

Revised Answer Key for 2 EE(LE) (Set-A)

Q.No.	Ans. Key	Q. No.	Ans. Key	Q. No.	Ans. Key
1	B	51	A	101	B
2	B	52	B	102	B
3	B	53	D	103	C
4	A	54	B	104	C
5	C	55	C	105	C
6	D	56	D	106	A
7	C	57	C	107	B
8	A	58	A	108	C
9	C	59	A	109	B
10	B	60	C	110	D
11	D	61	D	111	C
12	A	62	B	112	A
13	C	63	A	113	C
14	B	64	C	114	A
15	A	65	C	115	B
16	B	66	B	116	B
17	C	67	A	117	C
18	A	68	D	118	D
19	B	69	C	119	A
20	A	70	A	120	D
21	B	71	B	121	D
22	C	72	D	122	B
23	A	73	B	123	A
24	B	74	C	124	B
25	B	75	C	125	A
26	B	76	B	126	A
27	A	77	D	127	C
28	A	78	D	128	D
29	C	79	A	129	A
30	C	80	B	130	A
31	C	81	A	131	D
32	B	82	B	132	B
33	A	83	C	133	C
34	B	84	C	134	A
35	C	85	D	135	A
36	C	86	C	136	D
37	B	87	A	137	None
38	C	88	B	138	C
39	A	89	D	139	C
40	B	90	B	140	D
41	B	91	A	141	A
42	D	92	C	142	C
43	B or C	93	D	143	A
44	A	94	A	144	B
45	A	95	B	145	B
46	C	96	B	146	D
47	C	97	C	147	A
48	B	98	D	148	D
49	A	99	A	149	C
50	A	100	C	150	B

Answer Key for 2 EE(LE) (Set-B)

Q.No.	Ans. Key	Q. No.	Ans. Key	Q. No.	Ans. Key
1	D	51	D	101	A
2	C	52	C	102	B
3	A	53	A	103	C
4	C	54	A	104	B
5	B	55	C	105	D
6	B	56	B	106	B
7	C	57	A	107	C
8	A	58	D	108	D
9	B	59	C	109	A
10	A	60	A	110	D
11	B	61	B	111	A
12	A	62	D	112	C
13	A	63	D	113	D
14	C	64	A	114	A
15	C	65	B	115	A
16	C	66	C	116	D
17	B	67	A	117	None
18	C	68	B	118	C
19	A	69	D	119	C
20	B	70	B	120	D
21	C	71	B	121	D
22	C	72	C	122	A
23	B	73	D	123	D
24	A	74	A	124	C
25	A	75	C	125	B
26	B	76	A	126	B
27	B	77	B	127	B
28	B	78	D	128	C
29	A	79	B	129	C
30	C	80	C	130	C
31	D	81	D	131	C
32	A	82	B	132	A
33	C	83	A	133	C
34	B	84	C	134	A
35	A	85	C	135	B
36	B	86	B	136	D
37	C	87	D	137	B
38	A	88	B	138	A
39	B	89	C	139	B
40	B	90	C	140	A
41	C	91	A	141	D
42	B	92	B	142	B
43	A	93	C	143	C
44	B	94	C	144	A
45	C	95	D	145	A
46	B	96	A	146	A
47	D	97	C	147	C
48	B or C	98	D	148	A
49	A	99	A	149	B
50	A	100	B	150	B

Answer Key for 2 EE(LE) (Set-C)

Q.No.	Ans. Key	Q. No.	Ans. Key	Q. No.	Ans. Key
1	C	51	C	101	D
2	B	52	A	102	None
3	C	53	B	103	C
4	A	54	D	104	C
5	B	55	B	105	D
6	C	56	B	106	D
7	C	57	C	107	A
8	B	58	D	108	D
9	A	59	A	109	C
10	A	60	C	110	B
11	B	61	A	111	B
12	B	62	B	112	B
13	B	63	D	113	C
14	A	64	B	114	C
15	C	65	C	115	C
16	D	66	D	116	C
17	A	67	B	117	A
18	C	68	A	118	C
19	B	69	C	119	A
20	A	70	C	120	B
21	C	71	A	121	D
22	B	72	B	122	B
23	A	73	C	123	C
24	B	74	C	124	A
25	C	75	D	125	A
26	B	76	B	126	D
27	C	77	D	127	B
28	A	78	B	128	A
29	B	79	C	129	B
30	B	80	C	130	A
31	B	81	A	131	A
32	D	82	C	132	C
33	B or C	83	D	133	A
34	A	84	A	134	B
35	A	85	B	135	B
36	D	86	D	136	A
37	C	87	C	137	B
38	A	88	A	138	C
39	C	89	A	139	B
40	B	90	C	140	D
41	B	91	B	141	B
42	C	92	A	142	C
43	A	93	D	143	D
44	B	94	C	144	A
45	A	95	A	145	D
46	B	96	B	146	A
47	A	97	D	147	C
48	A	98	D	148	D
49	C	99	A	149	A
50	C	100	B	150	A

