IBPS RRB Officer Scale-I Preliminary Grand Test –IRP-180703
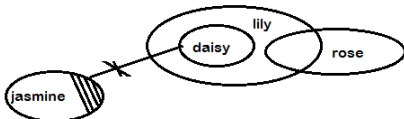## HINTS & SOLUTIONS

ANSWER KEY

1. (1)	21. (1)	41. (4)	61. (3)
2. (2)	22. (1)	42. (2)	62. (5)
3. (4)	23. (3)	43. (4)	63. (1)
4. (5)	24. (4)	44. (4)	64. (1)
5. (4)	25. (1)	45. (4)	65. (2)
6. (4)	26. (2)	46. (4)	66. (1)
7. (3)	27. (1)	47. (2)	67. (2)
8. (3)	28. (5)	48. (1)	68. (4)
9. (1)	29. (5)	49. (3)	69. (4)
10. (2)	30. (4)	50. (5)	70. (2)
11. (4)	31. (4)	51. (2)	71. (2)
12. (1)	32. (3)	52. (5)	72. (5)
13. (5)	33. (5)	53. (3)	73. (1)
14. (5)	34. (1)	54. (1)	74. (2)
15. (5)	35. (4)	55. (4)	75. (4)
16. (3)	36. (2)	56. (2)	76. (3)
17. (2)	37. (4)	57. (4)	77. (2)
18. (2)	38. (2)	58. (5)	78. (4)
19. (4)	39. (4)	59. (1)	79. (5)
20. (1)	40. (1)	60. (4)	80. (1)

HINTS & SOLUTIONS

1. (1)

For I- Since, there is no direct relation between elements jasmine and lily, So, possibility case will hold true. Hence, conclusion I can be concluded.
For II- Since, there is no direct relation between elements rose and lily. Hence, conclusion II cannot be concluded.

2. (2)

For I- Since, there is no direct relation between elements root and trunk. Hence, conclusion I cannot be concluded.
For II- Since, there is no direct relation between elements root and trunk. So, possibility case will hold true. Hence, conclusion II can be concluded.
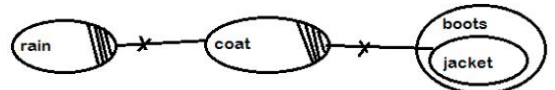
3. (4)

For I- Since, there is no direct relation between elements honda and suzuki. Hence, conclusion I cannot be concluded.
For II- Since, there is no direct relation between elements maruti and honda. Hence, conclusion II cannot be concluded.

4. (5)

For I- Since, there is no direct relation between elements jacket and rain. So, possibility case will hold true. Hence, conclusion I can be concluded.
For II- Since, there is no direct relation between elements coat and pen. So, possibility case will hold true. Hence, conclusion II can be concluded.

5. (4)

For I- From the venn diagram it is clear that no pen is cap. Therefore, some cap are definitely not pen. Therefore, possibility case will not hold. Hence conclusion I does not follow.
For I- Since, there is no direct relation between elements paper and pencil. Hence, conclusion II cannot be concluded.

6. (4) $N \geq A < B = M = O \leq I < L$

7. (3)
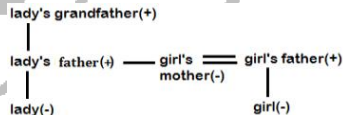
Since the lady is pointing towards another person not a photograph, therefore the lady cannot be the girl herself.

8. (3)

9. (1)

$=\sqrt{16^2 + 5^2} = \sqrt{281}$ km, north-west

10. (2)

=5km +5km=10km

11-15. A sit at one of the ends and diagonally opposite to B. Three persons sit between B and F, who does not face G. Two persons sit between I and G, none of them sits at the end. We get two cases:

CASE1   CASE2

E faces D. J sits immediate left to D but does not faces C. G does not face L, who is left to H but not immediate left.

