

# Tribhuvan University Institute of Science and Technology School of Mathematical Sciences BALKHU, KATHMANDU, NEPAL

# **Model Question for Written Entrance Examination** (For New Admission of MDS Program -2078)

Full Marks: 70

Time: 2:00 Hrs

Note: The total marks obtained by the candidates in written test out of 100 marks will be converted into 70 marks in the result of written test.

General Instructions

Please read the following instructions carefully before you start answering the questions.

Write your symbol No. on your answer sheet only.

Do not write anything else on your question sheet.

Use the blank paper given with the answer sheet for rough work.

- **4.** Mark your correct answers by <u>darkening option</u> on your answer sheet by using black ink.
- **5.** There is no negative marking for wrong answer.
- 6. All sheets (Question paper, answer sheet and rough papers) must be submitted.

#### **How to Answer the Questions?**

0.1, 0.1, then the	ne mean of <i>X</i> is			
(a) 0.	1 (b) 1.0	(c) 0.5 (d)	2	
Indicate your	correct answer on the	e Answer Sheet		
Solution a	<b>b</b>	C	d	
You should	l indicate your answer	by darkening the corre	ct answer choice (b) as	shown
below:				
a	•	C	d	

1. If a random variable X takes values 0, 1, 2, 3, 4 with respective probabilities 0.6, 0.1, 0.1,

## **Section-I: Mathematics (25 Marks)**

Find the correct answer for the questions given below.

1. Divergence of gradient of a vector function is equivalent to

	(a) Laplacian of	peration (b) C	Curl operation	
	(c) Double grad	ient operation (d) N	Iull vector	
2.	$\text{If } \int_0^1 \frac{1}{\sqrt{1-x^2}} \ dx$	$=m\pi$ , then the value	of m is	
	<b>(a)</b> 0	<b>(b)</b> $\frac{1}{2}$	<b>(c)</b> 1	( <b>d</b> ) 2
3.	Let $a_n = \sum_{k=0}^n \frac{1}{n^2}$	$\frac{n}{k+k}$ , for $n \in \mathbb{N}$ . Then the	he sequence $\{a_n\}$ is	
	(a) Convergent		ded but not converge	ent
	(c) Diverges to	$\infty$ (d) Neither	er bounded nor diver	rges to ∞
4.	The integrating f	actor of the differentia	l equation $(x \ln x) \frac{dy}{dx}$	$\frac{y^2}{x^2} + y = 2 \ln x \text{ is}$
	(a) $\ln(\log x)$	<b>(b)</b> $e^x$	(c) $\ln x$	<b>(d)</b> <i>x</i>
<b>5.</b>	The slope of the	normal at origin for th	e curve y = cos x +	$2e^x$ is
	<b>(a)</b> –2	<b>(b)</b> 0	(c) Infinity	<b>(d)</b> 3
6.	Complementary	function of the differen	ntial equation $(D^2 +$	4) $y = tan x$ is
	(a) $A \cos 2x + B$	$\sin 2x$ <b>(b)</b> $A \in$	$\cos 2x - B \sin 2x$	
	(c) $A \cosh 2x + B$	$3 \sinh 2x$ (d) $A = 0$	$\cosh 2x - B \sinh 2x$	
7.	Bounded monoto (a) Infimum	onic sequence will be i  (b) Least bound	ncreasing if it conve (c) Supremum	rges to its (d) Upper Bound
	( <b>u</b> ) 111111111111	(b) Least bound	(c) Supremum	(u) Opper Bound
8.	An infinite series	$ \Sigma \sum_{n=1}^{\infty} \frac{1}{n^p} $ is convergent if		
	(a) $p \ge 1$	<b>(b)</b> $p \le 1$	(c) $p > 1$	<b>(d)</b> <i>p</i> < 1
9.	The Value of La	place Transform $L(\cos$	h 10 <i>t</i> ) is	
	(a) $\frac{s}{s^2-100}$	<b>(b)</b> $\frac{s}{s^2 + 100}$	(c) $\frac{1}{s^2 - 100}$	( <b>d</b> ) $\frac{1}{s^2 + 100}$
10.	numbers greater contained in <i>S</i> .	than 5 is an upper bou Therefore, we can say	ended of $S$ since it is that 5.01, 5.1, 6 an	greater than all of the number d 7 are all upper bounds of Salue is known as the
	(a) Supremum	<b>(b)</b> Minimum	(c) Infimum	(d) Maximum
11.	Which of the follo	owing statements is tru	e?	
	(a) A number is	rational if and only if i	ts square is rational.	
	<b>(b)</b> An integer <i>n</i>	is odd if and only if $n^2$	+2n is odd.	
	(c) A number is	rrational if and only if	its square is irration	al.
	( <b>d</b> ) A number <i>n</i> i	s odd if and only if $n(n)$	(n+1) is even.	

