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

Body: Punjab Public Service Commission (PPSC) · **Post:** Lecturer Mathematics | BS-17 · **Set:** 2 of 2 · **Questions:** 100 predicted — 0 repeated questions, 14 verified facts predicted to recur, 86 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. 86 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 Do not quote any item as "asked in the 2026 exam" — nothing here has been asked yet.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

Every metric space is a Hausdorff space, also known as a:

- A. T1-space
- B. T3-space
- C. T0-space

space ✓ **Predicted answer**

Why this answer? Every metric space is a Hausdorff space, i.e. a T2-space.

Why predicted [B] — Verified fact, predicted to recur: ppsc-lecturer-mathematics-2020 Q38 (verified item — correct answer: Both (A) and (B)).

Question 2 Mathematics

Can a function satisfy the Cauchy-Riemann equations at a point yet fail to be differentiable there?

- A. Yes - it can be non-differentiable ✓ **Predicted answer**
- B. No - it must be differentiable
- C. Only if it is continuous
- D. None of these

Why this answer? The converse is not true in general: f(z) = x cubed + i y cubed satisfies the Cauchy-Riemann equations at the origin but is not differentiable there.

Why predicted [B] — Verified fact, predicted to recur: ppsc-lecturer-mathematics-2020 Q39 (verified item — correct answer: Non-differentiable).

Question 3 Mathematics

The worked limit 2i - (9 - 12i)/3 equals:

- A. 3 + 6i
- B. -3 - 6i
- C. -3 + 6i ✓ **Predicted answer**
- D. 3 - 6i

Why this answer? 2i - (9 - 12i)/3 = 2i - 3 + 4i = -3 + 6i.

Why predicted [B] — Verified fact, predicted to recur: ppsc-lecturer-mathematics-2020 Q40 (verified item — correct answer: -3 + 6i).

4 Mathematics

The formula integral over S of F cross n ds = integral over V of div F dv, as printed with a cross product, is:

- A. Gauss' divergence theorem
- B. Stokes' theorem
- C. Not Gauss' divergence theorem ✓ **Predicted answer**
- D. Green's theorem

Why this answer? Gauss' theorem uses the dot product F dot n; with a cross product the printed formula is not Gauss' theorem.

Why predicted [B] — Verified fact, predicted to recur: ppsc-lecturer-mathematics-2020 Q41 (verified item — correct answer: None of these).

Question 5 Mathematics

For subgroups H and K of a group G, HK is a subgroup exactly when:

- A. HK is not equal to KH
- B. H = K
- C. HK = KH ✓ **Predicted answer**
- D. HK = H

Why this answer? HK is a subgroup of G if and only if HK = KH.

Why predicted [B] — Verified fact, predicted to recur: ppsc-lecturer-mathematics-2020 Q42 (verified item — correct answer: HK = KH).

Question 6 Mathematics

Are sin 2x and cos 2x linearly independent solutions of y'' + 4y = 0?

- A. No - they are dependent
- B. Their Wronskian is zero

- D. Yes - they are independent ✓ **Predicted answer**

Why this answer? The Wronskian W(sin 2x, cos 2x) = -2, which is not zero, so the solutions are linearly independent.

Why predicted [B] — Verified fact, predicted to recur: ppsc-lecturer-mathematics-2020 Q43 (verified item — correct answer: Independent).

Question 7 Mathematics

What is the normal component of the acceleration of a particle moving with speed v along a curve of radius of curvature p?

- A. v squared / p ✓ **Predicted answer**
- B. v / p
- C. p / v
- D. v squared times p

Why this answer? Acceleration a = (dv/dt)t + (v squared / p)n, where p is the radius of curvature, so the normal component is v squared / p.

Why predicted [B] — Verified fact, predicted to recur: ppsc-lecturer-mathematics-2020 Q44 (verified item — correct answer: v squared / p).

Question 8 Mathematics

Euler's theorem a^phi(m) = 1 (mod m) holds provided that:

- A. gcd(a, m) = 1 ✓ **Predicted answer**
- B. a > m
- C. m < a
- D. gcd(a, m) is not 1

Why this answer? Euler's theorem: if gcd(a, m) = 1, then a^phi(m) = 1 (mod m).

ed [B] — Verified fact, predicted to recur: ppsc-lecturer-mathematics-2020 Q45 (verified item — correct answer: (a, m) = 1).