CASE1   CASE2

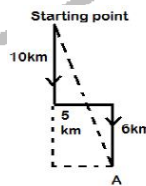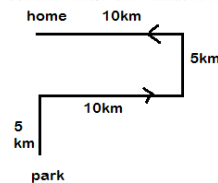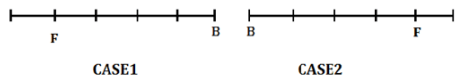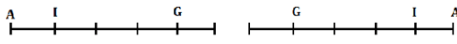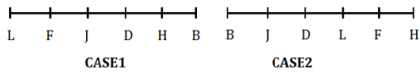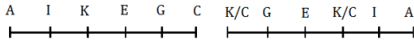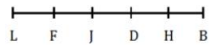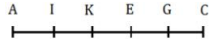The one who faces K sits 2nd right to L, So case2 gets eliminated. The final arrangement is:

11. (4)   12. (1)
13. (5)   14. (5)   15. (5)

16-20. Same number of persons live above and below J. Therefore, J lives on fifth floor. Two persons live between N and J. There are four floors in between floor of N and of R. Five persons live between K and M. So, there are two possible cases-----

	Case-1	Case-2
Floor	Persons	Persons
9		K/M
8	N	
7	K/M	R
6		
5	J	J
4		
3	R	M/K
2		N
1	M/K	

P does not live on even no. floor. There are as many persons between O and Q as between O and L. Q live above L. Only one person lives between P and K.

	Case-1	Case-2
Floor	Persons	Persons
9	P	M
8	N	Q
7	K	R
6	Q	O
5	J	J
4	O	L
3	R	K
2	L	N
1	M	P

P lives above M. By this condition case 2 will be eliminated and we got the final arrangement---

Floor	Persons
9	P
8	N
7	K
6	Q
5	J
4	O
3	R
2	L
1	M

16. (3)   17. (2)
18. (2)   19. (4)   20. (1)

21. (1) I. E > O(True)
         II. A ≥ D(False)
22. (1) I. O > Y(True)
         II. X > P(False)
23. (3) I. P < S (False)
         II. P ≥ S.(False)
24. (4) I. A > T(False)
         II. J > C(False)
25. (1) I. N > S (True)
         II. J < S.(False)

26-30. C sits second to the left of P. Two persons sit between C and D, who is not an immediate neighbor of P. A sits second to the left of C. So, there will be two possible cases as P can either face inside or outside ----
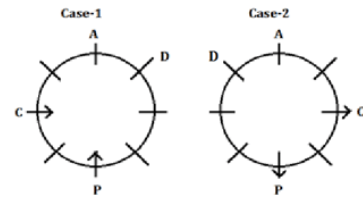
B is an immediate neighbour of P but not of C. B is facing outside. S sits third to the right of Q, who is an immediate neighbor of B. S is not a neighbor of A----
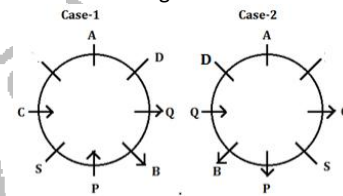
Now, S and A face same direction as B therefore, case 2 will be cancelled because in that case there will be five person (S, A, P, B, C) facing outside. So, the final arrangement is:
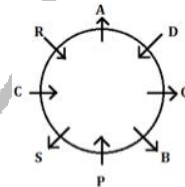
26. (2)   27. (1)
28. (5)   29. (5)   30. (4)

31-35.

Word	Code
Blanket	xy
Bed	in
Pillow	gy
Radio	pq
Chair	mn
Lamp	ab

31. (4)   32. (3)
33. (5)   34. (1)   35. (4)

36-40. B likes green and gets a day off on one of the days before Thursday. Two persons get day off between B and the one who likes blue. A gets day off immediately before the day on which C gets off, who likes orange. A, who does not like white and C get day off after Tuesday. A does not like white and blue.

	Case1		Case2		Case3	
	Person	Color	Person	Color	Person	Color
Monday	B	Green				
Tuesday			B	Green		
Wednesday			A		B	Green
Thursday		Blue	C	Orange	A	
Friday	A			Blue	C	Orange
Saturday	C	Orange				Blue

Only two person gets day off between F and A. F gets day off before E but not immediately before, So case2 gets eliminated.

	Case1		Case3	
	Person	Color	Person	Color
Monday	B	Green	F	
Tuesday	F			
Wednesday			B	Green
Thursday	E	Blue	A	
Friday	A		C	Orange
Saturday	C	Orange	E	Blue

D does not like white and blue. D did not get day off on Tuesday, So case3 gets eliminated. A does not like white and blue. The one who likes red does not gets day off on Friday. The final arrangement is :

Days	Persons	Colors
Monday	B	Green
Tuesday	F	White
Wednesday	D	Red
Thursday	E	Blue
Friday	A	Black
Saturday	C	Orange

36. (2) **37.** (4)

38. (2) **39.** (4)

40. (1)

41. (4) ATQ,

A+B = 120 _____(i)

And,

$\frac{60}{100} \times A - \frac{25}{100} \times B = 4$ _____(ii)

On solving (i) & (ii)

