## VARC

*Read the passage below and answer the questions that follow:*

Americans spend billions of dollars each year on books and seminars claiming to help people change their personalities. These books are built on the assumptions that personality can change, and that changing personality is good: Altering the basics of who you are will make you a better, healthier, happier person. Last week, I wrote about how the latest science of personality suggests that personality can indeed change—either through natural maturation, new responsibilities, or intentional strategies. But would changing your personality actually make you happier?

Recently, a series of studies in Australia looked to see whether changes in personality were associated with increases in life satisfaction. The series drew on the country's HILDA Survey (Household, Income and Labour Dynamics in Australia), which annually assesses the personality, life satisfaction, positive affect, and negative affect of a large, nationally representative sample of Australia's population. In one of the studies, researchers examined the data from 11,104 Australians, ages 18 to 79, over the course of four years. They found that increases in extraversion, conscientiousness, and agreeableness were all associated with increased life satisfaction, whereas increases in neuroticism were associated with decreased life satisfaction.

Another study, conducted on more than 8,000 Australians, found that personality changes during this same time period occurred as often as changes in socio-economic factors, such as income, unemployment, and marital status. Together, these two studies add to a growing body of literature suggesting that personality changes are related to changes in life satisfaction, and that personality change can even be a better predictor of life satisfaction than many of the external variables that are normally considered in economic models of happiness.

Changes from within do matter—and these changes may indeed be undervalued in their role in determining happiness. In fact, they may even have strong economic consequences. Considering the average U.S. household income is around $88,000, a little less anxiety perhaps could be worth leaps up the economic ladder. Not only can a personality makeover affect happiness, but a change in happiness, regardless of the source, can also have a big impact on personality. It's possible, for instance, that circumstances that consistently make a person feel negative can lead that person to be more anxious or cautious than they would be otherwise. Environments that support well-being = may encourage someone to keep acting the way they do, or even to become more conscientious, agreeable, and so forth.

In another study drawing on the HILDA dataset from 2005 to 2009, the psychologist Christopher Soto investigated this possibility among a sample of 16,367 Australians, ages 15 to 93. Consistent with the other studies reviewed here, personality traits predicted subsequent changes in well-being. However, well-being also predicted subsequent changes in personality. People who began the study with high levels of extraversion, agreeableness, conscientiousness, and emotional stability showed increases in happiness, more frequent positive emotions, and less frequent negative emotions. But the reverse direction was also true: those with initially high levels of happiness tended to show growth in agreeableness, conscientiousness, emotional stability, and introversion over time.

*1. The primary purpose of the passage is to:*
A. Show that personality traits remain stable across time regardless of life events.
B. Describe recent evidence that personality can change and that such change affects happiness.
C. Demonstrate that external socio-economic factors are more powerful than personality in determining life satisfaction.
D. Criticize the self-help industry for promoting unfounded claims about personality change.

*2. According to the passage, all of the following statements about the Australian studies on personality and life satisfaction are true EXCEPT:*
A. The studies found that increases in extraversion, conscientiousness, and agreeableness were associated with greater life satisfaction.
B. Higher levels of neuroticism were linked to lower life satisfaction in the sample studied.
C. Personality changes were found to occur more frequently than changes in socio-economic factors such as income or marital status.
D. The findings suggested that personality changes could predict happiness more effectively than traditional economic variables.

*3. Which of the following can be most reasonably inferred from the passage?*
A. People who become more conscientious over time are likely to experience higher life satisfaction.
B. Changes in personality are rare compared to changes in income or marital status.
C. Economic conditions are the primary cause of shifts in personality.
D. Personality change occurs only during adolescence and stabilizes afterwards.

*4. Suppose a company designs workplace programs that foster teamwork, goal-setting, and emotional resilience among employees. Based on the*

*passage's reasoning, which of the following outcomes is most consistent with these programs' likely effects?*
A. Employees' personalities would remain unchanged, though their income might increase.
B. Personality changes would occur only among older employees with prior job experience.
C. Improvements in morale would have no measurable connection to personality traits.
D. Enhanced well-being could reinforce positive personality traits, leading to sustained happiness.

