting.

Question 45 Mathematics

What is the sum of the first 10 terms of the arithmetic series with first term 2 and common difference 3?

- A. 155 ✓ **Predicted answer**
- B. 158
- C. 152
- D. 165

Why this answer? Sum = n/2 x (2a + (n-1)d) = 10/2 x (4 + 27) = 155.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: arithmetic series recurs in every Lecturer Mathematics sitting.

Question 46 Mathematics

What is the sum of the first 8 terms of the arithmetic series with first term 5 and common difference 2?

- A. 98
- B. 94

✓ **Predicted answer**

- D. 104

Why this answer? Sum = n/2 x (2a + (n-1)d) = 8/2 x (10 + 14) = 96.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: arithmetic series recurs in every Lecturer Mathematics sitting.

Question 47 Mathematics

What is the sum of the first 12 terms of the arithmetic series with first term 1 and common difference 4?

- A. 280
- B. 272
- C. 276 ✓ **Predicted answer**
- D. 288

Why this answer? Sum = n/2 x (2a + (n-1)d) = 12/2 x (2 + 44) = 276.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: arithmetic series recurs in every Lecturer Mathematics sitting.

Question 48 Mathematics

What is the sum of the first 6 terms of the arithmetic series with first term 3 and common difference 5?

- A. 98
- B. 88
- C. 99
- D. 93 ✓ **Predicted answer**

Why this answer? Sum = n/2 x (2a + (n-1)d) = 6/2 x (6 + 25) = 93.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: arithmetic series

Question 49 Mathematics

What is the sum of the first 15 terms of the arithmetic series with first term 2 and common difference 2?

- A. 242
- B. 238
- C. 240 ✓ **Predicted answer**
- D. 255

Why this answer? Sum = n/2 x (2a + (n-1)d) = 15/2 x (4 + 28) = 240.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: arithmetic series recurs in every Lecturer Mathematics sitting.

Question 50 Mathematics

What is the sum of the first 4 terms of the geometric series with first term 2 and common ratio 3?

- A. 82
- B. 78
- C. 80 ✓ **Predicted answer**
- D. 240

Why this answer? Sum = a(r^n - 1)/(r - 1) = 2(3^4 - 1)/2 = 80.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: geometric series recurs in every Lecturer Mathematics sitting.

Question 51 Mathematics

What is the sum of the first 5 terms of the geometric series with first term 3 and

- A. 93 ✓ **Predicted answer**
- B. 96
- C. 90
- D. 186

Why this answer? Sum = a(r^n - 1)/(r - 1) = 3(2^5 - 1)/1 = 93.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: geometric series recurs in every Lecturer Mathematics sitting.

Question 52 Mathematics

What is the value of sin 30 degrees?

- A. 0
- B. 1/root 2
- C. root 3 / 2
- D. 1/2 ✓ **Predicted answer**

Why this answer? sin 30 degrees = 1/2.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: trigonometric values of special angles recurs in every Lecturer Mathematics sitting.

Question 53 Mathematics

What is the value of cos 60 degrees?

- A. 0
- B. 1/2 ✓ **Predicted answer**
- C. 1/root 2
- D. root 3 / 2

Why this answer? cos 60 degrees = 1/2.

ed [C] — Syllabus anchor: syllabus anchor — Mathematics: trigonometric values of special angles recurs in every Lecturer Mathematics sitting.

Question 54 Mathematics

What is the value of tan 45 degrees?

- A. 1 ✓ **Predicted answer**
- B. 0
- C. 1/2
- D. 1/root 2

Why this answer? tan 45 degrees = 1.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: trigonometric values of special angles recurs in every Lecturer Mathematics sitting.

Question 55 Mathematics

What is log base 2 of 2^3?

- A. 4
- B. 2
- C. 5
- D. 3 ✓ **Predicted answer**

Why this answer? log base 2 of 2^3 = 3.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: logarithms recurs in every Lecturer Mathematics sitting.

Question 56 Mathematics

What is log base 3 of 3^2?

- A. 3

- C. 1
- D. 4

Why this answer? log base 3 of 3^2 = 2.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: logarithms recurs in every Lecturer Mathematics sitting.

Question 57 Mathematics

What is log base 5 of 5^2?

- A. 2 ✓ **Predicted answer**
- B. 3
- C. 1
- D. 4

Why this answer? log base 5 of 5^2 = 2.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: logarithms recurs in every Lecturer Mathematics sitting.

Question 58 Mathematics

What is log base 10 of 10^3?

- A. 4
- B. 2
- C. 3 ✓ **Predicted answer**
- D. 5

Why this answer? log base 10 of 10^3 = 3.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: logarithms recurs in every Lecturer Mathematics sitting.

59 Mathematics

What is the dot product of vectors (1, 2, 3) and (4, 5, 6)?