<b>12</b> . ]	Let $A = \{x^2 : 0 < x < 0\}$	1 and $B = \{ x^3 : 1 < 1 \}$	x < 2. Which of t	the following statement is true?								
	(a) There is one to	o one, onto function from	om $A$ to $B$ .									
	<b>(b)</b> There is no one to one and onto function from <i>A</i> to <i>B</i> taking rationals to rationals.											
	(c) There is no one to one from A to B which is onto.											
	(d) There is no onto function from A to B which is one to one.											
13.	13. The value of x from the equation $\log_6 (x+2) - \log_6 x = 2$ is											
	(a) $\frac{2}{35}$	<b>(b)</b> $\frac{35}{2}$		$(\mathbf{n}, \frac{1}{2})$								
	(a) ${35}$	(b) ${2}$	(c) -6	( <b>d</b> ) $\frac{1}{18}$								
14.				pair in $\mathbb{R}^2$ with respect to the								
		ned by $\langle u, v \rangle = 2x_1$										
	where $u = \begin{pmatrix} x_1 \\ x_2 \end{pmatrix} \in$	$\in \mathbb{R}^2 \text{ and } v = \begin{pmatrix} y_1 \\ y_2 \end{pmatrix} \in \mathbb{R}$	22									
	(1)	(1)	(1)	(2)								
	(a) $u = \begin{pmatrix} 1 \\ 1 \end{pmatrix}, v =$	$\begin{pmatrix} -1 \end{pmatrix}$	<b>(b)</b> $u = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$ ,	$v = \begin{pmatrix} 3 \end{pmatrix}$								
	(c) $u = \begin{pmatrix} 1 \\ -1 \end{pmatrix}, v \in \mathcal{C}$	_(3)	(d) $u = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$ ,	$\mathbf{v} = \begin{pmatrix} -1 \end{pmatrix}$								
	(c) $u = \begin{pmatrix} -1 \end{pmatrix}$ , $v = \begin{pmatrix} -1 \end{pmatrix}$	-(2)	(u) $u = \begin{pmatrix} 1 \end{pmatrix}$ ,	$v - \begin{pmatrix} -1 \end{pmatrix}$								
			٦									
15.	The rank of the m	$atrix M = \begin{bmatrix} 5 & 10 & 10 \\ 1 & 0 & 2 \\ 3 & 6 & 6 \end{bmatrix}$	is									
		L <sub>3 6 6</sub>										
	<b>(a)</b> 0	<b>(b)</b> 1	<b>(c)</b> 2	<b>(d)</b> 3								
		「41]										
16.	The Eigen values	of the matrix $\begin{bmatrix} 4 & 1 \\ 1 & 4 \end{bmatrix}$	are									
	<b>(a)</b> 3, −3	<b>(b)</b> 3, −5	<b>(c)</b> 3,5	<b>(d)</b> 5,0								
			$\int x^3 \text{ for } x \le 0$									
17.		ion defined by $f(x) = \frac{1}{2}$	$\begin{cases} x & \text{for } x > 0 \end{cases}$ . W	Thich of the following statement								
	about $f$ is true?											
	(a) $f$ is an odd fu		-	( <b>b</b> ) $f$ is discontinues at $x = 0$ ( <b>d</b> ) $f'(x) > 0$ for $x \ne 0$ .								
	(c) f has a relative	e maximum	$(\mathbf{u}) f(x) > 0$ 10	or $x \neq 0$ .								
18.	Let $f$ be the funct	f(x) = f(x) = f(x)	x . Which of the fo	ollowing statements about $f$ are								
	true?											
	I. $f  is continuous$	as at x = 0										
	<b>II.</b> $f$ is differentiate	able at $x = 0$										
	<b>III.</b> $f$ has an abso	lute minimum at $x = 0$	0									
	(a) I only	(b) II only	(c) III only	(d) I and III only								
19.	The number of hi	ective functions from	set A to itself when	A contains 10 elements is								
-/•	(a) 10	<b>(b)</b> $(10)^2$	(c) (10)!	(d) $2^{10}$								

