Sr.No	Question Type	Difficulty	Category, Sub Category	Question	Marks
1	Single Choice	Easy	Core Mathematics	The unit digit of 2^{100} is **A. 2** B. 4 C. 6 D. 8	1
2	Single Choice	Medium	Core Mathematics	If n is a positive integer and a is any relatively prime to n, then **A.** $a^{\emptyset(n)} \equiv$ **1 (mod n)** B. $a^{\emptyset(n)} \equiv$ 0 (mod n) C. $a^{\emptyset(n)} \equiv$ 2 (mod n) D. None.	1
3	Single Choice	Easy	Core Mathematics	How many different words can be made out of the letters of the word ALLAHABAD? A. 4! / (9! 2!) B. 2! / (4! 9!) **C. 9! / (4! 2!)** D. (2! 4!) / 9!	1
4	Single Choice	Hard	Core Mathematics	The number of elements of order 10 in Z_{30} is A. 2 **B. 3** C. 4 D. 5.	1
5	Single Choice	Easy	Core Mathematics	For real numbers x and y we write x Ry if x-y is an irrational number. Then the relation R is **A. Reflexive** B. Transitive C. Symmetric D. None of these.	1
6	Single Choice	Medium	Core Mathematics	The sequence $\{x_n\}$, where $X_n = \frac{1}{n+1} + \frac{1}{n+2} + \frac{1}{n+3} \dots \dots + \frac{1}{2n}$ **A. Increasing but not bounded** B. Increasing and bounded C. Decreasing and bounded D. Decreasing but not bounded.	1
7	Single Choice	Easy	Core Mathematics	The function $f(x) = x / (x^2 + 1)$ from R to R is A. One One and Onto B. Onto but Not One One C. Neither One One nor Onto **D. One One but Not Onto**	1
8	Single Choice	Medium	Core Mathematics	The Series is $\sum_{n=1}^{\infty} \frac{n^2}{3^n}$ **A. Convergent** B. Unbounded C. Divergent	1

				D. None	
9	Single Choice	Easy	Core Mathematics	The set of real numbers in [0,1] is A. Countable Set **B. Uncountable Set** C. Finite Set D. None.	1
10	Single Choice	Medium	Core Mathematics	In a class of 100 students, 55 students have passed in Mathematics and 67 students have passed in Physics, then the numbers of students who have passed in Physics only are? A. 22 B. 33 C. 10 **D. 45**	1
11	Single Choice	Medium	Core Mathematics	If f(z) = 1/(1-z) then the Re f(z) for z = 7 + 2i is **A. -3/20** B. -1/15 C. 1/20 D. 3/15	1
12	Single Choice	Medium	Core Mathematics	If 1, w, w^2 are the cube root of unity, then the roots of $(x-1)^3 + 8 = 0$ are A. -1, -1, -1 B. -1, 1+2w, $1+2w^2$ C. 1, w, 2w **D. -1, 1-2w, $1-2w^2$**	1
13	Single Choice	Easy	Core Mathematics	The Cauchy Riemann equations in polar form are A. $\frac{\partial u}{\partial \theta} = \frac{1}{r}\frac{\partial v}{\partial r}$; $\frac{\partial u}{\partial r} = r\frac{\partial v}{\partial \theta}$ B. $\frac{\partial v}{\partial \theta} = \frac{1}{r}\frac{\partial u}{\partial r}$; $\frac{\partial u}{\partial \theta} = r\frac{\partial v}{\partial r}$ **C.** $\boldsymbol{\frac{\partial u}{\partial r} = \frac{1}{r}\frac{\partial v}{\partial \theta}}$; $\boldsymbol{\frac{\partial u}{\partial \theta} = -r\frac{\partial v}{\partial r}}$ D. $\frac{\partial u}{\partial r} = r\frac{\partial v}{\partial \theta}$; $\frac{\partial u}{\partial \theta} = -r\frac{\partial v}{\partial r}$	1
14	Single Choice	Medium	Core Mathematics	By the stereographic projection with south pole at origin (0,0,0) the point (1,0,0) goes to the complex number A. Z = 1 B. Z = i C. Z = -i **D. Z = 1+i**	1
15	Single Choice	Medium	Core Mathematics	The poles of the function f(z) = $\frac{sinz}{cosz}$ are at **A.** $\boldsymbol{\frac{(2n+1)\pi}{2}}$**, n is any integer** B. $\frac{2n\pi}{3}$, n is any integer C. $n\pi$ D. None	1
16	Single Choice	Medium	Core Mathematics	T is non-singular iff A. Nullity(T) ≠ 0 **B. Nullity(T) = 0** C. Nullity(T) = Rank(T) D. Rank(T) = 0	1

