INDIAN SCHOOL AL WADI AL KABIR

Assessment -I (2022-2023)

Class: XI   Sub: Applied MATHEMATICS (241)   Max Marks: 80

Date: 20-09-2022   **Answer key**   Time: 3 hours

General Instructions:

1. This question paper contains six sections- A, B, C, D, E and F. Each part is compulsory.
2. Section – A has 16 objective type questions of 1 mark each.
3. Section – B has 8 MCQ type questions of 1 mark each.
4. Section – C has 2 Case based questions.
5. Section - D has 8 short answer type (SA1) questions of 2 marks each.
6. Section – E has 4 short answer type (SA2) questions of 3 marks each.
7. Section - F has 4 long answer type questions (LA) of 5 marks each.
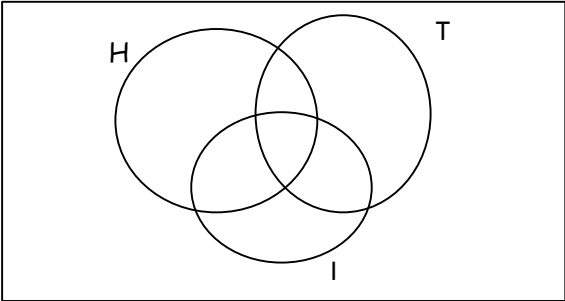8. There is an internal choice in some of the questions.

SECTION – A

1	R = {(1, 2), (2, 4), (3, 6), (4, 8), (5, 10)}	1
2	{(1, 3), (1, 4), (2, 3), (2, 4), (3, 3), (3, 4)}	½ + ½
3	10	1
4	Mean = 7 & Mean deviation = 10/3 OR Median = 11 & Mean deviation = 4.2	½ + ½
5	18.4	1
6	$(111111)_2$ OR 122	1
7	Minimum – 6 and Maximum – 11	½ + ½
8	½ OR 6ab	1
9	{-4, 4, 0}	1
10	$3^4 = 81$	1
11	{-2, 3}, {-2}, {3}, { }	1
12	24	1
13	X = -5/4 OR X= 7/2	1
14	X = 3	1
15	Median = 5, Mean = 5, sum = 10	½ + ½
16	70	1

17	B	1
18	C	1
19	D	1
20	A	1
21	C	1
22	A	1
23	B	1
24	C	1

SECTION – C

25	**CASE-BASED/DATA-BASED**	
i)	52	2
ii)	30	2

26	X	15	20	25	30	40	50
	Y	44	43	45	37	34	37

i)	30	1
ii)	40	1
iii)	-235	1
iv)	-39.17	1

SECTION – D (Each question carries 2 marks)

27	R = {(1, 1), (1, 2), (1, 3), (1, 4), (2, 1), (2, 2), (2, 3), (4, 1)} OR $2^m – 2^n = 48$　　　　　　(½) $2^n(2^{m-n} – 1) = 48 = 2^4\ 3$　　(1/2) n=4 & $2^{m-n} = 4$ then m = 6　　(1)	2
28	A – B = { 1, 3, 5 }, B – A = { 8 }	1+1
29	A × B = {(1,2), (1,3), (-3,2), (-3,3), (-5,2), (-5,3)} B × A = { (2,1), (2,-3), (2,-5), (3,1), (3,-3), (3,-5)}	1+1
30	11110 OR 111	2
31	$4^{2x} = \dfrac{1}{64}$, $2^{4x} = 2^{-6}$, x = -3/2	1+1

32	$x^2 - 4 = 32$, $x^2 = 36$, x = +6 or -6	2
33	65.625 OR 16	2
34	$\frac{6+0.5 \times 1}{12}$ x 100 = 54.17	1+1

SECTION – E (Each question carries 3 marks)

35	$\sum d^2$ =28, r = 1 - $\frac{6 \sum d^2}{n(n^2-1)}$ = 1 - $\frac{6 \times 28}{8(8^2-1)}$ = $1 - 1/3 = 2/3 = 0.667$	1+1+1
36	To prove	3
37	Log $\frac{7 \times 16 \times 45}{2 \times 9 \times 7}$ = log 10n , then n = 4 OR $m^9 n^4 = 10^6$	1.5+1.5
38	(M ∪ N) = {3, 4, 5, 6, 1} L – (M ∪ N) = {2} (L – N) ∩ (L – N) = {1, 2} ∩ {2, 4} = {2}	1+1+1

SECTION – F (Each question carries 5 marks)

39	A' = {1, 6, 7, 8, 9, 10} B' = {1, 2, 4, 6, 8, 10} A' ∩ B' = {1, 6, 8, 10}	1.5+1.5+2
40	Domain = {0, 2, -1, 3, 1} Range = {0, 4, -2, 6, 2} R={(x, y): x ∈ I, $-1 \le x \le 3$, $y = 2x$} Arrow diagram	1+1+1+2
41	$\sum x$ = 15 , $\sum y$ = 30 , $\sum x^2$ = 55, $\sum y^2$ = 220 , $\sum xy$ = 80 , r = -0.5 OR Mean = 14 Variance = 45.8 SD = $\sqrt{45.8}$ = 6.77	5
42	log x = 3.3758 x = 2375 log x = 1.0808 x = 12.04	5