20.	The average va	alue of the function $f(x)$	$=(x-1)^2$ on the inter-	val from $x = 1$ to $x = 5$	is
	(a) $-\frac{16}{3}$	<b>(b)</b> $\frac{16}{3}$	(c) $\frac{64}{3}$	(d) $\frac{66}{3}$	
21.		e infinite series $\sum_{n=10}^{\infty} \frac{3^{n+1}}{4^n}$ <b>(b)</b> $4\left(\frac{3}{4}\right)^{10}$		(d) $4(\frac{3}{2})^{11}$	
	· /		· /		
22.	If $f(x, y, z) = z$ (a) 0	$x^2 + xyz + z$ , then the parti <b>(b)</b> 1	al derivative of $f$ w  (c) 3	.r.t. $x$ at point $(1,1,1)$ ( <b>d</b> ) -1	is
23.	The curve $y = x$	$a^{1/5}$ at (0, 0) has			
	(a) A vertical	tangent (parallel to y-axi	s) <b>(b)</b> A horizont	al tangent (parallel to	x-axis)
	(c) An oblique	e tangent	(d) No tangent		
24.	The locus of th	ne equation $xy + yz = 0$ is			
	(a) A pair of p	perpendicular planes	<b>(b)</b> A pair of s	traight lines	
	(c) A pair of p	parallel planes	( <b>d</b> ) None of th	ese	
25.	_	of the vector $2\hat{i} + 3\hat{j} - 6\hat{k}$			(5,6,3) is
	(a) $\frac{2}{3}$	<b>(b)</b> $\frac{4}{3}$	(c) $-\frac{4}{3}$	<b>(d)</b> $\frac{5}{3}$	
	Section	-II: Statistics	s (25 Marks	)	
	The sum of devia	ntions of data values is al ean (b) Geometric i		iations are measured fredian (d) Mod	
		tribution, the probability $f(X = x)$ is given by	of success $(\pi)$ and p	robability of failure (1	$-\pi$ ) is
	(a) $n_{c_x}(\pi)^{n-x}$	<b>(b)</b> $n_{c_n}(0.5)^n$	(c) n	$C_n(\pi)^{n-x}$ (d) $I$	$n_{C_x}(0.5)^r$
28.	If the two observ (a) 10	ations are 20 and $-20$ , th	en their harmonic m	ean is ( <b>d</b> ) 0	
20	, ,	tion if $E(X) = 2$ and $E(X^2)$	` '	, ,	
	(a) 2	(b) 3	(c) 4	( <b>d</b> ) 10	6
30.	The coefficient of	f variation is computed by	by using the	formula	
	(a) $\frac{\text{s.d.}}{\text{mean}} \times 100$	<b>(b)</b> $\frac{\text{mean.}}{\text{s.d.}} \times 10$	$0 \qquad (\mathbf{c}) \ \frac{\text{mean} \times \mathbf{s}}{100}$	$\frac{\mathrm{d.}}{\mathrm{mean} \times \mathrm{s}}$	s.d.
31.	The mean and va	riance of the exponential	l distribution with pr	obability density funct	tion

(a) $\lambda$ and $1/\lambda^2$	<b>(b)</b> $1/\lambda$ and $1$	$/\lambda^3$	(c) $1/\lambda^2$ and $\lambda$	(d) $1/\lambda$ and $1/\lambda^2$							
<b>32</b> . The sum of square of the	deviations is al	lways 1	east when deviations a	re measured from the							
(a) Arithmetic mean	(b) Geometric	mean	(c) Median	(d) Mode							
33. In a distribution ,the difference of two quartiles is 20 and their sum is 70 and the											
median is 36. The coef	ficient of skewn	ness is									
(a) - 0.2	<b>(b)</b> 0.1		(c) - 0.1	<b>(d)</b> 0.2							
<ul> <li>34. Which of the following is true for Binomial distribution</li> <li>(a) Mean and variance are same</li> <li>(b) Mean is greater than variance</li> <li>(c) Mean is less than variance</li> <li>(d) None of the above</li> </ul>											
<b>35.</b> How many all possible samples will be made for selecting 2 samples at a time out of 4 population size with replacement?											
(a) 6	<b>(b)</b> 4		<b>(c)</b> 16	( <b>d</b> ) 16							
<b>36.</b> The statistical test general independent categorical v	•		er there is significant as	ssociation between two							
(a) Independent <i>t</i> -test	<b>(b)</b> <i>F</i> - test		(c) Chi-squares test	(d)None of the above							
<b>37.</b> The probability of sure e (a) 0	vent is <b>(b)</b> 1		(c) 0.2	<b>(d)</b> 0.5							
<b>38.</b> If the decrease in <i>X</i> is a between <i>X</i> and <i>Y</i> is always (a) Positive	ys	y the d									
(a) Positive	(b) Negative		(c) Zero	(d) Unity							
<b>39.</b> If a random variable <i>X</i> for $P(X \ge 2)$ will be compu			•	variance $\sigma^z$ , then							
(a) $Z = \frac{2-\mu}{\sigma/\sqrt{n}}$	_		•	$(\mathbf{d}) \ Z = \frac{2-\mu}{\sigma}$							
<ul> <li>40. Testing H<sub>0</sub>: μ = 100 vs H</li> <li>(a) One sided upper taile</li> <li>(c) Two tailed test</li> </ul>	•	<b>(b)</b> O	ne sided lower tailed te ne tailed test	st							
<b>41.</b> Fisher's index number is number.	the of ]	Laspey	re's index number and	Paasche's index							
<ul><li>(a) Arithmetic mean</li><li>(c) Harmonic mean</li></ul>			eometric mean one of the above								
<b>42.</b> The appropriate statistical independent groups in the	_		-	ross more than two							
(a) F -test (c) Z - test		` ′	t - test Chi- square test								
<b>43.</b> If $X$ is a random variable	with mean $\mu$ , th		<del>-</del>								
(a) Variance of that varia			th raw moment of that who we have	variable							