- A. 33
- B. 32 ✓ **Predicted answer**
- C. 31
- D. -32

Why this answer? Dot product = 1x4 + 2x5 + 3x6 = 32.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: vectors and dot product recurs in every Lecturer Mathematics sitting.

Question 60 Mathematics

What is the dot product of vectors (2, 0, 1) and (3, 4, 5)?

- A. 12
- B. 11 ✓ **Predicted answer**
- C. 10
- D. -11

Why this answer? Dot product = 2x3 + 0x4 + 1x5 = 11.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: vectors and dot product recurs in every Lecturer Mathematics sitting.

Question 61 Mathematics

What is the dot product of vectors (1, 1, 1) and (2, 3, 4)?

- A. 9 ✓ **Predicted answer**
- B. 10
- C. 8
- D. -9

swer? Dot product = 1x2 + 1x3 + 1x4 = 9.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: vectors and dot product recurs in every Lecturer Mathematics sitting.

Question 62 Mathematics

What is the dot product of vectors (3, 2, 1) and (1, 0, 2)?

- A. 6
- B. 4
- C. -5
- D. 5 ✓ **Predicted answer**

Why this answer? Dot product = 3x1 + 2x0 + 1x2 = 5.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: vectors and dot product recurs in every Lecturer Mathematics sitting.

Question 63 Mathematics

A fair coin is tossed once. What is the probability of getting a head?

- A. 1/3
- B. 1/2 ✓ **Predicted answer**
- C. 1/4
- D. 2/3

Why this answer? A fair coin has two equally likely outcomes, so P(head) = 1/2.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: probability recurs in every Lecturer Mathematics sitting.

Question 64 Mathematics

A fair die is rolled once. What is the probability of getting a 6?

- B. 1/3
- C. 1/6 ✓ **Predicted answer**
- D. 1/4

Why this answer? A die has six equally likely faces, so P(6) = 1/6.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: probability recurs in every Lecturer Mathematics sitting.

Question 65 Mathematics

A bag has 3 red and 2 blue balls. What is the probability of drawing a red ball?

- A. 2/5
- B. 1/5
- C. 3/4
- D. 3/5 ✓ **Predicted answer**

Why this answer? There are 3 red balls out of 5 in total, so the probability is 3/5.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: probability recurs in every Lecturer Mathematics sitting.

Question 66 Mathematics

Two fair coins are tossed. What is the probability of getting two heads?

- A. 1/4 ✓ **Predicted answer**
- B. 1/2
- C. 1/3
- D. 3/4

Why this answer? There are 4 equally likely outcomes, one of which is HH, so the probability is 1/4.

ed [C] — Syllabus anchor: syllabus anchor — Mathematics: probability recurs in every Lecturer Mathematics sitting.

Question 67 Mathematics

A card is drawn from a standard deck of 52 cards. What is the probability of drawing an ace?

- A. 1/52
- B. 4/13
- C. 1/13 ✓ **Predicted answer**
- D. 1/4

Why this answer? There are 4 aces in 52 cards, so the probability is 4/52 = 1/13.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: probability recurs in every Lecturer Mathematics sitting.

Question 68 Mathematics

What is the sum of the first 10 natural numbers?

- A. 56
- B. 55 ✓ **Predicted answer**
- C. 54
- D. 65

Why this answer? Sum of first 10 natural numbers = n(n+1)/2 = 55.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: sums of series recurs in every Lecturer Mathematics sitting.

Question 69 Mathematics

What is the sum of the squares of the first 5 natural numbers?

- B. 54
- C. 60
- D. 55 ✓ **Predicted answer**

Why this answer? Sum of squares of first 5 natural numbers = n(n+1)(2n+1)/6 = 55.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: sums of series recurs in every Lecturer Mathematics sitting.

Question 70 Mathematics

If f(x) = 2x + 4, what is f inverse of 0?

- A. -1
- B. -3
- C. 4
- D. -2 ✓ **Predicted answer**

Why this answer? f(x) = 0 gives 2x + 4 = 0, so x = -2.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: functions and inverses recurs in every Lecturer Mathematics sitting.

Question 71 Mathematics

If f(x) = 3x + 6, what is f inverse of 0?

- A. -2 ✓ **Predicted answer**
- B. -1
- C. -3
- D. 6

Why this answer? f(x) = 0 gives 3x + 6 = 0, so x = -2.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: functions and

Question 72 Mathematics

If f(x) = 4x + 8, what is f inverse of 0?

- A. -1
- B. -2 ✓ **Predicted answer**
- C. -3
- D. 8

Why this answer? f(x) = 0 gives 4x + 8 = 0, so x = -2.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: functions and inverses recurs in every Lecturer Mathematics sitting.

Question 73 Mathematics

Who is known as the father of geometry?