*5. Five jumbled-up sentences (labelled 1, 2, 3, 4 and 5), related to a topic, are given below. Four of them can be put together to form a coherent paragraph. Identify the odd sentence and key in the number of that sentence as your answer.*
1. There are situations in which we may not know what is happening because the outcome of the event hasn't been determined yet.
2. But uncertainty can also occur when we don't yet know what an outcome is, even though it has been determined.
3. One domain in which uncertainty can increase effort in this way is romantic relationships.
4. It's important to recognise that not all uncertainty is the same, and how people respond to uncertainty depends in part on the type of uncertainty they experience.
5. Our responses to both these types of uncertainty illustrate the unexpected usefulness of experiencing uncertainty.

*6. The four sentences (labelled 1, 2, 3 and 4) given below, when properly sequenced, would yield a coherent paragraph. Decide on the proper sequencing of the order of the sentences and key in the sequence of the four numbers as your answer.*
1. As the river deposited alluvial silt, raising the level of the floodplain, and land was reclaimed from marsh, the area available for cultivation in the Nile valley and delta increased, while pastoralism declined slowly.
2. In addition to grain crops, fruit and vegetables were important, the latter being irrigated year-round in small plots.
3. Basin irrigation was achieved by simple means, and multiple cropping was not feasible until much later times, except perhaps in the lakeside area of Al-Fayyūm.
4. Fish was also vital to the diet.

*7. There is a sentence that is missing in the paragraph below. Look at the paragraph and decide where (option 1, 2, 3, or 4) the following sentence would best fit.*

Sentence: If human language use is not affixed in some determinate, predictable fashion to stimuli, then language use is not directly caused by situations.
Paragraph: Humans can produce new expressions that lack any one-to-one relationship with their environments. ___(1)___. Generally, stimuli in a human's local environment appear to elicit utterances, but not cause them. ___(2)___. Among other things, this means that meaningful expressions can be generated about environments far-removed from the local context in which the person speaks, or even about imaginary contexts. ___(3)___. The contrast with animal communication is striking here. ___(4)___. For animals, communication is restricted to the local context of its use.
A. Option 1
B. Option 2
C. Option 3
D. Option 4

*8. Sentences given in the question below, when properly sequenced, form a coherent paragraph. The first and last sentences are A and F, and the four in between are labelled 1, 2, 3, and 4. Choose the most logical order of these four sentences to construct a coherent paragraph from sentences A to F.*
A. Five major Chinook hatcheries release tens of millions of juveniles annually, but this earnest production isn't helping wild salmon.
1. Wild salmon have a phenotypic plasticity that helps them adapt to habitat changes.
2. Hatchery fish compete with wild kin for food, mates, and nest sites, and when a hatchery spawner chooses a wild partner, their domesticated genetics get passed on.
3. A rich portfolio of life history options stabilizes populations by spreading environmental risk across habitats and over time.
4. They can colonize a new stream if one becomes blocked or delay migration if a stream gets too warm.
F. Maintaining this natural diversity is crucial for the long-term survival of salmon populations in the face of environmental challenges.

*9. The passage given below is followed by four alternate summaries. Choose the option that best captures the essence of the passage.*
Scientists from IIT-Delhi and the DRDO recently demonstrated a key advance in quantum cybersecurity that stands to revolutionise how the world will communicate in the future. The world's secrets are currently stored and communicated via channels that are protected by difficult mathematical problems. Over the years, an increasing amount of computing power available to certain actors has forced these problems to become difficult and nigh-uncrackable. The imminence of quantum computing requires this paradigm to change because quantum computers can (at least on paper) solve problems currently out of reach of the most

powerful conventional supercomputers. Quantum cybersecurity is one prong of this change, promising to protect communication channels irrespective of the computing power available to malicious actors.
A. Quantum computers will make all existing cybersecurity systems obsolete, forcing governments and scientists to rebuild global communication networks.
B. Quantum computing will soon replace conventional supercomputers, leading to faster communication across the world.
C. IIT-Delhi and DRDO scientists have developed quantum computers that can solve all existing mathematical problems used in cybersecurity.
D. Quantum cybersecurity offers a way to secure communication channels even against the immense power of quantum computers, marking a major shift in digital security.