17	Single Choice	Medium	Core Mathematics	A linear transformation E on V is a projection on some subspace iff A. $E^2 = 0$ B. $E^2 = I$ **C. $E^2 = E$** D. None	1
18	Single Choice	Hard	Core Mathematics	Consider the basis $\{u_1, u_2, u_3\}$ of R^3, where $u_1 = (1,0,0)$, $u_2 = (1,1,0)$ and $u_3 = (1,1,1)$. Let $\{f_1, f_2, f_3\}$ be the dual basis of $\{u_1, u_2, u_3\}$ and f be a linear functional defined by $f(a,b,c) = a + b + c$, $(a,b,c) \varepsilon R^3$. If $f = \alpha_1 f_1 + \alpha_2 f_2 + \alpha_3 f_3$, then $(\alpha_1, \alpha_2, \alpha_3)$ is A. (1,2,3) B. (2,3,1) C. (3,2,1) **D. (1,3,2)**	1
19	Single Choice	Hard	Core Mathematics	The number of generators in group ($\{1,2,3,4,5,6\}$, X_7) are A. 4 **B. 2** C. 5 D. 3	1
20	Single Choice	Medium	Core Mathematics	If H and K are normal subgroups of G, then which one is true? A. HK and H U K are normal in G B. HK is not normal but H U K is normal **C. HK and H ∩ K are normal in G** D. HK is normal but H ∩ K is not normal	1
21	Single Choice	Easy	Core Mathematics	If G is a set of integers and a.b = a – b, then G is A. Semi-Group **B. Quasi-Group** C. Monoid D. Group	1
22	Single Choice	Medium	Core Mathematics	If f = (2,3) and g = (4,5) be two permutation on five symbols 1,2,3,4,5, then gf is **A.** $\begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 1 & 3 & 2 & 5 & 4 \end{pmatrix}$ B. $\begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 1 & 3 & 5 & 4 & 2 \end{pmatrix}$ C. $\begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 1 & 5 & 3 & 4 & 2 \end{pmatrix}$ D. $\begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 1 & 3 & 5 & 2 & 4 \end{pmatrix}$	1
23	Single Choice	Easy	Core Mathematics	Which one of the following is the solution of differential equation A. Cusp-locus B. Tac-locus C. Node-locus **D. Envelop**	1
24	Single Choice	Easy	Core Mathematics	What is the sum of order and degree of the given differential equation $\sqrt{\frac{d3y}{dx3}} = \sqrt[3]{\frac{d2y}{dx2}}$ **A. 6** B. 5 C. 7 D. 9	1
25	Single Choice	Medium	Core Mathematics	When solving $(d^2y / dx^2) + 4y = \tan 2x$ by variation of parameters, the value of the Wronskian W is A. 1 **B. 2** C. 3 D. 4	1

26	Single Choice	Easy	Core Mathematics	The sequence $\{\frac{1}{n}\}$ is, A. Unbounded and convergent **B. Bounded and convergent** C. Unbounded and divergent D. Bounded and divergent	1
27	Single Choice	Medium	Core Mathematics	The value of 'C' of LMVT if f(x)=x(x-1)(x-2); a=0, b=1/2 is A. ¼ B. 1/3 **C.** $\frac{6-\sqrt{21}}{6}$ D. $\frac{6+\sqrt{21}}{6}$	1
28	Single Choice	Medium	Core Mathematics	A metric space (X,ρ) is complete, if A. Every sequence in X is convergent B. Every sequence in X is divergent **C. Every Cauchy sequence in X is convergent** D. Every Cauchy sequence in X is divergent	1
29	Single Choice	Medium	Core Mathematics	Consider the vector space V over the field of real numbers spanned by the set S={(0,1,0,0),(1,1,0,0),(1,0,1,0),(0,0,1,0),(1,1,1,0),(1,0,0,0)} what is the dimension of V? A. 1 B. 2 **C. 3** D. 4	1
30	Single Choice	Hard	Core Mathematics	In R^3 consider the following three statement about the subset E={(1,0,0),(0,1,0),(0,0,1),(1,1,1),(1,1,0)} I. E is linearly independent set. II. Any three vectors of E are linearly independent III. Any four vectors of E are linearly independent Which of the above statements are correct? A. **I,II and III** B. I and II C. I and III D. II and III	1
31	Single Choice	Medium	Core Mathematics	The system of equations 2x+y=5, x-3y= -1 and 3x+4y=k is consistent, when k is A. 1 B. 2 C. 5 **D. 10**	1
32	Single Choice	Medium	Core Mathematics	Let T: $R^2 \rightarrow R^3$ be a linear transformation given by T(x, y) = (x + y, x-y, y) then, rank T is A. 0 B. 1 **C. 2** D. 3	1
33	Single Choice	Hard	Core Mathematics	For given $u(x, y) = x^3-3xy^2+3x^2-3y^2+1$ the analytic function f(z) is A. z^3-3z^2+c **B. z^3+3z^2+c** C. z^2+2z^3+c D. z^2-2z^3+c	1