A = 40, B = 80

Required difference = 80 – 40 = 40

42. (2) Let speed of train 'X' = x km/hr

And, speed of train 'Y' = 1.5x km/hr

ATQ,

$2 = \frac{D}{x} - \frac{D}{1.5x}$ ...(i)

And, $\frac{D+160}{8} = x$ ...(ii)

On solving (i) & (ii)

x = 80 kmph

speed of train 'Y' = 120 kmph

43. (4) Total ways to form a committee of 5 members from 6 men and 7 women in which at least 3 men selected

= 2 women, 3 men + 1 women, 4 men + 5 men

= $^6C_3 \times {^7C_2} + {^6C_4} \times {^7C_1} + {^6C_5}$

= 531

44. (4) Let, S_1 series be → (x - 4), (x -2), (x), (x+2), (x +4)

Let S_2 series be→ (y - 4), (y - 2), (y), (y + 2), (y + 4)

ATQ,

x = 1.5y

And, x -4 + y - 4 = 67

⇒ x + y = 75

⇒ 2.5y = 75

⇒ y = 30

largest no. of S_2 series = y + 4 = 30 + 4 = 34

45. (4) Let, total sum he invested = 100x

Amount invested at 5% p.a = $100x \times \frac{1}{5} = 20x$

Amount invested at 10% p.a. = $100x \times \frac{1}{2} = 50x$

Amount invested at 20% p.a = $100x - 20x - 50x = 30x$

ATQ,

$\frac{20x \times 5 \times 2}{100} + \frac{50x \times 10 \times 2}{100} + \frac{20x \times 2 \times 30x}{100} = 1200$

⇒ 2x + 10x + 12x = 1200

⇒ 24x = 1200

⇒ $100x = \frac{1200}{24} \times 100 = 5000$

Total sum he invested = 5000

46. (4)

92	117	217	442	842	1467

+25   +100   +225   +400   +625

25×(1)² 25×(2)² 25×(3)² 25×(4)² 25×(5)²

47. (2)

121	212	339	508	725	996

(5)³-4 (6)³-4 (7)³-4 (8)³-4 (9)³-4 (10)³-4

48. (1)

4	6	9	13.5	20.25	30.375

×1.5 ×1.5 ×1.5 ×1.5 ×1.5

49. (3)

81	106	155	276	445	734

+25 +49 +121 +169 +289

(5)² (7)² (11)² (13)² (17)² consecutive — prime numbers

50. (5)

5986	2996	1502	756	384	199

÷2+3 ÷2+4 ÷2+5 ÷5+6 ÷2+7

51. (2) Total number of candidates who qualified in the written test from cities P, R and T

= $30,000 \times \frac{25}{100} + 32,000 \times \frac{10}{100} + 20,000 \times \frac{8}{100}$

= 7500 + 3200 + 1600

= 12,300

Required average = $\frac{12300}{3} = 4,100$

52. (5) Required ratio = $\frac{24000 \times \frac{15}{100} \times \frac{7.5}{100}}{25000 \times \frac{20}{100} \times \frac{2.5}{100}}$

= $\frac{24 \times 15 \times 7.5}{25 \times 20 \times 2.5}$

= $\frac{54}{25}$

53. (3) Number of candidates doing job in private firms

= $\frac{25}{100} \times 1,31,000 = 32,750$

Number of females doing job in private firms

= $\frac{2}{5} \times 32,750 = 13,100$

54. (1) Number of candidates who passed the interview from cities P and T together

= $30,000 \times \frac{25}{100} \times \frac{5}{100} + 20,000 \times \frac{8}{100} \times \frac{1.5}{100}$

= 375 + 24 = 399

Number of candidates who passed the interview from cities Q and R together

= $24,000 \times \frac{15}{100} \times \frac{7.5}{100} + 32,000 \times \frac{10}{100} \times \frac{4}{100}$

= 270 + 128 = 398

Required difference = 399 – 398 = 1

55. (4) Total number of candidates who passed the interview from cities P,S and T together

= $30,000 \times \frac{25}{100} \times \frac{5}{100} + 25,000 \times \frac{20}{100} \times \frac{2.5}{100} + 20,000 \times \frac{8}{100} \times \frac{1.5}{100}$

= 375 +125+ 24 = 524

Required number of candidates having no job experience =

$524 \times \frac{1}{2} = 262$

56. (2) Average number of vacancies in Bank 'A' and 'E' together = $\frac{64.8° + 50.4°}{2} = \frac{115.2°}{2} = 57.6°$