**44.** If a random variable X follows hypergeometric distribution with its probability mass

function  $P(X = k) = \frac{\binom{N}{k} \binom{N-k}{n-k}}{\binom{N}{k}}$ , where the notations have the usual meanings, the mean

of this distribution is

(a) nKN

(b)  $\frac{nk}{N^2}$  (c)  $\frac{nN}{K}$  (d)  $\frac{nK}{N}$ 

**45.** One can consider the best fitted trend line for which the sum of squares of errors is

(a) Maximum

(b) Minimum

(c) Negative

(d) Zero

**46.** In time series analysis, the mostly used mathematical method for measuring the trend is:

(a) Semi average method

**(b)** Moving average method

(c) Least squares method

(d) Free hand curve method

**47.** The coefficient of determination  $R^2$  measures

(a) The proportion of variation of dependent variable explained by the independent variable

(b) The proportion of variation of independent variable explained by the dependent variable

(c) The proportion of unexplained variation in the model

(d) None of the above

**48.** The probability density function of normal random variate X with mean 6 and variance 1 is

(a)  $\frac{1}{6\sqrt{2\pi}} \exp\left\{-\frac{1}{2}\left(\frac{x-1}{6}\right)^2\right\}$ 

**(b)**  $\frac{1}{\sqrt{2\pi}}\exp\left\{-\frac{1}{2}\times 2\right\}$ 

(c)  $\frac{1}{\sqrt{2\pi}} \exp\left\{-\frac{1}{2}\left(\frac{x-1}{6}\right)^2\right\}$ 

(d)  $\frac{1}{\sqrt{2\pi}} \exp\left\{-\frac{1}{2}(x-6)^2\right\}$ 

**49.** Binomial distribution tends to Poisson distribution when

(a)  $n \to \infty$ ,  $p \to 0$  and  $np = \lambda$  (finite) (b)  $n \to \infty$ ,  $p \to 1$  and  $np = \mu$  (c)  $n \to 0$ ,  $p \to 0$  and np = 1 (d)  $n \to 15$ ,  $p \to 1/2$  and np = 1(d)  $n \to 15, p \to 1/2 \text{ and } np = 0$ 

**50.** In testing of hypothesis, the type I error indicates

(a) Accept  $H_0$  when  $H_0$  is false

(b) Reject  $H_0$  when  $H_0$  is true

(c) Reject  $H_1$  when  $H_1$  is true

(d) None of the above

#### **Section-III:**

#### **Computer Science and Information Technology (25 Marks)**

**51**. Which of the following is not an operating system?

(a) Windows

(b) Oracle

(c) Dos

(d) Linux

**52.** Which one of the following is primary memory of computer?

	(a) RAM	(b) ROM	(c) DVD	( <b>d</b> ) Both (a) and (b)
53.	Which one of the followi	ng software is most co	mmonly used for statis	tical data analysis?
	(a) SPSS	<b>(b)</b> Word processor	(c) Photoshop	(d) Power Point
54.	Which of the following is	s exit controlled loop?		
	(a) For	(b) While	(c) Do-while	( <b>d</b> ) Both (a) and (b)
55.	The result of (10100001):	2 - (1100111)2 is		
	<b>(a)</b> 111010	<b>(b)</b> 100010	<b>(c)</b> 110000	<b>(d)</b> 101000
56.	Which of the following p	hase during software d	evelopment is used to	translate non-
	technical requirements to	technical requirements	s?	
	(a) Planning	(b) Analysis	(c) Feasibility study	(d) Design
57.	The phenomenon of having removed is called as	ng a continuous glow o	of a beam on the screen	even after it is
	(a) Fluorescence	<b>(b)</b> Persistence	(c) Phosphorescence	(d) Incandescence
58.	Which of the following s	ubnet-mask is used if v	ve divide a class C add	ress into 8 subnets?
	(a) 255.255.255.0	<b>(b)</b> 255.255.255.192	(c) 255.255.255.224	(d) 255.255.255.240
59.	Which of the following	system development	approach is appropr	iate if in which user
	requirements are certain a	and precise?		
	(a) Waterfall	(b) Prototyping	(c) Spiral	(d) Agile
60.	Which of the following la different networks?	ayer considers the func	tions that allows the da	ata to move along
	(a) Network access layer	(b) Internet layer	(c) Transport layer	(d) Physical layer
61.	Which of the following n	ormal form is based or	the concept multi-val	ued dependency?
	(a) 2NF	<b>(b)</b> 3NF	(c) 4NF	( <b>d</b> ) 5NF
62.	After successful completi	ion, a transaction is in	state.	
	(a) Active	(b) Committed	(c) Partially committed	(d) Failed
63.	Which data structure is m	nainly used for implem	enting the recursive alg	gorithm?
	(a) Queue	(b) Binary tree	(c) Linked list	(d) Stack
64.	How many times will the	following loop execut	e for $(j = 0; j \le 10; j = 10)$	-)?
	(a) Forever	(b) Never	<b>(c)</b> 0	( <b>d</b> ) 1
65.	Which of the following so receiver?	witching technique req	uires a dedicated path	between sender and
	(a) Message switching	<b>(b)</b> Pao	cket switching	