34	Single Choice	Medium	Core Mathematics	Which of the following relation is false A. $E = 1 + \blacktriangle$ B. $E^{-1} = 1 - \blacktriangledown$ **C. $\blacktriangledown.\blacktriangledown = 1 - 2E^{-1} + E^{-2}$** D. None	1
35	Single Choice	Hard	Core Mathematics	The Taylor series for $y(x) = \log(1+x)$ is A. $1 + x + x^2/2 + x^3/6 + - - - + x^n/n!$ **B. $x - x^2/2 + x^3/3 - x^4/4 + - - -$** C. $x + x^2/2 + x^3/3 + x^4/4 + - - -$ D. $1 - x - x^2/2 - x^3/6 - - - - - x^n/n!$	1
36	Single Choice	Hard	Core Mathematics	Using Newton's forward interpolation formula the value of f(1.6) for below given data is x: 1, 1.4, 1.8, 2.2 y: 3.49, 4.82, 5.96, 6.5 **A. 5.54** B. 4.45 C. 5.35 D. None	1
37	Single Choice	Easy	Core Mathematics	Which vector is a probability vector A. (¼, 3/2, -1/4, ½) B. (5/2, 0, 8/3, 1/6, 1/6) **C. (1/12, ½, 1/6, 0, ¼)** D. (3, 0, 2, 5, 3)	1
38	Single Choice	Hard	Core Mathematics	A fair dice is tossed 7 times. The probability that a 5 or a 6 occurs atleast once is A. $1 - (1/3)^7$ **B. $1 - (2/3)^7$** C. $(2/3)^7$ D. $(1/3)^7$	1
39	Single Choice	Medium	Core Mathematics	A random variable X has the following probability function X: 0, 1, 2, 2, 3, 4, 5, 6, 7 P(X): 0, k, 2k, 2k, 3k, k^2, $2k^2$, $7k^2+k$ Then the value of k is A. -1 B. 1/5 **C. 1/10** D. ½	1
40	Single Choice	Medium	Core Mathematics	The third moment about the mean is referred as __ of a distribution. **A. Symmetry or Skewness** B. Expatiation C. Kurtosis D. None	1

41	**Single Choice**	**Easy**	**Core Mathematics**	**If (G, .) is a group such that a^2 = e, ∀a ∈ G, then G is** **A. Non-abelian** **B. Abelian** **C. Cyclic** **D. None of these**	**1**
42	Single Choice	Medium	Core Mathematics	The inverse of - i in the multiplicative group, {1, - 1, i , - i} is A. 1 B. -1 **C. i** D. -i	1
43	Single Choice	Easy	Core Mathematics	Rank of the matrix A = $\begin{bmatrix} 0 & 0 & 0 & 0 \\ 4 & 2 & 3 & 0 \\ 1 & 0 & 0 & 0 \\ 4 & 0 & 3 & 0 \end{bmatrix}$ A. 0 B. 1 C. 2 **D. 3**	1
44	Single Choice	Medium	Core Mathematics	The system of linear equations (4d - 1)x +y + z = 0 - y + z = 0 (4d - 1) z = 0 has a non-trivial solution, if d equals A. 1/2 **B. 1/4** C. 3/4 D. 1	1
45	Single Choice	Easy	Core Mathematics	Eigen values of real symmetric matrix are always A. Positive B. Purely imaginary number **C. Real** D. Negative	1
46	Single Choice	Medium	Core Mathematics	Let R be a non-empty relation on a collection of sets defined by ARB if and only if A ∩ B = Ø Then (pick the TRUE statement) A. R is reflexive and transitive **B. R is symmetric and not transitive** C. R is an equivalence relation D. R is not reflexive and not symmetric	1
47	Single Choice	Easy	Core Mathematics	The number of elements in the Power set P(S) of the set S = { {Φ} , 1, { 2, 3 }} is A. 6 B. 9 **C. 8** D. 3	1