Required % = $\frac{86.4° - 57.6°}{57.6°} \times 100 = \frac{28.8°}{57.6°} \times 100 = 50\%$

57. (4) Total number of vacancies in bank 'D' and 'F' together = $\frac{(57.6° + 75.6°)}{360°} \times 3600$

= 133.2×10 = 1332

58. (5) Total number of vacancies in Bank 'E' = $\frac{50.4°}{360°} \times 3600 = 504$

Let Vacancies for male = 100 x

⇒ Vacancies for female = $\frac{75}{100} \times 100x = 75x$

ATQ,

100x + 75x = 504

⇒ $x = \frac{504}{175} = 2.88$

⇒ Vacancies for females = 75×2.88=216

59. (1) Required ratio = $\frac{(86.4 + 57.6) \times 10}{(75.6 + 50.4) \times 10} = \frac{144}{126} = \frac{8}{7}$

60. (4) Total number of vacancies in Bank 'C', 'E' and 'F' together = $\frac{(25.2° + 50.4° + 75.6°)}{360°} \times 3600$

= 151.2 × 10 = 1512

Required average = $\frac{1512}{3} = 504$

61. (3) I. $6x^2 - 9x + 10x - 15 = 0$

3x(2x - 3) + 5 (2x - 3) = 0

(3x + 5) (2x - 3) = 0

$x = \frac{3}{2}, \frac{-5}{3}$

II. $4y^2 - 24y + 35 = 0$
$4y^2 - 14y - 10y + 35 = 0$
$2y (2y - 7) - 5 (2y - 7) = 0$
$(2y - 7) (2y - 5) = 0$
$y = \dfrac{7}{2}, \dfrac{5}{2}$
$\therefore y > x$

62. (5) I. $5x^2 + 11x + 2 = 0$
$5x^2 + 10x + x + 2 = 0$
$5x(x + 2) + 1 (x + 2) = 0$
$(x + 2) (5x + 1) = 0$
$x = -2, -\dfrac{1}{5}$
II. $6y^2 + 11y + 4 = 0$
$6y^2 + 8y + 3y + 4 = 0$
$2y (3y + 4) + 1 (3y + 4) = 0$
$(3y + 4) (2y + 1) = 0$
$y = \dfrac{-4}{3}, -\dfrac{1}{2}$
$\therefore$ no relation

63. (1) I. $2x^2 - 23x + 56 = 0$
$2x^2 - 7x - 16x + 56 = 0$
$x(2x - 7) - 8 (2x - 7) = 0$
$(x - 8) (2x - 7) = 0$
$x = 8, \dfrac{7}{2}$
II. $3y^2 - 14y + 15 = 0$
$3y^2 - 5y - 9y + 15 = 0$
$y(3y - 5) - 3(3y - 5) = 0$
$y = 3, \dfrac{5}{3}$
$\therefore x > y$

64. (1) I. $7x + 2y = 12$ ...(i)
II. $4x + 3y = 5$ ...(ii)
Multiplying (i) by 3 and (ii) by 2 & solving
$x = 2, y = -1$
$x > y$

65. (2) I. $x^2 + 13x + 40 = 0$
$x^2 + 8x + 5x + 40 = 0$
$x(x + 8) + 5(x + 8) = 0$
$(x + 8) (x + 5) = 0$
$x = -5, -8$
II. $y^2 + 17y + 72 = 0$
$y^2 + 8y + 9y + 72 = 0$
$y (y + 8) + 9 (y + 8) = 0$
$\Rightarrow y = -8, -9$
$x \geq y$

66. (1) Total words than can be formed = $5! = 120$
As vowels are together
i.e. H, R, T, $\boxed{AE}$
total words = $4! \times 2! = 48$
So, required probability = $\dfrac{48}{120} = \dfrac{2}{5}$

67. (2) Ankit can do the whole work in = $\dfrac{3 \times 10}{2} = 15$ days
Veer can do the whole work in = $\dfrac{4}{3} \times 9 = 12$ days.

Total work

Ankit   15 days — 8
Veer   12 days — 10   120 (unit)

Efficiency of Neeraj = $1.2 \times 10 = 12$ unit/day

	1st day	2nd day	3rd day
	Ankit	Veer	Neeraj
	8 unit	10 unit	12 unit

30 unit of work is completed in 3 days.
$\therefore$ 120 unit = $\dfrac{3}{30} \times 120 = 12$ days.

