

## SCIENCE SCORING KEYS

Population I

Test 1A

Test 1B

Item	Correct Resp- once	Content Area	Behav- iour Category	Source	Item	Correct Resp- once	Content Area	Behav- iour Category	Source
1*	A	9	A	1.11	1	D	1	A	4.11
2	B	1	B	2.12	2*	C	1	A	3.12
3	E	3	A	3.14	3	C	5	B	4.13
4	B	3	B	3.15	4	C	-	B	2.10
5	A	3	C	3.16	5	E	12	A	4.1
6	D	3	C	3.17	6*	D	12	C	3.5
7*	D	12	B	4.2	7*	B	12	C	1.4
8*	B	13	D	2.5	8	C	13	B	3.4
9*	B	13	D	4.5	9	E	16	B	3.8
10	D	16	C	3.9	10	B	16	D	4.9
11	E	18	C	4.10	11	E	18	B	3.10
12*	C	23	A	1.16	12	A	30	B	4.17
13	E	30	A	1.13	13	B	33	A	2.16
14*	A	35	D	3.19	14	C	37	A	1.20
15	B	37	C	2.21	15*	C	37	B	4.20
16	D	39	B	3.20	16	C	39	D	1.21
17	A	40	B	2.23	17	E	41	B	4.23
18	C	42	A	1.23	18	C	42	C	2.24
19	D	45	C	4.25	19*	A	45	A	1.25
20	D	45	D	3.24	20	A	49	B	1.26

adapted

\* anchor items with Population II

Classification Summary

	Total	A	B	C	D
Earth Science	9	4	3	2	0
Biology	13	1	5	4	3
Chemistry	4	3	1	-	-
Physics	14	3	5	3	3
Total	40	11	14	9	6

## Population II

Test 4A					Test 4B				
Item	Correct Resp- onse	Content Area	Behav- iour Categ.	Source	Item	Correct Resp- onse	Content Area	Behav- iour Categ.	Source
1	D	1	A	I/3/12(1)	1	A	1	A	I/1/11(1)
2	D	9	A	I/4/2(1)	2	C	13	A	II/8/6
3	A	12	A	II/3/1	3	D	12	A	I/3/5(1)
4	B	12	C	I/1/4(1)	4	B	13	A	I/2/5(1)
5	D	12	B	II/5/2	5	B	13	A	II/8/4
6	E	13	A	II/7/3	6	C	13	A	II/8/1(4)
7	D	13	C	II/5/8	7	A	13	B	II/7/4(4)
8	C	14	C	II/3/5	8	A	14	A	II/5/4
9	B	15	D	II/1/7	9	C	17	D	II/7/8
10	B	14	B	II/2/6(4)	10	C	16	A	II/3/7(4)
11	B	14	C	I/4/5(1)	11	E	23	A	II/4/9(1)
12	A	23	D	II/5/9(4)	12	C	23	D	II/4/11(1)
13	B	23	B	II/1/10	13	A	23	B	II/4/10
14	E	23	A	II/1/11	14	D	23	B	II/3/11
15	C	24	C	II/7/11	15	A	31	BII	II/3/15(4SC)
16	A	26	B	II/8/11	16	E	26	A	II/3/12
17	C	23	C	II/2/10	17	B	28	A	II/1/13
18	A	31	A	II/3/14	18	D	30	C	II/8/13
19	A	31	D	II/6/15	19	A	26	D	II/2/13
20	D	31	D	II/6/18	20	D	31	A	II/4/14(4)
21	A	35	D	II/3/18(1)	21	B	35	B	II/8/17(4)
22	D	35	B	II/3/17	22	C	37	B	II/5/19(1)
23	B	37	B	II/5/18	23	C	37	C	II/7/18(4)
24	A	37	B	II/2/19	24	D	37	B	II/6/20
25	E	37	C	II/3/19	25	C	39	A	II/8/19
26	B	42	D	II/4/22(4)	26	A	45	A	I/1/25(1)
27	A	42	A	II/8/21	27	E	40	B	II/1/21
28	E	45	C	II/8/22	28	C	41	B	II/7/22
29	E	50	A	I/4/26	29	D	49	C	II/1/23(1)
30	A	49	B	II/6/24	30	D	49	D	II/8/24

## Pencil and Paper Practical Items

31	A	III I/11(4)	31	C	III II/6(4)
32	B	III I/12(4)	32	C	III II/7
33	A	III II/16	33	B	III II/8(4)

(continued)