48	Single Choice	Easy	Core Mathematics	In a language survey of students it is found that 80 students know English, 60 know French, 50 know German, 30 known English and French, 20 know French and German, 15 know English and German and 10 students know all the three languages. How many students know at least one language? **A. 135** B. 30 C. 10 D. 45	1
49	Single Choice	Medium	Core Mathematics	If A = {x / -1 < x < 1} = B, then function $f: A \rightarrow B$ such that $f(x) = \frac{x}{2}$ then A. f is surjective **B. f is injective** C. f is bijective D. All of above	1
50	Single Choice	Easy	Core Mathematics	Total number of words formed by 2 vowels and 3 consonants taken from 4 vowels and 5 consonants is equal to A. **3600** B. 120 C. 7200 D. None of these	1

S.No.	Question Type	Difficulty	Category, Sub Category	Question	Marks
1.	Single Choice	Easy	Logical Reasoning	1, 3, 6, 10, 15, 21, 28, _ A. 35 B. 30 **C. 36** D. 33	1
2.	Single Choice	Easy	Logical Reasoning	1, 3, 7, 15, 31, 63, 127, ____ **A. 255** B. None C. 254 D. 131	1
3.	Single Choice	Easy	Logical Reasoning	0, 1, 1, 2, 3, 5, 8, 13, 21, 34, ____ A. 56 B. 58 C. 60 **D. 55**	1
4.	Single Choice	Easy	Logical Reasoning	B, C, D, F, G, H, J, ____ A. I B. M **C. K** D. L	1
5.	Single Choice	Easy	Logical Reasoning	A, D, G, J, M, P, S, ____ A. I B. M C. L **D. V**	1

6.	Single Choice	Easy	Logical Reasoning	A, C, F, J, ____, U A. P **B. O** C. Q D. M	1
7.	Single Choice	Easy	Logical Reasoning	X, W, C, D, V, U, E, F, ____ **A. T** B. O C. S D. G	1
8.	Single Choice	Easy	Logical Reasoning	You are in a running race, and you overtake third place. What place are you in? A. Fourth B. first C. Second **D. Third**	1
9.	Single Choice	Easy	Logical Reasoning	Solve the following. Take 1000 and add 40. Now add another 1000. Now add 30. Add another 1000. Now add 20. Now add another 1000. Now add 10. What is the total? A. 4300 **B. 3100** C. 4100 D. 5000	1

10.	Single Choice	Easy	Logical Reasoning	Some months have thirty days, some have thirty-one. How many have thirty? A. one B. twelve C. two **D. four**	1
11.	Single Choice	Easy	Logical Reasoning	Solve the following. Take 1000 and add 400. Now add another 100. Now subtract 30. Add another 1000. Now subtract 20. Now add another 1000. Now add 10. What is the total? A. 1360 B. 3400 **C. 3460** D. 3640	1
12.	Single Choice	Easy	Logical Reasoning	Some months have thirty days, some have thirty-one. How many have twenty-eight? **A. one** B. two C. four D. twelve	1
13.	Single Choice	Easy	Logical Reasoning	Spot the odd number out:- **A. 17** B. 9 C. 15 D. 18	1

14.	Single Choice	Easy	Logical Reasoning	Complete the series:- 3,9,81, ? A. 729 **B. 6561** C. 162 D. 90	1
15.	Single Choice	Easy	Logical Reasoning	In the given sequence what does X stand for? 236,266,293,317,X,356 A. 328 B. 318 **C. 338** D. 348	1
16.	Single Choice	Easy	Logical Reasoning	One fourth of the sum of the prime numbers, greater than 4 but less than 16, is the square of? **A. 3** B. 4 C. 5 D. 2	1
17.	Single Choice	Easy	Logical Reasoning	If the mean(average) of 5 numbers is 5.4, what is the total sum of these numbers? A. 30 **B. 27** C. 29 D. 25	1

18.	Single Choice	Easy	Logical Reasoning	Complete the series:- 87,81,75,69,63,?,51 A. 54 B. 60 C. 50 **D. 57**	1
19.	Single Choice	Easy	Logical Reasoning	If 3/16 of a tank is filled in 15 minutes, the rest of tank can be filled in A. 55min B. 60min **C. 65min** D. 70min	1
20.	Single Choice	Easy	Logical Reasoning	Complete the series: - 2,7,14,23,?,47 A. 39 B. 44 **C. 34** D. None of these	1
21.	Single Choice	Easy	Logical Reasoning	In a class of 60 students,24 students got grade A. What percentage of students got grade A? A. 60% B. 65% **C. 40%** D. 24%	1

