

Sample Paper 02: Public Service Commission

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This is a sample paper for the post of Lecturer or Subject Specialist or any other equivalent position.



Note: Please choose the most appropriate choice.

General Knowledge

1. The first human who travelled into space was
(A) Neil Armstrong (B) Yuri Gararin (C) Sergei Korolev (D) John Glenn
2. Which from the following countries has no armed forces?
(A) Niger (B) Iceland (C) Landon (D) Nigeria
3. Taliban opened their political office in
(A) Musqat (B) Dubai (C) Doha (D) Riyadh
4. ——— has the world's largest natural gas reserves
(A) Russia (B) Iran (C) Pakistan (D) Canada
5. Chromite is found in Pakistan in the area of:
(A) Multan (B) Karachi (C) Lahore (D) Muslim bagh
6. The number of oil refineries working in Pakistan are:
(A) 6 (B) 4 (C) 7 (D) 8
7. The areas important for mineral wealth in Pakistan is \ are:
(A) Areas of Waziristan (B) Chitral (C) Northern Eastern Balochistan (D) All of them
8. The highest glacier of Pakistan is:
(A) Butura (B) Finland (C) Hisper (D) Siachen
9. Contract to operate Gwadar port was given to ———
(A) Landon (B) United State (C) Dubai (D) China
10. Muhammad-bin-Qasim entered Sindh in
(A) 512 AD (B) 612 AD (C) 712 AD (D) 812 AD
11. The Head Office of Institute of Chartered Accountants of Pakistan (ICAP) is in
(A) Islamabad (B) Los Multan (C) Lahore (D) Karachi

12. The largest sources of electricity in Pakistan is
(A) Geo Energy (B) Coal Energy (C) Thermal (D) Hydel
13. The total length of Karachi-Lahore Motorway is
(A) 1,100km (B) 1,000km (C) 1,600km (D) 1,400km
14. Kalabagh is famous for the mineral of:
(A) Stones (B) Salt (C) Iron (D) Sulphur
15. How many angels are mentioned in the Holy Quran
(A) 7 (B) 9 (C) 4 (D) 5
16. Which Surah is known as the door to the Quran?
(A) Baqarah (B) Fatihah (C) Ikhlas (D) Yaseen
17. Which pass connects Pakistan and Afghanistan
(A) Tochi Pass (B) Khyber Pass (C) Khunjerab Pass (D) Gomal Pass
18. Which Surah is on the name of tribe of Holy Prophet
(A) Quraish (B) Taha (C) Luqman (D) Al-Fatir
19. The effective Zakat system can ensure the elimination of?
(A) Poverty (B) Interest (C) Class Distribution (D) none
20. The world's oldest written language is:
(A) Japanese (B) Chinese (C) Urdu (D) Latin

Mathematics

21. Number of conjugacy classes of cyclic group of order 6 is —
(A) 1 (B) 2 (C) 3 (D) 6
22. Which of the following is an ideal of \mathbb{R}
(A) \mathbb{Z} (B) $\{0\}$ (C) \mathbb{C} (D) \mathbb{Q}
23. Which of the following is a field?
(A) $\{a + b\sqrt{2} : a, b \in \mathbb{Q}\}$ (B) $\mathbb{Q} \setminus \{0\}$ (C) \mathbb{Z} (D) \mathbb{Z}_6
24. Let $\phi : \mathbb{Z} \rightarrow \mathbb{Z}_5$ be such that $\phi(a) = a \pmod{5}$. Then $\text{Ker}(\phi) =$ —
(A) $\{0\}$ (B) $\{0, \pm 5, \pm 10, \dots\}$ (C) \mathbb{Z}_5 (D) \mathbb{Z}
25. The A.P. whose n th term is $2n - 1$ is
(A) $-1, 3, 5, \dots$ (B) $2, 4, 6, \dots$ (C) $1, 3, 5, \dots$ (D) $0, 3, 5, \dots$
26. The number of proper ideals of \mathbb{Z}_{17} is —
(A) 0 (B) 1 (C) 2 (D) 3