- (1) Anchor items with Population I  
 (4) Anchor items with Population IV

Item	Correct Resp- once	Content Area	Behav- iour Categ.	Source	Item	Correct Resp- once	Content Area	Behav- iour Categ.	Source
34	B		I	I/15	34	E		III	II/10
35	C		III	I/18	35	D		III	II/19(4)
36	C		III	I/19	36	E		I	I/17
37	E		III	II/23(4)	37	C		III	II/21
38	C		III	I/29(4)	38	A		III	I/30(iv)
39	D		III	II/28(4)	39	C		III	I/30(v)
40	C		III	II/29(4)	40	A		III	I/30(iv)

Classification

Summary

TEST 4A

TEST 4B

Area	No.	A	B	C	D	I	II	III	No.	A	B	C	D	I	II	III	Total
Biology	10	3	2	4	1				9	4	3	1	1				19
Chemistry	9	2	2	2	3				10	4	4	1	1				19
Physics	11	3	4	2	2				11	1	7	2	1				22
Practical	10					1	0	9						1	0	9	20
<b>Total</b>	<b>40</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>6</b>	<b>1</b>	<b>0</b>	<b>9</b>	<b>40</b>	<b>9</b>	<b>14</b>	<b>4</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>9</b>	<b>60</b>
									<b>80</b>	<b>17</b>	<b>22</b>	<b>12</b>	<b>9</b>	<b>2</b>	<b>0</b>	<b>18</b>	

- (1) anchor items with Population I
- (4) anchor items with Population IV

POPULATION IV

Test 10A

Test 11B (P-U)

Item	Correct Response	Content Area	Behaviour Categ.	Source	Item	Correct Response	Content Area	Behaviour Categ.	Source
1	E	9	D	IV 6-3	1*	C	9		1-3
2	D	12	A	2-3	2*	A	13		2-4
3	A	13	D	7-4	3	D	13	B	8-3
4	D	13	D	7-5	4	A	13	D	2-7
5	E	13	C	8-4	5*	B	14	B	3-3
6	A	15	C	3-7	6	C	16	C	1-6
7*	C	16	B	3-5	7	C	18	C	6-6
8	E	18	A	3-6	8	E	20	A	1-7
9	B	23	B	1-9	9*	A	23/24	C	II-5-9
10	B	25	C	7-9	10	B	24	C	6-11
11	B	25	C	5-10	11*	C	23/24	C	II-4-11
12	A	27	B	7-10	12	D	25	C	3-10
13	A	27	B	7-11	13	D	26	B	5-9
14	E	27	B	7-12	14	D	29	B	8-10
15	E	33	B	5-11	15	E	29	C	2-11
16	D	36	B	5-13	16*	D	31	A	3-14
17	D	36	B	7-13	17	C	25	B	1-13
18*	C	37	B	4-13	18*	B	37	B	2-15
19	E	39	B	2-12	19	C	38	B	4-16
20	C	41	B	5-15	20	E	39	B	4-14
21*	D	49	B	6-15	21*	B	41	C	4-15
22	B	50	A	3-16	22	E	41	C	8-15
23	E	46	B	2-13	23	C	45	C	8-14
24	D	52	B	6-16	24	C	52	A	1-1
<u>Pencil and Paper Practical Items</u>					<u>Rotating Items (for categories and Sources see IVS)</u>				
25*	A		III	I/11	25	C			
26*	B		III	I/12	26	E			
27	C		III	II/6	27	A			

\* anchor items with Population II

Item	Correct Resp- once	Content Area	Behav- iour Categ.	Source	Item	Correct Resp- once	Content Area	Behav- iour Categ.	Source
<u>Pencil and Paper Practical Items</u>					<u>Rotating Items (for categories and sources see IVB)</u>				
28	B		III	II/8	28	E			
29	C		III	I/14	29	D			
30*	D		III	II/19	30	B			
31	A		III	II/20					
32	D		III	II/22					
33*	E		III	II/23					
34*	C		III	I/29					
35*	D		III	II/28					
36*	C		III	II/29					

Summary

Area	No.	A	B	C	D	I	II	III	No.	A	B	C	D	I	II	III	Total	
Biology	8	2	1	2	3				8	2	2	3	1				16	
Chemistry	7	0	5	2	0				9	1	3	5	0				16	
Physics	9	1	8	0	0				7	1	3	3	0				16	
Practical	12					0	0	12	(Rotating 6)							(Practical)12		
Total	36	3	14	4	3	0	0	12	30							(Rotating) 6		
									Total	66	7	22	15	9	0	0	12	66