*10. There is a sentence that is missing in the paragraph below. Look at the paragraph and decide where (option 1, 2, 3, or 4) the following sentence would best fit.*
Sentence: They see potential far beyond China, believing that plant factories hold real promise in regions with limited arable land and challenging climates.
Paragraph: ___(1)___. Closing the emissions gap would require coordinated efforts across the vast network of indoor farms, which could be a challenge. ___(2)___. But perhaps that shouldn't overshadow the several other "multifaceted benefits" the researchers describe in their paper. ___(3)___. With the global population rounding up to 10 billion by 2050, and the climate growing less predictable all the while, the researchers seem confident that upscaling indoor farming could provide the "promising transformation" needed to meet these future challenges. ___(4)___. But clearly there's still a long way to go to reach that reality.
A. Option 1
B. Option 2
C. Option 3
D. Option 4

## DILR

Six badminton players, Neha, Lata, Jaya, Mamata, Kavita and Oorja participated in a tournament which was played across 5 days, and each player played exactly one match on each day. Every player played exactly one match against every other player during the course of the tournament. Each match consists of only one set. Each set has multiple games. The person who wins 11 games first with a lead of at least 2, is the winner of a particular match. If no one manages to win 11 games with a lead of 2, then the match continues till one of the players has managed such a lead. The following table gives the number of games won by each player on each of the given days.

| | **Mon** | **Tue** | **Wed** | **Thu** | **Fri** |
|---|---|---|---|---|---|
| **Jaya** | 13 | 12 | 11 | 12 | 4 |
| **Kavita** | 9 | 11 | 9 | 11 | 8 |
| **Lata** | 11 | 8 | 7 | 14 | 11 |
| **Mamata** | 11 | 13 | 11 | 11 | 11 |
| **Neha** | 8 | 11 | 9 | 7 | 11 |
| **Oorja** | 11 | 14 | 11 | 5 | 6 |

*11. For how many matches can the results be uniquely determined?*
A. All 15
B. 14
C. 13
D. 12

*12. How many games did Mamata win?*

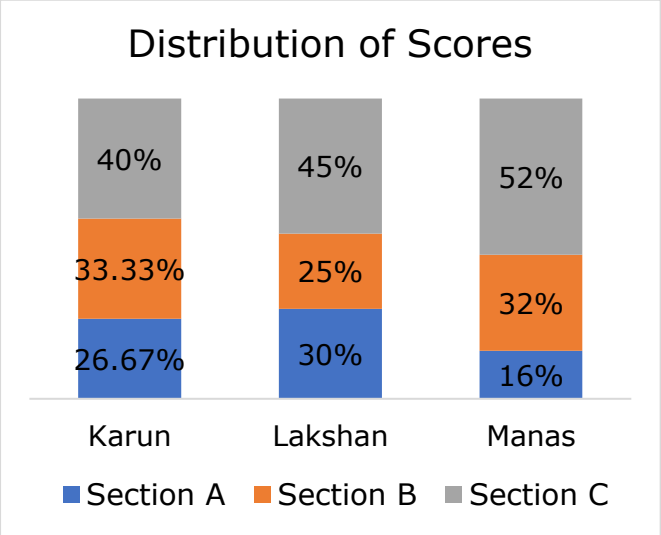
*13. On which day did Lata play against Jaya?*
A. Monday
B. Tuesday
C. Wednesday
D. Thursday

*14. Which of the following games was played on Friday?*
A. Lata vs Kavita
B. Mamata vs Oorja
C. Neha vs Jaya
D. Lata vs Jaya

Karun, Lakshan and Manas appeared in an exam that had three sections- A, B and C. Each section has 20 questions. The marking scheme is:

| Section | Marks awarded for Correct Answer | Marks deducted for Incorrect Answer |
|---|---|---|
| A | 3 | 1 |
| B | 4 | 1 |
| C | 5 | 2 |

Each one of them attempted all the questions in the paper. The bar graph gives the marks obtained in a section as a percentage of the total marks obtained for each of the students.




