Section – V

Directions for questions 141 to 145: Answer the questions based on the following information.

We are three friends — Saptarsh, Rushat and Trivendra — each has some red and white balls.

I. Saptarsh has atleast one red ball and twice as many white balls as red balls.

II. Rushat has atleast one red ball and three times as many white balls as red balls.

III. Trivendra has atleast one red ball and three more white balls than red balls.

IV. When I tell you the number of balls we have altogether - the number is less than 25, you will know how many balls I have, but not how many balls each of the others has".

141. How many balls do these three people have altogether?
a. 12 b. 19 c. 24 d. Cannot be determined

142. Who is the speaker of the given text?
a. Saptarsh b. Rushat c. Trivendra d. Cannot be determined

143. How many balls does Saptarsh has?
a. 3 b. 9 c. 6 d. Cannot be determined

144. How many balls does Rushat has?
a. 8 b. 12 c. 4 d. Cannot be determined

145. Who has the maximum number of balls among these three?
a. Saptarsh b. Rushat c. Trivendra d. Cannot be determined

Directions for questions 146 to 148: Answer the questions based on the following information.
The following steps refer to a certain software programme. The steps given in the code (in simple English language) shows the stages of working of the programme.

Step 0 : Start of programme.

Step 1 : Select X, where X is a natural number.

Step 2 : If X is a prime, go to Step 5.

Step 3 : If X is an even number, convert X to Y. Y is defined in Step 6. Go to Step 6.

Step 4 : If X is an odd number, convert X to Y. Y is defined in Step 7. Go to Step 7.

Step 5 : Display output as square root of X. Go to Step 9.

Step 6 : Y is defined as equal to two less than the square of X. Go to Step 8.

Step 7 : Y is defined as equal to 5 more than the square of X. Go to Step 8.

Step 8 : Display output as Y.

Step 9 : End of programme.

146. Find the value of X if the output number displayed is 4.121.
a. 4 b. 7 c. 17 d. 21

147. Find the value of X if the output number displayed is 2406.
a. 33 b. 47 c. 48 d. 49

148. Find the value of X if the output number displayed is 14.
a. 3 b. 4 c. 5 d. Both (a) and (b)

Directions for questions 149 to 153: The house tax inspector, Choitram, was evaluating the houses of Arpan, Bunty, Chhotu, Dinku and Eshwar. Their houses belong to one of the categories – A, B, C, D, and E (not necessarily in that order). Each category has one house only. However, each house has a different category as far as the year of completion of the house is concerned, which are – prior to 1970, 1970 to 1979, 1980 to 1989, 1990 to 1999 and 2000 onwards. Only one house belongs to each of the above categories. A house constructed earlier than another will mean that the two houses have different categories (as per the condition given) as far as the year of completion is concerned. Each of these houses are either self-occupied or tenanted (given out on rent).

Use the information below to answer questions that follow.
I. Arpan's house does not belong to category B or D.
II. Chhotu's house is one of the two houses which are tenanted.
III. Bunty's house was constructed earlier than Arpan's, but later than Dinku's.
IV. Eshwar's house is the newest and Dinku's house is the oldest. None of them belong to categories A or B.
V. Bunty's house belongs to category D.
VI. The tenanted houses belong to categories B and D.
VII. Chhotu built his house in 1987.
VIII. Eshawar stays with his family in his house.

149. Whose houses are not self-occupied?
a. Arpan and Bunty b. Bunty and Chhotu
c. Chhotu and Dinku d. Dinku and Eshwar

150. What is the correct sequence (oldest to newest) of houses in terms of year of construction of the house?
a. Dinku, Bunty, Arpan, Chhotu, Eshwar b. Dinku, Chhotu, Bunty, Arpan, Eshwar
c. Dinku, Bunty, Chhotu, Arpan, Eshwar d. Dinku, Arpan, Bunty, Chhotu, Eshwar

151. Which of the following pairs are correct in terms of categories of houses?
I. Arpan – A
II. Dinku – D
III. Chhotu – B
a. I only b. II only c. III only d. Both (a) and (c)

152. If Eshwar's house belongs to the category E, to which category, does Dinku's house belong to?
a. A b. B c. C d.D

153. Which of the following is the correct sequence (newest to oldest) among self-occupied houses?
a. Dinku, Arpan, Eshwar
b. Arpan, Dinku, Eshwar
c. Eshwar, Arpan, Dinku
d. Eshwar, Dinku, Arpan

Directions for questions 154 to 156: Answer the questions based on the following information.
There are 6 shopping malls in a city – A, B, C, D, E, F. Each of these are located in a manner such that we obtain a circle (or a ring) by joining them in order (not necessarily the same as given above). The entrance to all malls face towards the centre of this circle and their relative positions are considered based on their entrances.