(	(c) Circuit switching	(d) None of the above
66. V	Which of the following is an example of	polymorphism?
(	(a) Method overloading	<b>(b)</b> Method overriding
(	(c) Method definition	( <b>d</b> ) Both (a) and (b)
<b>67.</b> \	Which of the following is the best way to	o measure algorithm's time complexity?
	(a) Counting algorithm steps	(b) Measuring time in seconds
	(c) Counting significant operations	(d) All of the above
<b>68.</b> <sup>7</sup>	Which of the following information is re	quired to normalize a relation in BCNF?
(	(a) Functional dependency	(b) Multivalued dependency
(	(c) Join dependency	(d) All of the above
<b>69.</b> <sup>v</sup>	Which of the following language is recog	gnized by finite state automata?
	(a) Context free language	(b) Regular language
	(c) Context sensitive language	(d) None of the above
<b>70.</b> I	Round-robin scheduling is the preemptive	re version of
(	(a) Shortest-job first	(b) Shortest-remaining first
(	(c) FIFO	(d) Longest time first
<b>71.</b> Y	Which of the following is executed by pr	reprocessor?
(	(a) Void main (int argc, char **argv)	(b) #include <stdio.h></stdio.h>
(	(c) Return (0)	(d) None of the above
<b>72.</b> I	DNS stands for	
(	(a) Domain name system	(b) Document name system
(	(c) Discrete name system	(d) Disk name system
<b>73.</b> V	Which one of the following diagram is u	sed for process modelling in structured software
(	development approach?	
(	(a) Use-case diagram	(b) Entity relationship diagram
(	(c) Data flow diagram	(d) Class diagram
<b>74.</b> Y	Which of the following statement is true	?
(	(a) A relation can have only one primary	key
(	(b) A relation can have only one foreign	key
(	(c) A relation can have only one super ke	гу
(	(d) A relation can have only one candida	te key
75. Y	Which one of the following is the execut	ion order of commands in SQL query?
(	(a) SELECT, FROM, WHERE	(b) SELECT, WHERE, FROM

## Section-IV: English (10 Marks)

	•	many applicants for the post. cond sentence 'separate the		-				
	(a) Literal	<b>(b)</b> Figurative	(c) Contextual	(d) Poetic				
	"When I was in Ka	athmandu, I had to work very	y <u>hard.</u> " The part of	speech of the underlined				
	(a) Noun	(b) Adjective	(c) Adverb	(d) Preposition				
<b>78</b> .	He enquired							
	(a) That where I	studied	<b>(b)</b> Where I studie	ed				
	(c) Where I will	study	(d) That where I will study					
<b>79.</b>	A policeman shot	him dead in the early morni	orning. This means ''					
	(a) He is shot dea	d by a policeman in the early	y morning					
	<b>(b)</b> In the early m	orning was shot dead him						
	(c) He in the early	y morning was shot dead						
	(d) He was shot d	lead in the early morning						
80.	Neither the mana	ager nor the assistants						
	(a) knows how the	he office building caught fire	2					
	<b>(b)</b> have known l	how the office building caug	ht fire					
	(c) know how the	e office building caught fire						
	(d) were knowin	g how the office building car	ught fire					

#### Read the passage below and answer Q.No.81 to 85.

The achievement of science in the twentieth century has been very great. Its influence can be felt in every sphere of life. From the small pins and needles to the huge iron sheets and joints, most of the things we require for our everyday use, come out of factories where scientific principles are utilized for practical ends. Science has enabled man to bring forces of nature under control and use them for his own advantage. It has brought the distant parts of the world closer together. Our knowledge of the universe has been much widened on account of the untiring efforts of the astronomers like Jeans and Eddington. Remarkable cures of human diseases have been possible owing to the discovery of some wonderful medicines.