*15. What is the minimum possible score of Karun*?
A. -30
B. -45
C. -60
D. -80

*16. How much did Lakshan score on the test?*

*17. How many questions did Manas attempt correctly in the test?*
A. 35
B. 37
C. 40
D. Cannot be determined

*18. Which of the following cannot be the total marks obtained by the three students?*
A. 465
B. 360
C. 325
D. 255

*19. Which of the following statements is definitely true?*
A. Manas scored the least marks in section C
B. No one scored more than 50 marks in section B
C. Exactly two of the students scored equal marks in section A
D. Exactly two of the students scored equal marks in section B

*20. If Karun and Lakshan had equal marks in section C, what is the difference between their total marks?*

## QA

*21. A certain sum amounts to ₹81,840 in 3 years and ₹92,400 in 5 years at a fixed rate of simple interest. Had the sum been lent at compound interest at the same rate, in how many years would it double itself?*
A. 8
B. 9
C. 10
D. 12

*22. If the sum of three integers is 10, then the sum of the fourth powers of the integers cannot be less than*

*23. Find the number of distinct factors of $(570570)^2$.*
A. 2187
B. 2304
C. 1872
D. 2025

*24. The work done by 4 men in 12 days is equal to the work done by 6 women in 10 days and is also equal to the work done by 8 children in 9 days. A man, a woman and a child working together take 10 days to complete a particular job. In how many days will the same job be completed by 2 women and 5 children working together?*

*25. A rectangular field is 156 m long and 81 m broad. A well with a length of 13 m and a breadth of 12 m is dug inside the field, and the mud dug out is spread uniformly over the rest of the field to a thickness of 25 cm. What will be the depth of the well?*
A. 15 m
B. 16 m
C. 18 m
D. 20 m

*26. Amol and Bishnu start running simultaneously from diametrically opposite ends of a circular track, heading towards each other at speeds of 12 km/h and 24 km/h, respectively. Every 8 minutes, each of them reduces their speed to half of what it was at the start of that interval. If the length of the circular track is 1500 meters, how many times will they meet? Assume they continue running along the circular path without changing direction.*
A. 5
B. 6
C. 7
D. Infinite

*27. $\log_a N = p_1 + q_1$, $\log_b N = p_2 + q_2$, $\log_c N = p_3 + q_3$, where $p_1$, $p_2$, $p_3$ are integers and $q_1$, $q_2$, $q_3 \in [0, 1)$. For $a = 3$, $c = 7$, $p_1 = 5$, $p_2 = 3$, $p_3 = 2$, and $b$ is such that the largest integral value of $N$ is 342, find the number of integral values $b$ can assume.*

A. 3
B. 4
C. 5
D. 6

*28. A square with side length x is inscribed in a right triangle with sides 3, 4, and 5 such that one vertex of the square coincides with the right-angle vertex of the triangle. Another square with side length y is inscribed in the same triangle such that one side of the square lies along the hypotenuse of the triangle. What is the value of x/y?*

A. 13/12
B. 12/13
C. 37/35
D. 35/37

*29. A wheel with three numbers on it, zero, one, and two, is spun so that there is a 40% chance that the wheel lands on zero, a 50% chance the wheel lands on one, and a 10% chance the wheel lands on two. You receive back the amount corresponding to the number that the wheel lands on. What is the expected amount of money that you will get back from the game if you put Rs. 100?*

A. 50
B. 60
C. 70
D. 75

*30. A 1-litre water-alcohol mixture M1 contains 40% water while another 1-litre water-alcohol mixture M2 contains 70% water. x ml is taken out from each of the two mixtures and put in two separate containers. The quantity taken out from M1 is mixed into the remaining part of M2, and the quantity taken out from M2 is mixed into the remaining part of M1. If the two mixtures contain equal quantities of water after the operation, what is the value of x'?*

*A. 200*
*B. 300*
*C. 400*
*D. 500*