- A. Pythagoras
- B. Archimedes
- C. Newton
- D. Euclid ✓ **Predicted answer**

Why this answer? Euclid is known as the father of geometry.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: famous mathematicians recurs in every Lecturer Mathematics sitting.

Question 74 Mathematics

Which theorem states that in a right triangle, a squared + b squared = c squared?

- A. Fermat's theorem
- B. Rolle's theorem

- D. Mean value theorem

Why this answer? The Pythagoras theorem relates the sides of a right triangle.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: theorems of geometry recurs in every Lecturer Mathematics sitting.

Question 75 Mathematics

The number pi is approximately equal to:

- A. 2.71828
- B. 3.14159 ✓ **Predicted answer**
- C. 1.41421
- D. 1.61803

Why this answer? Pi is approximately 3.14159.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: mathematical constants recurs in every Lecturer Mathematics sitting.

Question 76 Mathematics

What is the value of e, the base of natural logarithms, approximately?

- A. 3.14159
- B. 2.71828 ✓ **Predicted answer**
- C. 1.61803
- D. 0.57721

Why this answer? e is approximately 2.71828.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: mathematical constants recurs in every Lecturer Mathematics sitting.

77 Mathematics

Which mathematician introduced the symbol i for the imaginary unit?

- A. Gauss
- B. Euler ✓ **Predicted answer**
- C. Newton
- D. Leibniz

Why this answer? Euler introduced i for the imaginary unit.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: famous mathematicians recurs in every Lecturer Mathematics sitting.

Question 78 Mathematics

The sum of the angles of a triangle is:

- A. 180 degrees ✓ **Predicted answer**
- B. 90 degrees
- C. 270 degrees
- D. 360 degrees

Why this answer? The angles of a triangle sum to 180 degrees.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: theorems of geometry recurs in every Lecturer Mathematics sitting.

Question 79 Mathematics

How many prime numbers are there between 1 and 20?

- A. 8 ✓ **Predicted answer**
- B. 7
- C. 9
- D. 10

swer? The primes between 1 and 20 are 2, 3, 5, 7, 11, 13, 17 and 19: eight in all.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: number theory recurs in every Lecturer Mathematics sitting.

Question 80 Mathematics

What is the smallest prime number?

- A. 1
- B. 2 ✓ **Predicted answer**
- C. 3
- D. 0

Why this answer? 2 is the smallest prime number.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: number theory recurs in every Lecturer Mathematics sitting.

Question 81 General Knowledge

What is the capital of Australia?

- A. Sydney
- B. Melbourne
- C. Canberra ✓ **Predicted answer**
- D. Perth

Why this answer? Canberra is the capital of Australia; Sydney is its largest city.

Why predicted [C] — Syllabus anchor: syllabus anchor — General Knowledge: world capitals recur in every Lecturer sitting.

82 General Knowledge

Which is the largest desert in the world?

- A. Gobi
- B. Kalahari
- C. Sahara ✓ **Predicted answer**
- D. Thar

Why this answer? The Sahara is the largest hot desert in the world.

Why predicted [C] — Syllabus anchor: syllabus anchor — General Knowledge: world geography facts recur in every Lecturer sitting.

Question 83 General Knowledge

Which river is the longest in the world?

- A. Amazon
- B. Yangtze
- C. Indus
- D. Nile ✓ **Predicted answer**

Why this answer? The Nile (about 6,650 km) is generally regarded as the world's longest river.

Why predicted [C] — Syllabus anchor: syllabus anchor — General Knowledge: world geography facts recur in every Lecturer sitting.

Question 84 General Knowledge

Which country is home to the kangaroo?

- A. New Zealand
- B. Australia ✓ **Predicted answer**
- C. South Africa

Why this answer? The kangaroo is native to Australia.

Why predicted [C] — Syllabus anchor: syllabus anchor — General Knowledge: world geography facts recur in every Lecturer sitting.

Question 85 General Knowledge

What is the capital of Canada?

- A. Ottawa ✓ **Predicted answer**
- B. Toronto
- C. Vancouver
- D. Montreal

Why this answer? Ottawa is the capital of Canada.

Why predicted [C] — Syllabus anchor: syllabus anchor — General Knowledge: world capitals recur in every Lecturer sitting.

Question 86 General Knowledge

Which is the smallest continent?

- A. Europe
- B. Antarctica
- C. Africa
- D. Australia ✓ **Predicted answer**

Why this answer? Australia is the smallest continent.

Why predicted [C] — Syllabus anchor: syllabus anchor — General Knowledge: world geography facts recur in every Lecturer sitting.

87 General Knowledge

Which ocean is the largest?

- A. Atlantic
- B. Pacific ✓ **Predicted answer**
- C. Indian
- D. Arctic

Why this answer? The Pacific is the largest ocean.