27. Which of the following is a division Ring?
 (A) $(\mathbb{Z}, +, \cdot)$ (B) $(\mathbb{E}, +, \cdot)$ (C) $(\mathbb{Q}, +, \cdot)$ (D) $(\mathbb{Z}_6, \oplus_6, \odot_6)$
28. $\int_{-1}^2 (x + |x|) dx =$ —
 (A) {0} (B) {4} (C) {2} (D) {6}
29. $x = 6$ in \mathbb{R}^3 represents a
 (A) Point (B) Line (C) Plane (D) Space
30. Kernel of $T : \mathbb{R}^3 \rightarrow \mathbb{R}^3$, where $T(x, y, z) = (x, y, 0)$, is
 (A) Point (B) Line (C) Plane (D) Space
31. Dimension of $\text{Hom}(\mathbb{R}^3, \mathbb{R}^4) =$ —
 (A) 3 (B) 4 (C) 7 (D) 12
32. Dimension of $\text{Hom}(M_{2,4}, P_2(t)) =$ —
 (A) 4 (B) 8 (C) 16 (D) 24
33. A dice is thrown. The probability that the dots on the top are prime numbers or odd numbers is —
 (A) $\frac{1}{3}$ (B) $\frac{2}{3}$ (C) 1 (D) $\frac{5}{6}$
34. A coin is tossed 4 times in succession. The probability that at least one head occurs is
 (A) $\frac{1}{16}$ (B) $\frac{4}{16}$ (C) $\frac{12}{16}$ (D) $\frac{15}{16}$
35. Number of necklaces made from 9 beads of different colors is
 (A) $\frac{8!}{2}$ (B) $8!$ (C) $7!$ (D) $9!$
36. Period of $3 \cos \frac{x}{5}$ is —
 (A) 2π (B) $\frac{2\pi}{5}$ (C) 6π (D) 10π
37. Range of $\sec^{-1} x$ is —
 (A) $[0, \pi]$ (B) $[0, \pi] \setminus \left\{ \frac{\pi}{2} \right\}$ (C) $\left[-\frac{\pi}{2}, \frac{\pi}{2} \right]$ (D) $\left[-\frac{\pi}{2}, \frac{\pi}{2} \right] \setminus \{0\}$
38. Solution set of $\sin x \cos x = \frac{\sqrt{3}}{4}$ is —
 (A) $\left\{ \frac{\pi}{6} + n\pi \right\} \cup \left\{ \frac{\pi}{3} + n\pi \right\}$ (B) $\left\{ \frac{\pi}{3} + 2n\pi \right\} \cup \left\{ \frac{2\pi}{3} + 2n\pi \right\}$ (C) $\left\{ \frac{\pi}{6} + 2n\pi \right\} \cup \left\{ \frac{5\pi}{6} + 2n\pi \right\}$
 (D) $\left\{ \frac{\pi}{12} + n\pi \right\} \cup \left\{ \frac{5\pi}{12} + n\pi \right\}$
39. $(\cot^2 \phi - 1)(\sin^2 \phi + 1) =$
 (A) $1 - \sin^2 \phi$ (B) $1 + \sin^2 \phi$ (C) $\cos 2\phi - \sin 2\phi$ (D) All
40. Which of the following is tautology
 (A) $p \rightarrow \sim q$ (B) $(p \rightarrow q) \cap (pq)$ (C) $p \rightarrow q \leftrightarrow \sim q \rightarrow \sim p$ (D) $p \cap \sim p$
41. $f(z) = \frac{1}{z}$ is not uniformly continuous in the region —
 (A) $0 \leq |z| \leq 1$ (B) $0 \leq |z| < 1$ (C) $0 < |z| \leq 1$ (D) $0 < |z| < 1$

42. The sum of exponents of a and b in every term of the expansion $(a + b)^n$ is
(A) n (B) 1 (C) 0 (D) $2n$
43. The sum of odd co-efficient in the expansion $(1 + x)^4$ is
(A) 4 (B) 8 (C) 12 (D) 14
44. The domain of $\cot x$ is
(A) \mathbb{R} choice \mathbb{Z} (B) $\mathbb{R} - \{x/x = n\pi, n \in \mathbb{Z}\}$ (C) None
45. The graph of function $y = \sin x$ is discontinuous at $x = \text{---}$
(A) 0° (B) 90° (C) 180° (D) None
46. Second derivative of $y = x^9 + 10x^2 + 2x - 1$ at $x = 0$ is
(A) 20 (B) 10 (C) 12 (D) 1
47. Centroid of triangle is a point that divides each median in the ratio
(A) $2:1$ (B) $1:2$ (C) $3:1$ (D) $1:3$
48. A one to one linear transformation preserves
- (A) basis but not dimension (B) basis and dimension (C) dimension but not basis
(D) None of these
49. Evaluate $\int_0^{\frac{\pi}{2}} \frac{\sqrt{\sin x}}{\sqrt{\sin x} + \sqrt{\cos x}} dx$
(A) $\frac{\pi}{4}$ (B) $\frac{\pi}{2}$ (C) 0 (D) 1
50. Optimization means — a quantity under certain constraints:
(A) Maximize (B) Minimize (C) Both (D) None
51. Circle is special case of
(A) Ellipse (B) Parabola (C) Hyperbola (D) None
52. Let p and q be distinct primes. How many (mutually-nonisomorphic) abelian groups are there of order p^2q^4
(A) 6 (B) 8 (C) 10 (D) 12
53. The projection of $\underline{a} = \underline{i} - 2\underline{j} + \underline{k}$ along $\underline{b} = 4\underline{i} - 4\underline{j} + 7\underline{k}$ is
(A) $\frac{19}{9}$ (B) $\frac{19}{10}$ (C) $\frac{19}{11}$ (D) $\frac{19}{12}$
54. A linear transformation $T: U \rightarrow V$ is one-to-one if and only if kernel of T is equal to
(A) U (B) V (C) 0 (D) $\text{Im}(T)$
55. To each element of a group there correspond how many inverse element
(A) At least one (B) Only one (C) Two (D) None
56. Which of the following is not monoid w.r.t addition
(A) \mathbb{N} (B) \mathbb{Z} (C) \mathbb{W}_4 (D) None