Question 9 Mathematics

If f_xx = f_xy = f_yy = 0 at a point, the point is a multiple point of order:

- A. Two
- B. Higher than two ✓ **Predicted answer**
- C. Lower than two
- D. Exactly one

Why this answer? If f_xx = f_xy = f_yy = 0, the point is a multiple point of order higher than two.

Why predicted [B] — Verified fact, predicted to recur: ppsc-lecturer-mathematics-2020 Q46 (verified item — correct answer: Higher than two).

Question 10 Mathematics

How many numbers does the three-index symbol A_ijk with i, j, k = 1, 2, 3 denote?

- A. 9
- B. 8
- C. 27 ✓ **Predicted answer**
- D. 6

Why this answer? A three-index symbol with i, j, k = 1, 2, 3 denotes 3 cubed = 27 numbers.

Why predicted [B] — Verified fact, predicted to recur: ppsc-lecturer-mathematics-2020 Q47 (verified item — correct answer: 27).

11 Mathematics

What is the value of the integral from 0 to 4 of floor(x) dx, where floor(x) is the greatest integer <= x?

- A. 3
- B. 6 ✓ **Predicted answer**
- C. 7
- D. 4

Why this answer? Integral 0 to 4 of floor(x) dx = 0 + 1 + 2 + 3 = 6.

Why predicted [B] — Verified fact, predicted to recur: ppsc-lecturer-mathematics-2020 Q48 (verified item — correct answer: 6).

Question 12 Mathematics

Is f(x) = x|x| differentiable at the origin?

- A. No - not differentiable
- B. Continuous but not differentiable
- C. Yes - differentiable ✓ **Predicted answer**
- D. None of these

Why this answer? f'(0) = limit of |x| as x tends to 0 = 0, so f is differentiable at the origin.

Why predicted [B] — Verified fact, predicted to recur: ppsc-lecturer-mathematics-2020 Q49 (verified item — correct answer: Differentiable).

Question 13 Mathematics

A real matrix A with A A-transpose = A-transpose A is called:

- A. Orthogonal
- B. Symmetric
- C. Normal ✓ **Predicted answer**

ne of these

Why this answer? A matrix commuting with its transpose is normal; orthogonal needs A A-transpose = I as well.

Why predicted [B] — Verified fact, predicted to recur: ppsc-lecturer-mathematics-2020 Q50 (verified item — correct answer: Normal).

Question 14 Mathematics

If M is a subset of L, both subspaces of V, which identity holds for L intersect (M + N)?

- A. Both identities hold ✓ **Predicted answer**
- B. Only L intersect (M + N) = (L intersect M) + (L intersect N)
- C. Only L intersect (M + N) = M + (L intersect N)
- D. Neither identity

Why this answer? Both hold: L intersect (M + N) = (L intersect M) + (L intersect N) = M + (L intersect N).

Why predicted [B] — Verified fact, predicted to recur: ppsc-lecturer-mathematics-2020 Q51 (verified item — correct answer: Both (A) and (B)).

Question 15 Mathematics

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

- A. 9
- B. 7
- C. 8 ✓ **Predicted answer**
- D. 16

Why this answer? d/dx of x^2 is 2x^1; at x = 4 this is 2 x 4^1 = 8.

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

16 Mathematics

What is the derivative of x^3 at x = 4?

- A. 49
- B. 48 ✓ **Predicted answer**
- C. 47
- D. 96

Why this answer? d/dx of x^3 is 3x^2; at x = 4 this is 3 x 4^2 = 48.

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 = 3?

- A. 109
- B. 107
- C. 216
- D. 108 ✓ **Predicted answer**

Why this answer? d/dx of x^4 is 4x^3; at x = 3 this is 4 x 3^3 = 108.

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

Question 18 Mathematics

What is the derivative of x^6 at x = 2?

- A. 192 ✓ **Predicted answer**
- B. 193
- C. 191
- D. 384

Why this answer? d/dx of x^6 is 6x^5; at x = 2 this is 6 x 2^5 = 192.

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^2 at x = 6?

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

Why this answer? d/dx of x^2 is 2x^1; at x = 6 this is 2 x 6^1 = 12.

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

Question 20 Mathematics

What is the value of the integral from 0 to 6 of x^1 dx?

- A. 18 ✓ **Predicted answer**
- B. 19
- C. 17
- D. 20

Why this answer? Integral of x^1 is x^2/2; from 0 to 6 this is 6^2/2 = 18.

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

Question 21 Mathematics

What is the value of the integral from 0 to 6 of x^2 dx?