Answer Key for 2 EE(LE) (Set-D)

Q.No.	Ans. Key	Q. No.	Ans. Key	Q. No.	Ans. Key
1	B	51	B	101	D
2	C	52	D	102	B
3	A	53	B	103	A
4	B	54	C	104	B
5	B	55	C	105	A
6	C	56	A	106	D
7	B	57	B	107	B
8	A	58	C	108	C
9	B	59	C	109	A
10	C	60	D	110	A
11	B	61	A	111	A
12	D	62	C	112	C
13	B or C	63	D	113	A
14	A	64	A	114	B
15	A	65	B	115	B
16	D	66	D	116	A
17	C	67	C	117	B
18	A	68	A	118	C
19	C	69	A	119	B
20	B	70	C	120	D
21	B	71	B	121	B
22	C	72	A	122	C
23	A	73	D	123	D
24	B	74	C	124	A
25	A	75	A	125	D
26	C	76	C	126	D
27	B	77	A	127	None
28	C	78	B	128	C
29	A	79	D	129	C
30	B	80	B	130	D
31	B	81	B	131	A
32	A	82	D	132	C
33	A	83	D	133	D
34	C	84	A	134	A
35	C	85	B	135	A
36	C	86	B	136	D
37	C	87	C	137	A
38	B	88	D	138	D
39	A	89	A	139	C
40	A	90	C	140	B
41	B	91	A	141	B
42	B	92	B	142	B
43	B	93	D	143	C
44	A	94	B	144	C
45	C	95	C	145	C
46	D	96	D	146	C
47	A	97	B	147	A
48	C	98	A	148	C
49	B	99	C	149	A
50	A	100	C	150	B

75. Which of the following elements are not regarded as transition elements ?

- A) Zn, Hg and Au
- B) Hg, Au and Cd
- C) Zn, Cd and Hg
- D) Se, Zn and Au

Initial Answer Key : C

Final Answer Key : C

Reference :

Book : NCERT 12th Std.

Author :

Publication : 2014-15

Page No. : 211

Solution :

Photo Proof :

	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd
Z	39	40	41	42	43	44	45	46	47	48
5s	2	2	1	1	1	1	1	0	1	2
4d	1	2	4	5	6	7	8	10	10	10

	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg
Z	57	72	73	74	75	76	77	78	79	80
6s	2	2	2	2	2	2	2	1	1	2
5d	1	2	3	4	5	6	7	9	10	10

	Ac	Rf	Db	Sg	Bh	Hs	Mt	Ds	Rg	Uub
Z	89	104	105	106	107	108	109	110	111	112
7s	2	2	2	2	2	2	2	2	1	2
6d	1	2	3	4	5	6	7	8	10	10

The electronic configurations of Zn, Cd and Hg are represented by the general formula $(n-1)d^{10}ns^2$. The orbitals in these elements are completely filled in the ground state as well as in their common oxidation states. Therefore, they are not regarded as transition elements.

The *d* orbitals of the transition elements project to the periphery of an atom more than the other orbitals (i.e., *s* and *p*), hence, they are more influenced by the surroundings as well as affecting the atoms or molecules surrounding them. In some respects, ions of a given d^n configuration ($n = 1 - 9$) have similar magnetic and electronic properties. With partly filled *d* orbitals these elements exhibit certain characteristic properties such as display of a variety of oxidation states, formation of coloured ions and entering into complex formation with a variety of ligands.

The transition metals and their compounds also exhibit catalytic property and paramagnetic behaviour. All these characteristics have been discussed in detail later in this Unit.

There are greater horizontal similarities in the properties of the transition elements in contrast to the main group elements. However, some group similarities also exist. We shall first study the general characteristics and their trends in the horizontal rows (particularly 3*d* row) and then consider some group similarities.

On what ground can you say that scandium ($Z = 21$) is a transition element but zinc ($Z = 30$) is not?

On the basis of incompletely filled 3*d* orbitals in case of scandium atom in its ground state ($3d^1$), it is regarded as a transition element. On the other hand, zinc atom has completely filled *d* orbitals ($3d^{10}$) in its ground state as well as in its oxidised state, hence it is not regarded as a transition element.

