Assignment 6

Set 1

Two maps are being designed. One will show subway line; the other will show bus routes. There are three subway lines and four bus routes, and each line or route must be represented on the maps by a colour used to represent it only. The colour available to the designer of the maps are blue, green, orange, purple, red, tan and yellow. Any assignment of colours to lines and routes is acceptable provided the following conditions are met:

Blue cannot be used on the same map as purple.

Orange cannot be used on the same map as red nor on the same map as yellow.

1. If blue is used on the subway map, which of the following must be true?

(1) orange is used on the subway map.

(2) yellow is used on the subway map.

(3) green is used on the subway map.

(4) red is used on the subway map.

(5) none of the above

2. If red is used on the bus map, which of the following colours must be used on the subway map?

(1) blue

(2) orange

(3) purple

(4) tan

(5) yellow

3. If yellow and purple are used on the subway map, the third colour used on that map must be?

(1) blue

(2) green

(3) orange

(4) red

(5) tan

4. If red and blue are used on the bus map, which of the following could be the other two colours used on that map?

(1) Green and Purple

(2) Green and tan

(3) Green and yellow

(4) Orange and tan

(5) Purple and yellow

5. If green is not used on the same map as blue, nor on the same map as yellow, which of the following must be true?

(1) Blue is used on the subway map

(2) Blue is used on the bus map

(3) Green is used on the same map as red

(4) Purple is used on the same map as orange

(5) Tan is used on the same map as red

6. There will be only one acceptable assignment of colours to each of the two maps if which of the following conditions is added to the original ones?

(1) Purple and tan must be used on the subway

(2) Green and purple must be used on the bus map

(3) Blue cannot be used on the same map as green

(4) Green cannot be used on the same map as yellow

(5) Purple cannot be used on the same map as red

Set 2

There are 6 members in a club: A, B, C, D, E and F
A is not the heaviest while E is not the most intelligent
The lightest of the group is the most intelligent of the group
B is more intelligent than D, who is more intelligent than F
B is heavier than C but lighter than F
A is less intelligent than D but heavier than D
F is more intelligent than A, while D is heavier than F

7. Who is the heaviest of the group?

(1) A

(2) E

(3) D

(4) F

(5) Cannot be determined

8. What is the rank of B in the descending order of weight?

(1) 3rd

(2) 4th

(3) 5th

(4) 2nd

(5) Cannot be determined

9. Who is the most intelligent?

(1) B

(2) E

(3) C

(4) D

(5) Cannot be determined

10. What is the rank of E in descending order of intelligence?

(1) 2nd

(2) 3rd

(3) 4th

(4) 5th

(5) Cannot be determined

11. What is the rank of D in decreasing order of intelligence?

(1) 4^{th}

(2) 5^{th}

(3) 6^{th}

(4) 3^{rd}

(5) Cannot be determined

Set 3

Two or more essences out of a stock of five essences—L, M, N, O, and P are used in making all perfumes by a manufacturer. He has learned that for a blend of essences to be agreeable it should comply with all the rules listed below.
i. A perfume containing L, should also contain the essence N, and the quantity of N should be twice as that of L.
ii. A perfume containing M, must also have O as one of its components and they should be in equal proportion.

iii. A single perfume should never contain N as well as O.
iv. O and P should not be used together.
v. A perfume containing the essence P should contain P in such a proportion that the total amount of P present should be greater than the total amount of the other essence or essences used.

12. Among following which is an agreeable formula for a perfume?

(1) One part L, one part P

(2) Two part M, two parts L

(3) Three parts N, three parts L.

(4) Four parts O, four parts M

(5) Five parts P, five part M

13. Adding more amount of essence N will make which of the following perfumes agreeable?

(1) One part L, one part N, five parts P

(2) Two parts M, two parts N, two parts P

(3) One part M, one part N, one parts P

(4) Two part M, one part N, four parts P

(5) Two part N, one part O, three parts P

14. Among the following, the addition of which combination would make an unagreeable perfume containing two parts N and one part P agreeable?