22.	Single Choice	Easy	Logical Reasoning	How much interest will Rs.9000 earn in eight months at an annual rate of interest of 5%? A. 330 B. 270 **C. 300** D. 240	1
23.	Single Choice	Easy	Logical Reasoning	A car which cost Rs. 1,00,000 is discounted at 5%. What is the discount? A. None of these **B. 5000** C. 5500 D. 5200	1
24.	Single Choice	Easy	Logical Reasoning	A gas stove originally cost Rs.500 and was discounted at 10% .After 2 months it was sold after being discounted at 15%.What was the sale price? A. 380.50 B. 381.50 C. None of these **D. 382.50**	1
25.	Single Choice	Easy	Logical Reasoning	What is 30% of 450? A. 180 **B. 135** C. 150 D. 1350	1

S. No.	Question Type	Difficulty	Category, Sub Category	Question
1.	Single Choice	Easy	English, Nouns	Which of the following is not a noun? **A. correct** B. imagination C. description D. anger
2.	Single Choice	Hard	English, Noun	An article made by hand is called _____. A. manuscript **B. handicraft** C. handiwork D. thesis
3.	Single Choice	Medium	English, Nouns	Who sells the following – Garlands, Bouquet, Flowers A. Garden B. Plantist C. Grocer **D. Florist**
4.	Single Choice	Hard	English, Phrases	The concert was _____ until another day. Fill in the blank. A. ignored **B. put off** C. put on D. put delay
5.	Single Choice	Hard	English, Synonym	Find the synonym of VIAL. A. A face mask B. Useful **C. Small glass container** D. A virus

6.	Single Choice	Easy	English, Antonym	Select antonym of the given word – SIGNIFICANT A. Important **B. Insignificant** C. Bright D. Pertinent
7.	Single Choice	Easy	English, Verbs	They _____ to school every day. A. goes B. arrive **C. go** D. reach
8.	Single Choice	Hard	English, Adjectives	Choose the correctly spelt word. A. floriscent **B. florescent** C. fluorisent D. floricent
9.	Single Choice	Medium	English, Plurals	Give the plural of – FUNGUS A. fungus B. funguses **C. fungi** D. fungee

10.	Single Choice	Medium	English, Adjectives	BIANNUAL means _____ A. Happening every year B. Happening every two years **C. Happening twice a year** D. Happing in two different countries
11.	Single Choice	Easy	English, Adjectives	Synonym of - Liked by people A. pessimist **B. popular** C. optimist D. potable
12.	Single Choice	Hard	English, Adjectives	Potable means something that: A. Can be broken B. That can be run on different machines C. Breakable **D. Safe to drink**
13.	Single Choice	Hard	English, Synonyms	Meaning of VENDETTA is A. Proposal B. Feud **C. Revenge** D. Compromise

14.	Single Choice	Hard	English, Synonyms	Meaning of FICKLE is A. An agricultural tool **B. Changing loyalty frequently** C. Certain D. A bright light
15.	Single Choice	Easy	English, Sentences	There is an exception _____ every rule. **A. to** B. for C. in D. on
16.	Single Choice	Easy	English, Proverbs	The hand _____ rocks the cradle, rules _____ world. A. will, follow B. will, shall **C. that, the** D. which, whole
17.	Single Choice	Hard	English, Parts Of Speech	Sit down and rest for a while. In this sentence, 'while' is used as: A. verb **B.** preposition **C. noun** D. conjunction

18.	Single Choice	Hard	English, Adjectives	The then king rewarded him generously. 'then' in the above sentence means – A. afterwards B. in the past **C. then reigning** D. incorrect usage of 'then'
19.	Single Choice	Hard	English, Adjectives	He was a just king. The meaning of the phrase 'just king' in this sentence is **A. king who was fair in his dealings** B. only a king C. almost became a king D. recently throne king
20.	Single Choice	Medium	English, Word Meanings	He hardly studied for the exam and he topped. 'hardly' in above sentence means: A. With great difficulty B. Worked very hard **C. Scarcely** D. Uninterestedly
21.	Single Choice	Easy	English, Articles	This is _____ piece of art. A. very unique **B. a unique** C. an unique D. the most unique

22.	Single Choice	Hard	English, Adjectives	This house is to _____ A. leave B. living C. go **D. let**
23.	Single Choice	Medium	English, Verbs	Suman finished her lunch and so _____. Select the verb phrase to complete the above sentence. A. I also B. I did C. along with me **D. did I**
24.	Single Choice	Hard	English, Adjectives	He does not believe in God. He is an _____. A. ascetic B. analyst C. believer **D. atheist**
25.	Single Choice	Easy	English, Verbs	The rules _____ students from carrying mobile phones to exam centers. A. exhibit B. permit **C. prohibit** D. question