In B Set Questions no. 48

43. The general solution of the differential equation $\frac{y dx - x dy}{y} = 0$ is

A) $xy = c$

B) $x = cy$

C) $y = cx$

D) $y = cx^2$

Initial Answer Key : B

Final Answer Key : B or C

Reference :

Book : Mathematics, Text Book for Class 12, Part 2

Author : NCERT

Publication : NCERT

Page No. : 421

Solution : 1

Soln \rightarrow Given $\frac{y dx - x dy}{y} = 0$

$$\Rightarrow y dx - x dy = 0$$

$$y dx = x dy$$

$$\frac{dx}{x} = \frac{dy}{y}$$

$$\text{OR } \int \frac{dx}{x} = \int \frac{dy}{y}$$

$$\log x = \log y + \log c$$

$$\log x = \log (yC)$$

$$x = yC \rightarrow \text{option B}$$

Updated Solution

$$43) ydx - xdy = 0$$

$$\frac{dx}{x} = \frac{dy}{y}$$

$$\log x = \log y + \log C$$

$$x = yC$$

$$\text{or } \log x + \log C = \log y$$

$$y = xC$$

option B or C

In C Set Questions no. 49

29. If $\tan^{-1}2x + \tan^{-1}3x = \frac{\pi}{4}$, then $x = ?$

A) $-1, \frac{1}{6}$

B) -1

C) $\frac{1}{6}$

D) None of these

Initial Answer Key : C

Final Answer Key : C

Reference :

Book : Mathematics, Text Book for Class 12, Part 1

Author : NCERT

Publication : NCERT

Page No. : 51

Solution :

Solution \rightarrow We have, $\tan^{-1} 2x + \tan^{-1} 3x = \frac{\pi}{4}$

$$\tan^{-1} \left(\frac{2x + 3x}{1 - 6x^2} \right) = \frac{\pi}{4}$$

$$\tan^{-1} \left(\frac{5x}{1 - 6x^2} \right) = \frac{\pi}{4}$$

$$\text{OR } \frac{5x}{1 - 6x^2} = 1$$

$$6x^2 + 5x - 1 = 0 \Rightarrow x = \frac{1}{6}, x = -1$$

But $x = -1$ does not satisfy the equation, as the L.H.S of the equation becomes negative.

$\therefore x = \frac{1}{6}$ is the only solution of the given equation.

Photo Proof :

Example 13 Solve $\tan^{-1} 2x + \tan^{-1} 3x = \frac{\pi}{4}$

Solution We have $\tan^{-1} 2x + \tan^{-1} 3x = \frac{\pi}{4}$

or
$$\tan^{-1} \left(\frac{2x+3x}{1-2x \times 3x} \right) = \frac{\pi}{4}$$

i.e.
$$\tan^{-1} \left(\frac{5x}{1-6x^2} \right) = \frac{\pi}{4}$$

Therefore
$$\frac{5x}{1-6x^2} = \tan \frac{\pi}{4} = 1$$

or
$$6x^2 + 5x - 1 = 0 \text{ i.e., } (6x - 1)(x + 1) = 0$$

which gives
$$x = \frac{1}{6} \text{ or } x = -1.$$

Since $x = -1$ does not satisfy the equation, as the L.H.S. of the equation becomes negative, $x = \frac{1}{6}$ is the only solution of the given equation.

Miscellaneous Exercise on Chapter 2

Find the value of the following:

1. $\cos^{-1} \left(\cos \frac{13\pi}{6} \right)$

2. $\tan^{-1} \left(\tan \frac{7\pi}{6} \right)$

Prove that

3. $2\sin^{-1} \frac{3}{5} = \tan^{-1} \frac{24}{7}$

4. $\sin^{-1} \frac{8}{17} + \sin^{-1} \frac{3}{5} = \tan^{-1} \frac{77}{36}$

5. $\cos^{-1} \frac{4}{5} + \cos^{-1} \frac{12}{13} = \cos^{-1} \frac{33}{65}$

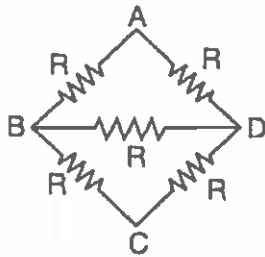
6. $\cos^{-1} \frac{12}{13} + \sin^{-1} \frac{3}{5} = \sin^{-1} \frac{56}{65}$

7. $\tan^{-1} \frac{63}{16} = \sin^{-1} \frac{5}{13} + \cos^{-1} \frac{3}{5}$

8. $\tan^{-1} \frac{1}{5} + \tan^{-1} \frac{1}{7} + \tan^{-1} \frac{1}{3} + \tan^{-1} \frac{1}{8} = \frac{\pi}{4}$

In C Set Questions no. 102

137. Five equal resistors each of value R are connected as shown. The equivalent resistance of the network is



- A) Between points B and D is $2R$
- B) Between points A and C is $2R$
- C) Between points B and D is R
- D) Between points A and C is $\frac{R}{2}$

Initial Answer Key : C

Final Answer Key : None

Reference :

Book :

Author : S. K. Sharma

Publication : Dinesh

Page No. : 278

Solution :