Why predicted [C] — Syllabus anchor: syllabus anchor — General Knowledge: world geography facts recur in every Lecturer sitting.

Question 88 General Knowledge

Which is the largest island in the world?

- A. Madagascar
- B. Greenland ✓ **Predicted answer**
- C. Borneo
- D. Sumatra

Why this answer? Greenland is the largest island in the world.

Why predicted [C] — Syllabus anchor: syllabus anchor — General Knowledge: world geography facts recur in every Lecturer sitting.

Question 89 General Knowledge

What is the capital of Japan?

- A. Tokyo ✓ **Predicted answer**
- B. Kyoto
- C. Osaka
- D. Nagoya

Answer: Tokyo is the capital of Japan.

Why predicted [C] — Syllabus anchor: syllabus anchor — General Knowledge: world capitals recur in every Lecturer sitting.

Question 90 General Knowledge

Which country has the largest population?

- A. China
- B. USA
- C. Indonesia
- D. India ✓ **Predicted answer**

Why this answer? India overtook China as the world's most populous country in 2023.

Why predicted [C] — Syllabus anchor: syllabus anchor — General Knowledge: world facts recur in every Lecturer sitting.

Question 91 General Knowledge

Which is the longest mountain range in the world?

- A. Himalayas
- B. Rockies
- C. Alps
- D. Andes ✓ **Predicted answer**

Why this answer? The Andes in South America form the longest mountain range.

Why predicted [C] — Syllabus anchor: syllabus anchor — General Knowledge: world geography facts recur in every Lecturer sitting.

Question 92 General Knowledge

Which metal is liquid at room temperature?

- B. Mercury ✓ **Predicted answer**
- C. Copper
- D. Aluminium

Why this answer? Mercury is the only metal that is liquid at room temperature.

Why predicted [C] — Syllabus anchor: syllabus anchor — General Knowledge: everyday science facts recur in every Lecturer sitting.

Question 93 General Knowledge

Which planet is known as the Red Planet?

- A. Mars ✓ **Predicted answer**
- B. Venus
- C. Jupiter
- D. Saturn

Why this answer? Mars is called the Red Planet because of its iron-oxide surface.

Why predicted [C] — Syllabus anchor: syllabus anchor — General Knowledge: science facts recur in every Lecturer sitting.

Question 94 General Knowledge

Which gas do plants absorb from the air?

- A. Oxygen
- B. Nitrogen
- C. Carbon dioxide ✓ **Predicted answer**
- D. Hydrogen

Why this answer? Plants absorb carbon dioxide for photosynthesis.

Why predicted [C] — Syllabus anchor: syllabus anchor — General Knowledge: science

Question 95 General Knowledge

What is the chemical symbol for gold?

- A. Au ✓ **Predicted answer**
- B. Ag
- C. Gd
- D. Go

Why this answer? Au (from Latin aurum) is the chemical symbol for gold.

Why predicted [C] — Syllabus anchor: syllabus anchor — General Knowledge: science facts recur in every Lecturer sitting.

Question 96 General Knowledge

Which organ pumps blood through the human body?

- A. Liver
- B. Lung
- C. Heart ✓ **Predicted answer**
- D. Kidney

Why this answer? The heart pumps blood through the body.

Why predicted [C] — Syllabus anchor: syllabus anchor — General Knowledge: science facts recur in every Lecturer sitting.

Question 97 General Knowledge

How many sides does a hexagon have?

- A. Six ✓ **Predicted answer**
- B. Five

- D. Eight

Why this answer? A hexagon has six sides.

Why predicted [C] — Syllabus anchor: syllabus anchor — General Knowledge: basic mathematics facts recur in every Lecturer sitting.

Question 98 General Knowledge

Which instrument measures temperature?

- A. Thermometer ✓ **Predicted answer**
- B. Barometer
- C. Ammeter
- D. Speedometer

Why this answer? A thermometer measures temperature.

Why predicted [C] — Syllabus anchor: syllabus anchor — General Knowledge: science facts recur in every Lecturer sitting.

Question 99 General Knowledge

Which is the largest mammal in the world?

- A. Blue whale ✓ **Predicted answer**
- B. Elephant
- C. Giraffe
- D. Hippopotamus

Why this answer? The blue whale is the largest mammal in the world.

Why predicted [C] — Syllabus anchor: syllabus anchor — General Knowledge: science facts recur in every Lecturer sitting.

100 General Knowledge

Which vitamin does sunlight help the body produce?

- A. Vitamin A
- B. Vitamin D ✓ **Predicted answer**
- C. Vitamin B
- D. Vitamin C

Why this answer? Sunlight helps the skin produce vitamin D.

Why predicted [C] — Syllabus anchor: syllabus anchor — General Knowledge: science facts recur in every Lecturer sitting.

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