- **81.** The main idea of the passage is
  - (a) The impact of science can be felt in every sphere of life.

	<b>(b)</b> Science is an anathe	ma.										
	(c) Nothing is beyond the	ne purview of s	cience.									
	(d) Science can work miracles.  The mode of approach in the passage is											
82.	The mode of approach i	n the passage is	S									
	(a) Anatomical	ve	(c) Logical	(d) Narrative								
83.	What has enabled man	to harness the fe	orces of nature	to the advantage	of mankind?							
	(a) Arts	( <b>b</b> ) Oratory		(c) Bravery	(d) Science							
84.	Science has proved a gre	eat boon for										
	(a)Scientist	(b) Mankind		(c) Artists	(d) Explorers							
85.	The most appropriate titl	e for the passas	ge will be									
	(a) Science is a curse		chievements o	f Science								
	(c) Science, a great boon	, ,										
~				<u> </u>								
S	ection-V: Log	gical Rea	asoning	(15 Mar)	ks)							
<b>Q</b> 6	Look carefully for the pa	ottorn and than	ahoosa which	nair of numbers								
ου.	comes next: 8 11 21 15		choose which	pair of numbers								
	(a) 25 18	<b>(b)</b> 25 29	(c)25	21	<b>d.</b> 24 21							
	(a) 25 To	(2) 20 25	(0)20		<b></b> 2 . 2 .							
87.	Look at this series: 8, 43											
	(a) 8	<b>(b)</b> 14	<b>(c)</b> 43	(	<b>(d)</b> 44							
88.	Fill the blank: QAR RA	S SAT TAU										
	(a) UAV	<b>(b)</b> UAT	(c) TA	(c) TAS (d) TAT								
20	Read the following info	rmation agraful	ly and anawar	the questions hal	OW.							
07.	I. $J + K$ means $J$ is the		•	-								
	III. $J \times K$ means $J$ is the		II. $J - K$ means J is the wife of $K$ IV. $J \div K$ means J is the mother of $K$									
	V. $J = K$ means $J$ is the		1V.J	- K illeans J is ui	le momer of K							
	What does $a + b - c$ me											
	(a) $C$ is the uncle of $A$	an:	<b>(b)</b> <i>C</i> is the se	on of A								
	(c) C is the brother of A		( <b>d</b> ) <i>C</i> is the fa									
90.	Statement: No new tax 1		` ,		till a surplus budget.							
- •				nsidered a good b	-							
	Conclusion II: 2021–22	•	•	•	_							

	Which one is true?												
	(a) Only conclusion II	follows.	(b) Only cond	(b) Only conclusion I follows									
	(c) Both I and II follow	7	(d) Neither I	nor II follow.									
91.	91. Statement: Apart from the educational value of newspapers their recreational values should												
	also be kept into account.												
	Con. I: People take newspapers to be a means of imparting education.												
	Con. II: The entertains	ment value of ne	wspapers is als	so of paramount im	portance.								
	Which one is true?												
	(a) Only conclusion I f	follows	(b) Only cond	clusion II follows.									
	(c) Both I and II follow	1	(d) Neither I	nor II follows									
92.	Fill in the blank												
	(a) \( \delta \).	00812	-										
	(a) \( \times \).	( <b>b</b> ) $\Diamond$ .		(c)	( <b>d</b> )								
93.	Fact 1: All chickens ar	e birds.											
	Fact 2: Some chickens	are hens.											
	Fact 3: Female birds la	ny eggs.											
	If the above statements	are true, which	of the followin	g statements must	also be true?								
	I. All birds lay eggs.	II. Hens are b	irds.	III. Some chicken	ns are not hens.								
	(a) II only (b) II and	I III only (c)	I, II, and III	(d) None of the st	tatements is true.								
94.	What is the conclusion in	ndicator term in	this passage, if	there is a conclusion	on? If it rains, then								
	it's a bad time for a pic	enic. So, we show	aldn't go there	for a picnic since S	vetlana knows it's								
	raining there now. At l	east that's what	she heard.										
	<b>(a)</b> Then <b>(b)</b> A	at least	<b>(c)</b> So	(d) No conclusion	n								
95.	Which sentence below j	probably is <i>not</i> b	eing used to m	ake a claim (that is	, a statement)?								
	(a) I wonder if we show	ıld turn back.											
	(b) Financial ruin from	medical bills is	almost exclusi	vely an American o	lisease.								
	(c) I learned a long time	e ago that minor	surgery is who	en they do the oper	ation on someone								
	else, not you.												
	(d) My bumper sticker	asks, —Do you	believe in love	at first sight, or sh	ould I drive by								
	again?												