- B. 71
- C. 74
- D. 72 ✓ **Predicted answer**

Why this answer? Integral of x^2 is x^3/3; from 0 to 6 this is 6^3/3 = 72.

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 6 of x^3 dx?

- A. 325
- B. 324 ✓ **Predicted answer**
- C. 323
- D. 326

Why this answer? Integral of x^3 is x^4/4; from 0 to 6 this is 6^4/4 = 324.

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 8 of x^1 dx?

- A. 33
- B. 32 ✓ **Predicted answer**
- C. 31
- D. 34

Why this answer? Integral of x^1 is x^2/2; from 0 to 8 this is 8^2/2 = 32.

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

Question 24 Mathematics

What is the value of the integral from 0 to 8 of x^3 dx?

- A. 1025
- B. 1023
- C. 1026
- D. 1024 ✓ **Predicted answer**

Why this answer? Integral of x^3 is x^4/4; from 0 to 8 this is 8^4/4 = 1024.

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

Question 25 Mathematics

What is the limit of (x squared - 36) / (x - 6) as x tends to 6?

- A. 12 ✓ **Predicted answer**
- B. 13
- C. 11
- D. 14

Why this answer? (x squared - 36) = (x - 6)(x + 6), so the limit as x tends to 6 is 6 + 6 = 12.

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

Question 26 Mathematics

What is the limit of (x squared - 49) / (x - 7) as x tends to 7?

- A. 14 ✓ **Predicted answer**
- B. 15

- D. 16

Why this answer? (x squared - 49) = (x - 7)(x + 7), so the limit as x tends to 7 is 7 + 7 = 14.

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 - 1) / (x - 1) as x tends to 1?

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

Why this answer? (x squared - 1) = (x - 1)(x + 1), so the limit as x tends to 1 is 1 + 1 = 2.

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 - 64) / (x - 8) as x tends to 8?

- A. 17
- B. 16 ✓ **Predicted answer**
- C. 15
- D. 18

Why this answer? (x squared - 64) = (x - 8)(x + 8), so the limit as x tends to 8 is 8 + 8 = 16.

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

29 Mathematics

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

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

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

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

Question 30 Mathematics

What is the determinant of the matrix [[2, 4], [3, 7]]?

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

Why this answer? Determinant = 2 x 7 - 4 x 3 = 2.

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

Question 31 Mathematics

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

- A. 23
- B. 21
- C. -22
- D. 22 ✓ **Predicted answer**

swer? Determinant = 6 x 4 - 1 x 2 = 22.

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 [[3, 3], [1, 2]]?

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

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

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 [[2, 1, 0], [3, 4, 1], [1, 2, 5]]?

- A. 22 ✓ **Predicted answer**
- B. 23
- C. 21
- D. -22

Why this answer? Expanding along the first row gives 22.

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

Question 34 Mathematics

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

✓ **Predicted answer**

- B. 17
- C. 7
- D. 60

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

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

Question 35 Mathematics

What is the modulus of the complex number 20 + 21i?

- A. 41
- B. 1
- C. 29 ✓ **Predicted answer**
- D. 420

Why this answer? |20 + 21i| = sqrt(20 squared + 21 squared) = 29.

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 7 + 24i?

- A. 25 ✓ **Predicted answer**
- B. 31
- C. 17
- D. 168

Why this answer? |7 + 24i| = sqrt(7 squared + 24 squared) = 25.

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

d modulus recurs in every Lecturer Mathematics sitting.

Question 37 Mathematics

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

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

Why this answer? |15 + 8i| = sqrt(15 squared + 8 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 24 + 7i?

- A. 31
- B. 25 ✓ **Predicted answer**
- C. 17
- D. 168

Why this answer? |24 + 7i| = sqrt(24 squared + 7 squared) = 25.

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

Question 39 Mathematics

For the quadratic equation 1x squared + -9x + 20 = 0, what is the sum of the roots?

- A. 20
- B. 9 ✓ **Predicted answer**

- D. 10

Why this answer? For ax squared + bx + c = 0, the sum of the roots is -b/a = 9.

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

Question 40 Mathematics

For the quadratic equation 1x squared + -4x + 3 = 0, what is the sum of the roots?

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

Why this answer? For ax squared + bx + c = 0, the sum of the roots is -b/a = 4.

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 3x squared + -6x + 3 = 0, what is the sum of the roots?

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

42 Mathematics

For the quadratic equation 1x squared + -11x + 30 = 0, what is the sum of the roots?