57. The set $\{1, -1, i, -i\}$ is group w.r.t
(A) \times (B) $-$ (C) $+$ (D) None
58. Which of the following is subset of all set
(A) ϕ (B) 0 (C) $\{1, 2, 3\}$ (D) None
59. The set of the first elements of the order pairs forming a relation is called
(A) Domain (B) A into B (C) Range (D) None
60. If $n(X) = 18$, $n(X \cup Y) = 40$, $n(X \cap Y) = 7$ then $n(Y) =$ _____
(A) 29 (B) 30 (C) 31 (D) None
61. The period of $\cot x$ is
(A) $\frac{\pi}{2}$ (B) π (C) 2π (D) 4π
62. If ω is an imaginary cubic root of unity then $(1 + \omega - \omega^2)^7$ equal to
(A) 128ω (B) -128ω (C) $128\omega^2$ (D) $-128\omega^2$
63. If $\#n = (n - 5)^2 + 5$, then find $\#3 \times \#4$
(A) 54 (B) 55 (C) 56 (D) 59
64. $i^{101} =$ _____
(A) 1 (B) -1 (C) i (D) $-i5$
65. The group of Quaternions is a non-abelian group of order _____
(A) 6 (B) 8 (C) 10 (D) 1
66. Every
(A) an abelian but not cyclic (B) an abelian group (C) a Non-abelian group (D) a cyclic group
67. Any two conjugate subgroup of a group G are
(A) Equivalent (B) Similar (C) Isomorphic (D) None
68. If H is a subgroup of index then H is a normal subgroup of G
(A) 2 (B) 4 (C) prime number (D) None
69. nhj
(A) prime number (B) composite number (C) natural number (D) None
70. Let G be a cyclic group of order 24 generated by a then order of a^{10} is
(A) 2 (B) 12 (C) 10 (D) 1
71. If a vector space V has a basis of n vectors, then every basis of V must consist of exactly vectors.
(A) $n + 1$ (B) n (C) $n - 1$ (D) $n + 3$

72. An indexed set of vectors $\{v_1, v_2, \dots, v_p\}$ in R^n is said to be if the vector equation $x_1v_1 + x_2v_2 + \dots + x_pv_p = 0$ has only the trivial solution.
(A) linearly independent (B) basis (C) linearly dependent (D) none
73. If A and B are overlapping sets, then
(A) $A \cap B \neq \phi$ (B) $A = B$ (C) $A \cap B = \phi$ (D) None
74. Intersection of any collection of normal subgroup G
(A) is normal subgroup (B) may not be normal subgroup (C) is cyclic subgroup
(D) is abelian subgroup
75. A group G having order where P is a prime is always abelian.
(A) p^4 (B) p^2 (C) $2p$ (D) p^3
76. The number of conjugacy classes of symmetric group of degree 3 is
(A) 6 (B) 2 (C) 3 (D) 4
77. What are Zero divisors in the Ring of integers modulo 6
(A) 1, 2, 6 (B) 0, 2, 3 (C) 0, 2, 4 (D) 2, 3, 4
78. The set of all solutions to be homogeneous equation $Ax = 0$ where A is an $m \times n$ matrix is
(A) Null space (B) Column space (C) Rank (D) None
79. If 7 cards are dealt from an ordinary deck of 52 playing cards, What is the probability that at least one of them will be queen
(A) 0.4773 (B) 0.4774 (C) 0.4775 (D) 0.4776
80. Every group of order ≤ 5 is
(A) cyclic (B) abelian (C) not abelian (D) none
81. Number of non-isomorphic groups of order 8 is.....
(A) 4 (B) 2 (C) 3 (D) 5
82. $\underline{a} \cdot (\underline{b} \times \underline{c})$ is not equal to
(A) $\underline{a} \cdot (\underline{c} \times \underline{b})$ (B) $(\underline{a} \times \underline{b}) \cdot \underline{c}$ (C) $\underline{b} \cdot (\underline{c} \times \underline{a})$ (D) $\underline{c} \cdot (\underline{a} \times \underline{b})$
83. Let G be a group. Then the derived group G' is subgroup of G.
(A) Cyclic (B) Abelian (C) Normal (D) None
84. Finite simple abelian groups are of order
(A) 4 (B) prime power (C) power of 2 (D) prime number
85. Set of integers \mathbb{Z} is of the set Q of rationals
(A) prime ideal (B) subring (C) maximal ideal (D) None
86. Solution set of the equation $1 + \cos x = 0$ is
(A) $\{\pi + n\pi : n \in \mathbb{Z}\}$ (B) $\{2n\pi : n \in \mathbb{Z}\}$ (C) $\{\frac{\pi}{2} + n\pi : n \in \mathbb{Z}\}$ (D) $\{\pi + 2n\pi : n \in \mathbb{Z}\}$