(1) One part L

(2) One part M

(3) Two parts N

(4) One part O

(5) Two parts P

15. Among the following which combination cannot be used together in an agreeable perfume containing two or more essences?

(1) L and M

(2) L and N

(3) L and P

(4) M and O

(5) P and N

16. Among the below mentioned formulas, which can be made agreeable by the eliminating some or all of one essence?

(1) One part L, one part M, one part N, four parts P

(2) One part L, two parts N, one part O, four parts P

(3) One part L, one part M, one part O, one part P

(4) Two parts L, two parts N, one part O, two parts P

(5) Two parts M, one part N, two parts O, three parts P

Set 4

There are three on-off switches o a control panel A, B, and C. They have to be changed from an initial setting to a second setting according to the following conditions:

i. In case only switch A is the switch on in the initial setting, then turn on switch B.

ii. In case switches A and B are the only switches on in the initial setting, then turn on switch C.

iii. In case all the three switches are on initially setting, then turn off the switch C.

iv. For any other initial setting, turn on all switches that are off and turn off all switches, if any, that are on.

17. In case in the initial setting the switches A and B are on and the switch C is off, then what could be the second setting?

(1) A on, B on, C on.

(2) A on, B off, C on.

(3) A on, B off, C off.

(4) A off, B on, C off.

(5) A off, B off, C on.

18. In case switch B is the only switch on in the initial setting, what must be the second setting?

(1) A on, B on, C on.

(2) A on, B on, C off.

(3) A on, B off, C on.

(4) A off, B off, C on.

(5) A off, B off, C off.

19. In case all the three switches are on in the second setting, which among the following could have been the initial setting?

(1) A on, B on, C on.

(2) A on, B on, C off.

(3) A on, B off, C on.

(4) A on, B off, C off.

(5) A off, B on, C off.

20. In case switch A is off in the second setting, which among the following could have been the initial setting?

(1) A on, B on, C on.

(2) A on, B on, C off.

(3) A on, B off, C on.

(4) A on, B off, C off.

(5) A off, B on, C off.

21. In case only switch B is on in the second setting, which among the following could have been the initial setting?

(1) A on, B on, C on.

(2) A on, B off, C on.

(3) A off, B on, C off.

(4) A off, B off, C on.

(5) A off, B off, C off.

22. Which among the following initial settings leads to a second setting, where only one switch is off?

(1) A on, B on, C off.

(2) A on, B off, C on.

(3) A off, B on, C on.

(4) A off, B on, C off.

(5) A off, B off, C off.

Set 5

A certain musical scale consists of exactly six notes: F, G, H, I, J and K. The notes are arranged from the lowest (the 1st note on the scale) to the highest (the 6th note on the scale). Each note appears once and only once in the scale, and the intervals between the notes are all equal.

J is lower than K

G is higher than F

I is somewhere between F and G

H is the highest note on the scale

23. Which of the following cannot be true?

(1) G is the 2nd note

(2) G is the 3rd note

(3) I is the 2nd note

(4) I is 3rd note

(5) I is the 4th note

24. If J is the 4th note on the scale, which of the following must be true?

(1) F is the 3rd note

(2) F is the 5th note

(3) I is the 3rd note

(4) I is the 2rd note

(5) G is the 1sh note

25. If exactly 2 notes separate F and I, then which of the following must be true?

(1) F is the lowest note

(2) K is the 5^{th} note

(3) K is higher than I

(4) J is somewhere between G and I

(5) K and J are separated by exactly one note

26. If J is the 2nd note, then G and I could be which of the following respectively?

i. 4 and 3 ii. 5 and 3 iii. 5 and 4

(1) i only

(2) iii only

(3) i and ii only

(4) ii and iii only

(5) i, ii and iii

27. If F and I are separated by exactly one note, which of the following must be true?

(1) G is note 4

(2) K is note 5

(3) J is lower than I

(4) I is lower than K

(5) J is between F and I