- **96.** If a headline were to say "New Pill Controls Birth Twice a Month," it would be unintentionally funny. Which one rewriting of it says only what was most probably intended?
  - (a) New Pill Works Twice a Month to Control Pregnancy
  - (b) New Birth Control Pill can be Taken Twice a Month
  - (c) Taking New Pill Controls Pregnancy Two Times a Month
  - (d) Taking New Pill Twice a Month Promotes Birth
- **97.** Which of the following is not a useful principle for making scientific progress?
  - (a) Similar effects are likely to have similar causes.
  - (b) Look for confirming instances of the hypothesis, never disconfirming instances.
  - (c) To find the cause, look for the key, relevant difference between situations where the effect occurs and situations where it does not.
  - (d) Divide the problem into manageable components.
- **98. Fact 1:** Most stuffed toys are stuffed with beans.
  - Fact 2: There are stuffed bears and stuffed tigers.
  - Fact 3: Some chairs are stuffed with beans.

If the first three statements are facts, which of the following statements must also be a fact?

- **I.** Only children's chairs are stuffed with beans.
- II. All stuffed tigers are stuffed with beans.
- **III.** Stuffed monkeys are not stuffed with beans.
- (a) I only
- **(b)** II only
- (c) II and III only
- (d) None of the statements is true.
- **99.** Four people witnessed a mugging. Each gave a different description of the mugger.

Which description is probably right?

- (a) He was average height, thin, and middle-aged.
- **(b)** He was tall, thin, and middle-aged.
- (c) He was tall, thin, and young.
- (d) He was tall, of average weight, and middle-aged.
- **100.** Here are some words translated from an artificial language.

plekapaki means fruitcake

pakishillen means cakewalk

treftalan means buttercup

Which word could mean "cupcake"?