68. (4) Let the quantity of milk in the original mixture be 3x.
And the quantity of water be 2x.
ATQ,
$\dfrac{3x+40}{2x} = \dfrac{2}{1}$
$\Rightarrow 4x = 3x + 40$
$\Rightarrow x = 40$
Quantity of new mixture = $5 \times 40 + 40 = 240$ lit.
$\therefore$ Required quantity of water = $(240 - 90) \times \dfrac{1}{3} = 50$ lit.

69. (4) Let the income of Rohan be Rs. x
The, income of Badree = Rs. 72,000 – x
ATQ,
$\Rightarrow \dfrac{\frac{1}{5}x}{\frac{1}{8} \times (72,000 - x)} = \dfrac{3}{7}$
$\Rightarrow \dfrac{7}{5}x = 72,000 - x$
$\Rightarrow 7x = 3,60,000 - 5x$
$\Rightarrow 12x = 3,60,000$
$\Rightarrow x = $ Rs. 30,000
Required average = $\dfrac{\frac{1}{5} \times 30,000 + \frac{1}{8} \times 42,000}{2}$
$= \dfrac{6,000 + 14,000}{2}$
= Rs. 10,000

70. (2) Total number of Tata cars that are red = $\dfrac{250000}{625} \times 40 = 16,000$
Total cars that are red = $\dfrac{28 \times 394000}{100} = 1,10,320$
$\therefore$ Non-Tata cars that are red = 110320 – 16000 = 94,320
And, non-tata cars = 3,94,000 – 2,50,000 = 1,44,000
Required percentage = $\dfrac{94320}{144000} \times 100 = 65.5\%$

71. (2) $\dfrac{?}{20} = \sqrt{42^2 - 24 \times 48 - 24^2}$
$\Rightarrow \dfrac{?}{20} = \sqrt{1764 - 1152 - 576}$
$\Rightarrow \dfrac{?}{20} = \sqrt{36}$
$\Rightarrow \dfrac{?}{20} = 6 \Rightarrow ? = 120$

72. (5) 25% of ? = $\sqrt{2704} + \dfrac{576}{18} - (64)^{1/3}$
$\Rightarrow \dfrac{?}{4} = 52 + 32 - 4$
$\Rightarrow ? = 4 \times (80) = 320$

73. (1) $?^2 = \sqrt{55\% \; of \; 960 + 75\% \times 640 + 2 \times 12^2}$
$\Rightarrow ?^2 = \sqrt{528 + 480 + 2 \times 144}$
$\Rightarrow ?^2 = \sqrt{1008 + 288}$
$\Rightarrow ?^2 = \sqrt{1296}$
$\Rightarrow ?^2 = 36$
$\Rightarrow ? = 6$

74. (2) $2^? = \dfrac{256}{16} \times \dfrac{2048}{64} \times \dfrac{1}{128} = 4$
$\Rightarrow ? = 2$

75. (4) $\dfrac{55}{100} \times ? = 45 \times 12 - 36 \times 14 + \dfrac{8}{100} \times 375$
$\Rightarrow \dfrac{11}{20} \times ? = 540 - 504 + 30$
$\Rightarrow ? = \dfrac{66}{11} \times 20 = 120$

76. (3) Total number of students who did not belongs to 'SC' category from IIT DELHI and IIT MADRAS in the years 2016 & 2017 respectively
$= 360 \times \dfrac{8}{9} + 420 \times \dfrac{6}{7}$
$= 320 + 360$
$= 680$

77. (2) Total boys take admission in IIT MADRAS in the year 2016
$= 480 \times \dfrac{5}{6} = 400$
Required percentage = $\dfrac{420 - 400}{420} \times 100$
$= 4\dfrac{16}{21}\%$

78. (4) Average number of students take admission in IIT KANPUR in the both years
$= \dfrac{460 + 340}{2}$
$= \dfrac{800}{2}$
$= 400$
Average number of students take admission in IIT GUHAWATI in the both years
$= \dfrac{300 + 160}{2}$
$= \dfrac{460}{2}$
$= 230$
Required difference = 400 – 230 = 170

79. (5) Total students take admission in the year 2016 belongs to general category in IIT DELHI
$= 360 \times \dfrac{50}{100} = 180$

Total students take admission in the year 2017 belongs to OBC category in IIT DELHI
$= 220 \times \dfrac{25}{100}$
$= 55$
Required percentage = $\dfrac{180 - 55}{55} \times 100$
$= 227\dfrac{3}{11}\%$

80. (1) Required ratio = $\dfrac{480 + 300}{220 + 280}$
$= 39 : 25$