- A. 11 ✓ **Predicted answer**
- B. 30
- C. 1
- D. 12

Why this answer? For ax squared + bx + c = 0, the sum of the roots is -b/a = 11.

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 2x squared + -10x + 12 = 0, what is the sum of the roots?

- A. 6
- B. 4
- C. 5 ✓ **Predicted answer**
- D. 10

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 44 Mathematics

What is the sum of the first 9 terms of the arithmetic series with first term 3 and common difference 4?

- A. 175
- B. 167
- C. 171 ✓ **Predicted answer**

Why this answer? Sum = n/2 x (2a + (n-1)d) = 9/2 x (6 + 32) = 171.

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

Question 45 Mathematics

What is the sum of the first 11 terms of the arithmetic series with first term 2 and common difference 5?

- A. 302
- B. 297 ✓ **Predicted answer**
- C. 292
- D. 308

Why this answer? Sum = n/2 x (2a + (n-1)d) = 11/2 x (4 + 50) = 297.

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 7 terms of the arithmetic series with first term 4 and common difference 3?

- A. 91 ✓ **Predicted answer**
- B. 94
- C. 88
- D. 98

Why this answer? Sum = n/2 x (2a + (n-1)d) = 7/2 x (8 + 18) = 91.

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

47 Mathematics

What is the sum of the first 13 terms of the arithmetic series with first term 1 and common difference 2?

- A. 171
- B. 167
- C. 182
- D. 169 ✓ **Predicted answer**

Why this answer? Sum = n/2 x (2a + (n-1)d) = 13/2 x (2 + 24) = 169.

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 5 terms of the arithmetic series with first term 6 and common difference 7?

- A. 100 ✓ **Predicted answer**
- B. 107
- C. 93
- D. 105

Why this answer? Sum = n/2 x (2a + (n-1)d) = 5/2 x (12 + 28) = 100.

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

Question 49 Mathematics

What is the sum of the first 6 terms of the geometric series with first term 2 and common ratio 2?

- A. 128

- C. 252
- D. 126 ✓ **Predicted answer**

Why this answer? Sum = a(r^n - 1)/(r - 1) = 2(2^6 - 1)/1 = 126.

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

Question 50 Mathematics

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

- A. 56
- B. 52 ✓ **Predicted answer**
- C. 48
- D. 156

Why this answer? Sum = a(r^n - 1)/(r - 1) = 4(3^3 - 1)/2 = 52.

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

Question 51 Mathematics

What is the value of cos 30 degrees?

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

Why this answer? cos 30 degrees = root 3 / 2.

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

ecial angles recurs in every Lecturer Mathematics sitting.

Question 52 Mathematics

What is the value of sin 60 degrees?

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

Why this answer? sin 60 degrees = root 3 / 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 tan 60 degrees?

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

Why this answer? tan 60 degrees = root 3.

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

Question 54 Mathematics

What is log base 2 of 2^5?

- A. 6
- B. 4

Predicted answer

- D. 7

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

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

Question 55 Mathematics

What is log base 4 of 4^3?

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

Why this answer? log base 4 of 4^3 = 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 3^4?

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

Why this answer? log base 3 of 3^4 = 4.

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

57 Mathematics

What is log base 2 of 2^4?

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

Why this answer? log base 2 of 2^4 = 4.

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

Question 58 Mathematics

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

- A. 16
- B. 14
- C. 15 ✓ **Predicted answer**
- D. -15

Why this answer? Dot product = 2x5 + 3x1 + 1x2 = 15.

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

Question 59 Mathematics

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

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

swer? Dot product = 4x2 + 1x2 + 3x1 = 13.

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 (0, 2, 5) and (3, 1, 4)?

- A. 23
- B. 21
- C. 22 ✓ **Predicted answer**
- D. -22

Why this answer? Dot product = 0x3 + 2x1 + 5x4 = 22.

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 (5, 5, 5) and (1, 2, 3)?

- A. 31
- B. 29
- C. -30
- D. 30 ✓ **Predicted answer**

Why this answer? Dot product = 5x1 + 5x2 + 5x3 = 30.

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

Question 62 Mathematics

A fair coin is tossed twice. What is the probability of getting at least one head?

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

Why this answer? Out of HH, HT, TH, TT, three have at least one head, so the probability is 3/4.

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

Question 63 Mathematics

A fair die is rolled once. What is the probability of getting an even number?