\* Anchor Items with Population II

S C I E N C ETest 11 B - Rotated Sets P - U

Item	P		Q		R		S		T		U	
	Source	Correct Response Category	Source	Correct Response Category	Source	Correct Response Category	Source	Correct Response Category	Source	Correct Response Category	Source	Correct Response Category
25	B 5	C B	B 7	C B	C 7	C B	P 8	C C	P 32	C C	P 40	C B
26	B 31	E D	B 40	E B	C 35	E B	P 14	E A	P 13	E A	P 10	E C
27	C 4	A B	C 9	A A	B 22	A D	C 12	A A	C 32	A C	C 39	A D
28	C 19	E C	C 31	E C	P 33	E C	C 23	E D	B 29	E B	B 18	E B
29	P 6	D D	P 15	D B	B 13	D C	B 33	D D	C 2	D A	C 36	D C
30	P 20	B B	P 25	B C	P 19	B B	B 20	B C	B 35	B B	B 32	B B

POPULATION IV SCIENCE PRACTICAL (National Option)

<u>Item</u>	<u>Correct Response</u>	<u>Behaviour Category</u>	<u>Source</u>	<u>Marks</u>
1	A	II	2.1	1
2	C	II	2.2	1
3	A	II	2.3	1
4	C	II	2.4	1
5	A	II	2.5	1
6 <del>2</del>	A I.K.S.	II	1.24	
7	A J.R.T.	II		8
7	II = I + III	III	2.31	1 If II = I + III within 20%
	II = IV or I + III = IV			1 If II = IV or I + III = IV (not both) within 20%
	V = VI + VII			1 If V = VI + VII within 20%
Total				<u>16</u> x $\frac{9}{8}$ to bring to 18

Summary of Behaviour Categories

I	0	0	0
II	13	0	13
III	3	12	15
	16	12	28
Practical Pen and Paper			Total



POPULATION IV BIOLOGY PRACTICAL (National Option)

<u>Item</u>	<u>Correct Response</u>	<u>Behaviour Category</u>	<u>Score</u>	<u>Order</u>
1	A	II	2.1	
2	D	II	2.2	
3	A	II	2.3	1
4	C	II	2.4	1
5	A	II	2.5	1
6	D	III	1.8	1
7	C	II	1.9	1
8	A	II	1.10	1
9	D	II	2.13	1
10	C	I	2.14	
11	A	II	2.15	1
12	D	I	1.1	1
13	A	I	1.2	1
14	A	I	1.3	1
15	B	III	1.4	1
			<u>Total</u>	<u>1</u>
			15 x $\frac{6}{5}$ = 18	same as chemistry & physics

Summary of Behaviour Categories

I	3	0	3
II	10	0	10
III	2	12	14
	15	12	27
	Practical Pen and Paper		Total

Biology

Item	Correct Response	Content Area	Behaviour Category	Source			
1	B	7	A	3.1			
2	D	7	B	3.2			
3	B	7	B	3.3			
4	A	7	B	3.4			
5	C	7	B	2.3	*	P	25
6	E	11	C	1.6		Q	25
7	C	11	C	1.7	*		
8	B	11	B	2.7			
9	D	11	C	2.8			
10	C	11	C	2.9			
11	E	11	C	3.7			
12	D	13	A	2.11			
13	D	13	C	1.12	*	R	29
14	B	13	C	1.23			
15	C	13	D	3.12			
16	D	14	A	3.6			
17	C	14	B	1.10			
18	E	14	B	3.8	*	U	28
19	A	14	A	3.9			
20	B	14	C	4.11	*	S	30
21	C	14	D	4.12			
22	A	14	D	1.13	*	R	27
23	B	14	D	3.13			
24	C	14	D	3.14			
25	C	14	D	1.14			
26	A	15	A	4.14			
27	C	15	C	1.16			
28	A	15	C	2.16			
29	E	16	B	3.15	*	T	28
30	B	16	A	1.18			
31	E	16	D	3.24	*	P	26
32	B	20	B	3.17	*	U	30
33	D	22	D	4.18	*	S	29
34	D	22	D	3.21			
35	B	22	B	3.22	*	T	30
36	C	22	C	2.21			
37	A	20	D	4.18			
38	C	22	B	1.19			
39	C	22	B	1.20			
40	E	22	B	2.19	*	Q	26

\* Rotator items with Population IV

Classification Summary

	Total	A	B	C	D
I Cell structure & function	11	1	6	3	1
II Events on the level of a multicellular organism	17	4	3	5	5
III Reproduction, Development Population genetics & Evolution	12	1	4	3	4
Total	40	6	13	11	10