- (a) alanpaki (b) shillenalan
- (c) treftpleka
- (d) pakitreft

# Sample Answer Sheet

	•																		
	Syi	mbol	<i>No.</i> (	In Wo	ords)	:				• • • • •									
1.	a	b	C	d	26.	a	<b>b</b>	C	d	51.	a	<b>b</b>	C	d	76.	a	<b>b</b>	C	d
2.	a	<b>b</b>	C	$\bigcirc$ d	27.	a	b	C	$\bigcirc$ d	52.	a	<b>b</b>	C	$\bigcirc d$	77.	a	<b>b</b>	$\bigcirc$	$\bigcirc$ d
3.	a	<b>b</b>	C	$\bigcirc$ d	28.	a	<b>b</b>	C	$\bigcirc d$	53.	a	<b>b</b>	$\bigcirc$ c	$\bigcirc$ d	78.	a	<b>b</b>	$\bigcirc$ c	$\bigcirc$ d
4.	a	<b>b</b>	C	$\bigcirc$ d	29.	a	<b>b</b>	$\bigcirc$ c	$\bigcirc d$	54.	a	<b>b</b>	$\bigcirc$	$\bigcirc$ d	79.	a	<b>b</b>	$\bigcirc$ c	$\bigcirc$ d
5.	a	<b>b</b>	C	$\bigcirc d$	30.	a	<b>b</b>	C	$\bigcirc d$	55.	a	<b>b</b>	C	$\bigcirc \mathbf{d}$	80.	a	<b>b</b>	<b>c</b>	$\bigcirc$ d
6.	a	<b>b</b>	C	$\bigcirc \mathbf{d}$	31.	a	<b>b</b>	C		56.	a	<b>b</b>	C	$\bigcirc \mathbf{d}$	81.	a	<b>b</b>	$\bigcirc$ c	$\bigcirc$ d
7.	a	<b>b</b>	C	$\bigcirc d$	32.	a	<b>b</b>	C	$\bigcirc d$	57.	a	<b>b</b>	<b>c</b>	$\bigcirc \mathbf{d}$	82.	a	<b>b</b>	$\bigcirc$ c	$\bigcirc$ d
8.	a	<b>b</b>	<b>c</b>	$\bigcirc \mathbf{d}$	33.	a	<b>b</b>	C	$\bigcirc d$	58.	a	<b>b</b>	<b>c</b>	$\bigcirc \mathbf{d}$	83.	a	<b>b</b>	$\bigcirc$ c	d
9.	a	<b>b</b>	C		34.	a	<b>b</b>	$\bigcirc$ c		59.	a	<b>b</b>	C	$\bigcirc \mathbf{d}$	84.	a	<b>b</b>	$\bigcirc$ c	$\bigcirc$ d
10.	a	<b>b</b>	C	$\bigcirc d$	35.	a	<b>b</b>	C		60.	a	<b>b</b>	C	$\bigcirc \mathbf{d}$	85.	a	<b>b</b>	$\bigcirc$ c	$\bigcirc$ d
11.	a	<b>b</b>	C		36.	a	<b>b</b>	c		61.	a	<b>b</b>	<b>c</b>	$\bigcirc$ d	86.	a	<b>b</b>	$\bigcirc$ c	$\bigcirc$ d
12.	a	<b>b</b>	C		37.	a	<b>b</b>	$\bigcirc$ c		62.	a	<b>b</b>	$\bigcirc$ c	$\bigcirc \mathbf{d}$	87.	a	<b>b</b>	$\bigcirc$	$\bigcirc$ d
13.	a	<b>b</b>	C		38.	a	<b>b</b>	$\bigcirc$ c	$\bigcirc d$	63.	a	<b>b</b>	<b>c</b>		88.	a	<b>b</b>	$\bigcirc$ c	$\bigcirc$ d
14.	a	<b>b</b>	C	$\bigcirc \mathbf{d}$	39.	a	<b>b</b>	$\bigcirc$ c	$\bigcirc \mathbf{d}$	64.	a	<b>b</b>	$\bigcirc$	$\bigcirc \mathbf{d}$	89.	a	<b>b</b>	$\bigcirc$	$\bigcirc$ d
15.	a	<b>b</b>	$\bigcirc$ c	$\bigcirc d$	40.	a	<b>b</b>	C	$\bigcirc d$	65.	a	<b>b</b>	$\bigcirc$	$\bigcirc \mathbf{d}$	90.	a	<b>b</b>	$\bigcirc$	$\bigcirc$ d
16.	a	<b>b</b>	C	$\bigcirc$ d	41.	a	<b>b</b>	C	$\bigcirc d$	66.	a	<b>b</b>	$\bigcirc$ c	$\bigcirc \mathbf{d}$	91.	a	<b>b</b>	$\bigcirc$ c	$\bigcirc$ d
17.	a	<b>b</b>	C	$\bigcirc d$	42.	a	<b>b</b>	C	$\bigcirc d$	67.	a	<b>b</b>	C	$\bigcirc$ d	92.	a	<b>b</b>	C	$\bigcirc$ d
18.	a	<b>b</b>	C	$\bigcirc d$	43.	a	<b>b</b>	C	$\bigcirc d$	68.	a	<b>b</b>	C	$\bigcirc d$	93.	a	<b>b</b>	C	$\bigcirc$ d
19.	a	<b>b</b>	C	d	44.	a	<b>b</b>	C	$\bigcirc d$	69.	a	<b>b</b>	C	$\bigcirc$ d	94.	a	<b>b</b>	C	$\bigcirc$ d
20.	a	<b>b</b>	C	$\bigcirc$ d	45.	a	<b>b</b>	C	$\bigcirc d$	70.	a	<b>b</b>	C	$\bigcirc d$	95.	a	<b>b</b>	C	$\bigcirc$ d
21.	a	<b>b</b>	<b>(c)</b>	$\bigcirc \mathbf{d}$	46.	a	<b>b</b>	$\bigcirc$ c	$\bigcirc \mathbf{d}$	71.	a	<b>b</b>	$\bigcirc$	$\bigcirc \mathbf{d}$	96.	a	<b>b</b>	$\bigcirc$	$\bigcirc$ d
22.	a	<b>b</b>	C	$\bigcirc d$	47.	a	<b>b</b>	C	$\bigcirc d$	72.	a	<b>b</b>	C	$\bigcirc \mathbf{d}$	97.	a	<b>b</b>	C	$\bigcirc$ d
23.	a	<b>b</b>	C	$\bigcirc d$	48.	a	<b>b</b>	C	$\bigcirc d$	73.	a	<b>b</b>	<b>c</b>	$\bigcirc \mathbf{d}$	98.	a	<b>b</b>	$\bigcirc$ c	$\bigcirc$ d
24.	a	<b>b</b>	$\bigcirc$	$\bigcirc \mathbf{d}$	49.	a	<b>b</b>	$\bigcirc$ c		74.	a	<b>b</b>	$\bigcirc$	$\bigcirc \mathbf{d}$	99.	a	<b>b</b>	$\bigcirc$	$\bigcirc$ d
25.	a	<b>b</b>	C	$\bigcirc d$	50.	a	<b>b</b>	C	$\bigcirc d$	75.	a	<b>b</b>	<b>c</b>	$\bigcirc \mathbf{d}$	100.	a	<b>b</b>	<b>c</b>	$\bigcirc$ d
	3.6	1 01		1															

Marks Obtained (In Words):