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

Why this answer? Three of the six faces are even, so the probability is 3/6 = 1/2.

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

Question 64 Mathematics

A bag has 4 white and 6 black balls. What is the probability of drawing a white ball?

- A. 3/5
- B. 1/5
- C. 2/5 ✓ **Predicted answer**
- D. 4/9

Why this answer? There are 4 white balls out of 10 in total, so the probability is 4/10 =

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

Question 65 Mathematics

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

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

Why this answer? There are 4 kings 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 66 Mathematics

Two fair dice are rolled. What is the probability that the sum is 7?

- A. 1/6 ✓ **Predicted answer**
- B. 1/12
- C. 1/36
- D. 5/36

Why this answer? Six of the 36 outcomes give a sum of 7, so the probability is 6/36 = 1/6.

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

67 Mathematics

What is the sum of the first 15 natural numbers?

- A. 121
- B. 120 ✓ **Predicted answer**
- C. 119
- D. 135

Why this answer? Sum of first 15 natural numbers = n(n+1)/2 = 120.

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

Question 68 Mathematics

What is the sum of the squares of the first 6 natural numbers?

- A. 92
- B. 91 ✓ **Predicted answer**
- C. 90
- D. 97

Why this answer? Sum of squares of first 6 natural numbers = n(n+1)(2n+1)/6 = 91.

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 first 25 natural numbers?

- A. 325 ✓ **Predicted answer**
- B. 326
- C. 324
- D. 350

Answer: Sum of first 25 natural numbers = n(n+1)/2 = 325.

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

Question 70 Mathematics

If f(x) = 5x + 10, what is f inverse of 0?

- A. -1
- B. -3
- C. -2 ✓ **Predicted answer**
- D. 10

Why this answer? f(x) = 0 gives 5x + 10 = 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) = 2x + 6, what is f inverse of 0?

- A. -2
- B. -4
- C. 6
- D. -3 ✓ **Predicted answer**

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

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

Question 72 Mathematics

If f(x) = 3x + 9, what is f inverse of 0?

- B. -4
- C. 9
- D. -3 ✓ **Predicted answer**

Why this answer? f(x) = 0 gives 3x + 9 = 0, so x = -3.

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 prince of mathematicians?

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

Why this answer? Gauss is known as the prince of mathematicians.

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

Question 74 Mathematics

Which theorem states that every polynomial equation has a root in the complex numbers?

- A. Pythagoras theorem
- B. Fundamental theorem of algebra ✓ **Predicted answer**
- C. Binomial theorem
- D. Mean value theorem

Why this answer? The fundamental theorem of algebra states that every non-constant

has a complex root.

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

Question 75 Mathematics

The golden ratio is approximately equal to:

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

Why this answer? The golden ratio is approximately 1.61803.

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

Question 76 Mathematics

What is the square root of 2, approximately?

- A. 1.73205
- B. 2.23607
- C. 1.41421 ✓ **Predicted answer**
- D. 1.61803

Why this answer? The square root of 2 is approximately 1.41421.

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

Question 77 Mathematics

Who developed the calculus independently alongside Newton?

- B. Gauss
- C. Fermat
- D. Leibniz ✓ **Predicted answer**

Why this answer? Leibniz developed calculus independently of Newton.

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 quadrilateral is:

- A. 180 degrees
- B. 270 degrees
- C. 540 degrees
- D. 360 degrees ✓ **Predicted answer**

Why this answer? The angles of a quadrilateral sum to 360 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 20 and 40?

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

Why this answer? The primes between 20 and 40 are 23, 29, 31 and 37: four in all.

Why predicted [C] — Syllabus anchor: syllabus anchor — Mathematics: number theory

Question 80 Mathematics

What is the largest prime number less than 100?

- A. 97 ✓ **Predicted answer**
- B. 99
- C. 89
- D. 91

Why this answer? 97 is the largest prime less than 100.

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 France?

- A. Lyon
- B. Paris ✓ **Predicted answer**
- C. Marseille
- D. Nice

Why this answer? Paris is the capital of France.

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

Question 82 General Knowledge

Which is the largest country by area?

- A. Canada
- B. China

- D. Russia ✓ **Predicted answer**

Why this answer? Russia is the largest country by area.

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

Question 83 General Knowledge

Which sea separates Europe and Africa?

- A. Red Sea
- B. Black Sea
- C. Caspian Sea
- D. Mediterranean Sea ✓ **Predicted answer**

Why this answer? The Mediterranean Sea separates Europe from Africa.