Chemistry

Item	Correct Response	Content Area	Behaviour Category	Source	
1	C	I 25	A	4.12	
2	D	25	A	4.3 *	T 29
3	D	25	B	3.3	
4	A	23	B	1.3 *	P 27
5	E	24	B	3.1	
6	B	25	B	3.4	
7	C	23	B	1.1 *	R 25
8	D	24	C	3.2	
9	A	II 27	A	2.6 *	Q 27
10	A	34	A	2.22	
11	D	31	A	3.16	
12	A	31	A	1.17*	S 27
13	B	31	B	2.18	
14	A	27	B	4.6	
15	B	27	B	4.7	
16	B	31	B	4.15	
17	C	31	C	2.15	
18	D	24	C	2.16	
19	E	27	C	3.8 *	P 28
20	E	33	B	3.20	
21	D	34	C	1.23	
22	E	33	C	3.23	
23	E	27	D	2.7 *	S 28
24	B	27	D	2.8	
25	C	III 28	B	1.10	
26	B	28	B	1.11	
27	A	28	B	1.12	
28	C	28	B	2.9	
29	B	29	B	2.14	
30	D	29	B	4.11	
31	E	29	C	4.13 *	Q 28
32	A	29	C	3.14 *	T 27
33	E	IV 30	A	1.14	
34	C	30	A	2.19	
35	E	30	B	2.20 *	R 26
36	D	33	C	4.19 *	U 29
37	E	33	B	4.20	
38	C	33	C	4.21	
39	A	26	D	1.6 *	U 27
40	B	33	D	4.22	

\* Rotator items with Population IV

Classification Summary

	Total	A	B	C	D	
I	Laws of chemical change including electro-chemistry	8	3	3	1	1
II	Atomic and molecular structure including periodic table	16	3	5	4	4
III	Reaction rate, equilibrium and energetics	8	-	5	2	1
IV	Descriptive processes, reaction	8	2	3	1	2
	Total	40	8	16	8	8

Population IV S

IEA/17  
Booklet 17

Physics

Item	Correct Response	Content Area	Behaviour Category	Source
1	A	I	B	1.1
2	B		C	3.2
3	E		B	2.3
4	E		C	2.6
5	C		C	3.5
6	D		D	3.7 * P29
7	C		B	4.3
8	C		C	4.4 * S25
9	D		C	2.8
10	E		C	4.5 * U26
11	C		D	4.6
12	A		D	2.11
13	E		A	4.8 * T26
14	E	II	A	4.9 * S26
15	D		B	1.13 * Q29
16	D		B	1.14
17	C		C	1.15
18	D		C	2.13
19	B		B	3.13 * R30
20	B		B	4.13 * P30
21	C		B	3.15
22	B		A	4.14
23	A		C	4.15
24	C		III	B
25	B	C		1.17 * Q30
26	D	B		2.15
27	A	C		2.16
28	E	B		3.17
29	D	A		1.18
30	A	B		1.19
31	E	C		3.18
32	C	C		3.19 * T25
33	E	C		1.20 * R28
34	D	B		4.20
35	C	IV	D	1.21
36	C		B	2.20
37	D		B	3.22
38	E		B	2.22
39	B		B	2.21
40	C		B	4.22 * U 25

\* = Rotator items with IV

Classification Summary

	Total	A	B	C	D
I Mechanics : Measurement, Forces Energy, Heat, Kinetic theory	13	1	3	6	5
II Waves : Light, Sound, Spectra, Radiation	10	2	5	3	0
III Electricity: Electrostatics, Circuits, Electromagnetism	11	1	5	5	0
IV Modern Physics and Electronics	6	0	5	-	1
<b>Total</b>	<b>40</b>	<b>4</b>	<b>18</b>	<b>14</b>	<b>4</b>

POPULATION II SCIENCE PRACTICAL (National Option)

<u>Item</u>	<u>Correct Response</u>	<u>Behaviour Category</u>	<u>Source</u>	<u>Marks</u>
1	D	I	I 1	1
2	A	I	I 2	1
3	A	I	I 3	1
4	E	I	I 7	1
5 X	E H	II	II 27	
Y	D G	II	II 27	
Z	D H	II	II 27	6
6	A	I	I 25	1
7	C	I	I 26	1
8	E	III	I 27	1
9	I = II + III	III	II 31	2 (If I = II + III within 20% score 2)
			<b>Total</b>	<b>15</b>

Summary of Behaviour Categories

I	6	2	8
II	6	0	6
III	3	18	21
	15	20	35

Practical Pen  
and  
Paper

Totals