87. None-zero elements of a field form a group under
(A) addition (B) multiplication (C) subtraction (D) division
88. Let Q be a set of rational numbers. Then $Q(\sqrt{3}) = \{a + b\sqrt{3}; a, b \in Q\}$ is a vector space over Q with dimension
(A) 1 (B) 2 (C) 3 (D) 4
89. Let W be a subspace of the space \mathbb{R}^3 . If $\dim W = 0$, then W is a
(A) line through the origin 0 (B) plane through the origin 0 (C) entire space \mathbb{R}^3
(D) a point
90. Let $P_n(t)$ be a vector space of all polynomials of degree $\leq n$: Then
(A) $P_n(t) = n - 1$ (B) $P_n(t) = n$ (C) $P_n(t) = n + 1$ (D) 2
91. In the group $(\mathbb{Z}, 0)$ of all integers where $a \circ b = a + b + 1$ for $a, b \in \mathbb{Z}$, then inverse of -3 is
(A) -3 (B) 0 (C) 3 (D) 1
92. Let G be a group in which $g^2 = 1$ for all g in G . Then G is.....
(A) abelian (B) cyclic (C) abelian but not cyclic (D) non-abelian
93. The metric coefficients in cylindrical coordinates are
(A) (1, 1, 1) (B) (1, 0, 1) (C) (1, r , 1) (D) None
94. The value of quantity $\delta_{ij}x_i x_j$ is
(A) x_i (B) 0 (C) x_i^j (D) $x_i x_j$
95. A tensor of rank 5 in a space 4 dimensions has components
(A) 5 (B) 2 (C) 625 (D) 1024
96. f' is bounded if and only if
(A) $a > 1 + c$ (B) $a > 2 + c$ (C) $a \geq 1 + c$ (D) $a \geq 2 + c$
97. The value of $\sin\left(\cos^{-1}\frac{\sqrt{3}}{2}\right)$ is
(A) $\frac{\sqrt{3}}{2}$ (B) $\frac{1}{\sqrt{2}}$ (C) $\frac{1}{2}$ (D) 1
98. Let \mathbb{R} be the cofinite topology. Then \mathbb{R} is a
(A) T_0 but not T_1 (B) T_1 but not T_2 (C) T_2 but not T_3 (D) T_2 but not T_1
99. A particular integral of the differential equation $(D^2 + 4)y = x$ is
(A) $x e^{-2x}$ (B) $x \cos 2x$ (C) $x \sin 2x$ (D) $\frac{x}{4}$
100. The area of the cardioid $r = a(1 + \cos \theta)$ is equal
(A) $4\pi a^2$ (B) $8\pi a$ (C) $\frac{3\pi a^2}{2}$ (D) $2\pi a^2$

ANSWERS

1. B	2. B	3. C	4. A	5. D	6. B	7. D	8. D	9. D	10. C	11. D
12. C	13. A	14. C	15. A	16. B	17. B	18. A	19. A	20. B	21. D	
22. B	23. A	24. B	25. C	26. B	27. D	28. B	29. C	30. B	31. D	
32. D	33. B	34. D	35. A	36. D	37. B	38. B	39. C	40. C	41. B	
42. A	43. B	44. B	45. D	46. A	47. A	48. A	49. A	50. A	51. A	
52. A	53. A	54. A	55. A	56. A	57. A	58. A	59. A	60. A	61. A	
62. A	63. A	64. A	65. A	66. A	67. A	68. A	69. A	70. A	71. A	
72. A	73. A	74. A	75. A	76. A	77. A	78. A	79. A	80. A	81. A	
82. A	83. A	84. A	85. A	86. A	87. A	88. A	89. A	90. A	91. A	
92. A	93. A	94. A	95. A	96. A	97. A	98. A	99. A	100. A		

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