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

Question 84 General Knowledge

What is the capital of Turkey?

- A. Ankara ✓ **Predicted answer**
- B. Istanbul
- C. Izmir
- D. Antalya

Why this answer? Ankara is the capital of Turkey; Istanbul is its largest city.

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

85 General Knowledge

Which country is known as the Land of the Rising Sun?

- A. Japan ✓ **Predicted answer**
- B. China
- C. Thailand
- D. Korea

Why this answer? Japan is known as the Land of the Rising Sun.

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

Question 86 General Knowledge

Which is the highest mountain in the world?

- A. K2
- B. Kangchenjunga
- C. Mount Everest ✓ **Predicted answer**
- D. Makalu

Why this answer? Mount Everest (8,849 m) is the highest mountain in the world.

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

Question 87 General Knowledge

Which is the largest province of Pakistan by area?

- A. Punjab
- B. Sindh
- C. Khyber Pakhtunkhwa
- D. Balochistan ✓ **Predicted answer**

swer? Balochistan is the largest province of Pakistan by area.

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

Question 88 General Knowledge

Which city is the capital of Pakistan?

- A. Lahore
- B. Islamabad ✓ **Predicted answer**
- C. Karachi
- D. Rawalpindi

Why this answer? Islamabad is the capital of Pakistan.

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

Question 89 General Knowledge

Which is the national animal of Pakistan?

- A. Snow leopard
- B. Indus dolphin
- C. Chinkara
- D. Markhor ✓ **Predicted answer**

Why this answer? The markhor is the national animal of Pakistan.

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

Question 90 General Knowledge

Which is the national flower of Pakistan?

nine ✓ **Predicted answer**

- B. Rose
- C. Tulip
- D. Sunflower

Why this answer? Jasmine is the national flower of Pakistan.

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

Question 91 General Knowledge

Which river is the longest in Pakistan?

- A. Jhelum
- B. Indus ✓ **Predicted answer**
- C. Chenab
- D. Ravi

Why this answer? The Indus is the longest river in Pakistan.

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

Question 92 General Knowledge

When did Pakistan come into being?

- A. 15 August 1947
- B. 23 March 1940
- C. 14 August 1947 ✓ **Predicted answer**
- D. 14 August 1948

Why this answer? Pakistan came into being on 14 August 1947.

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

n every Lecturer sitting.

Question 93 General Knowledge

Who is known as the founder of Pakistan?

- A. Liaquat Ali Khan
- B. Allama Iqbal
- C. Quaid-e-Azam Muhammad Ali Jinnah ✓ **Predicted answer**
- D. Sir Syed Ahmad Khan

Why this answer? Muhammad Ali Jinnah is the founder of Pakistan.

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

Question 94 General Knowledge

Which is the national language of Pakistan?

- A. Punjabi
- B. Urdu ✓ **Predicted answer**
- C. Sindhi
- D. Pashto

Why this answer? Urdu is the national language of Pakistan.

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

Question 95 General Knowledge

Which city is called the City of Gardens in Pakistan?

- A. Karachi
- B. Islamabad

- D. Lahore ✓ **Predicted answer**

Why this answer? Lahore is known as the City of Gardens.

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

Question 96 General Knowledge

Which is the largest city of Pakistan?

- A. Karachi ✓ **Predicted answer**
- B. Lahore
- C. Faisalabad
- D. Rawalpindi

Why this answer? Karachi is the largest city of Pakistan.

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

Question 97 General Knowledge

Which pass connects Pakistan with China?

- A. Khyber Pass
- B. Bolan Pass
- C. Lowari Pass
- D. Khunjerab Pass ✓ **Predicted answer**

Why this answer? The Khunjerab Pass connects Pakistan with China.

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

98 General Knowledge

Which is the national sport of Pakistan?

- A. Cricket
- B. Hockey ✓ **Predicted answer**
- C. Squash
- D. Football

Why this answer? Hockey is the national sport of Pakistan.

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

Question 99 General Knowledge

Who wrote the national anthem of Pakistan?

- A. Allama Iqbal
- B. Faiz Ahmad Faiz
- C. Josh Malihabadi
- D. Hafeez Jalandhari ✓ **Predicted answer**

Why this answer? Hafeez Jalandhari wrote Pakistan's national anthem.

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

Question 100 General Knowledge

Which is the deepest ocean in the world?

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

swer? The Pacific contains the Mariana Trench, the deepest point.

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

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