I. Mall A is adjacent to mall D and to the right of it. It is diagonally opposite to mall E.
II. Mall C is located diagonally opposite to mall B, which is adjacent to mall A.

154. If the alternate malls in the circle are considered as a mall triplet, which of the following is the correct pair of mall triplet ?
a. AEF and BDC
b. ABD and EFC
c. BFD and ACE
d. AFC and BED

155. Which malls are adjacent to mall F?
a. C and E
b. B and E
c. B and A
d. None of these

156. If Sanjay wants to visit the malls in a sequence along this circle, and he starts from mall C (and returns to the same after visiting the other malls), which of the following is the sequence that he follows?
a. C, D, A, F, E, B, C
b. C, E, F, A, D, B, C
c. C, E, F, B, A, D, C
d. C, D, A, B, E, F, C

Directions for questions 157 and 158: Answer the questions based on the following information.
There are four animals in one block in a zoo — a giraffe, a zebra, a kangaroo, and a monkey. The animals re kept in a cage, where each cage is of different sizes. Each cage contains one animal and each of the animals is in a cage. The cages are arranged in a line and the largest cage occupies the rightmost position. The smallest cage is not in any of the end positions (of the line) and is not adjacent to the largest cage. The smallest cage is occupied by the monkey and the largest by the giraffe. The second largest cage belongs to the zebra and is at one end.

157. Which animals occupy the middle-most cages?
a. Zebra and giraffe
b. Kangaroo and monkey
c. Monkey and giraffe
d. Zebra and kangaroo.

158. Kangaroo occupies a cage which is at
a. the rightmost position
b. the leftmost position
c. the second position from left
d. the second position from right

Directions for questions 159 and 160: Answer the questions based on the following information.
X_1, X_2, X_3, X_4, X_5, and X_6 are 6 persons, of which only two persons have the same height. Let all person in each of the triplets (X_1, X_2, X_3); (X_4, X_5, X_6); (X_2, X_3, X_4); (X_5, X_6,X_1); (X_1, X_3 ,X_6) and (X_4, X_2,X_5) be of different heights.

159. The persons with same height are necessarily
a. X_1 and X_4 b. X_2 and X_6 c. X_3 and X_5 d. Either (a) or (b) or (c)

160. How many pairs of persons are possible which may have the same height?
a. 1 b. 2 c. 3 d. 4

Directions for questions 161 to 170: Read the following arguments and answer the questions that follow:

161. Prediction is an essential part of justifying claims of knowledge in science: by testing further predictions derived from our theories, we must perpetually lay them open to refutation; it is in this sense that scientific knowledge is only provisional.
But we don't do science just to increase our knowledge, we also apply that knowledge. We can use scientific knowledge precisely because it allows us to make predictions, and very often the predictions made by scientists have been very accurate and useful. Perhaps as a result, there is another widespread, if often unspoken, belief: that science will eventually enable us to predict everything, at least in principle if not in practice.

If the above argument is true, then it must also be true that
a. in a completely deterministic universe, if we could at any point in time know the present state of the universe (or a closed system within it) completely, we would be able to calculate ahead to its state at any point in the future.
b. everything that has happened, everything that is happening and everything that will happen cannot be unalterably determined from the first instant.
c. scientists have not been able to make accurate predictions for complicated systems, such as the earth's weather.
d. None of the above

162. Popper's theory claims that evolution proceeds by survival of the fittest, but it defines 'the fittest' as those who survive and reproduce the most. This turns the theory into an empty claim that the fittest are the fittest, ...

The conclusion would be more properly drawn if it were made clear that...
a. arctic organisms like polar bears have a larger volume-to-surface-area ratio than their conspecifics in more temperate zones.
b. many races of animals have become extinct in the world's history.
c. evolutionary biologists do in fact have a way of identifying adaptations independent of rates of reproduction, so they need not define fitness in terms of it.
d. All of the above

163. Many green-thinkers are convinced that a great deal of modern science, in the way it has been formulated and controlled, is antithetical to a holistic approach, and that the dichotomy is unbridgeable. 'Socially irresponsible science not only pollutes our rivers, air and soil, produces CS gas for Northern Ireland, defoliants for Vietnam and stroboscopic torture devices for police states. It also degrades, both mentally and physically, those at the point of production, as the objectivisation of their labour reduces them to mere machine appendages.'

Which of the following inferences is best supported by the statement made above?

a. Many scientists declare that their science is intrinsically neutral.
b. There is very little science which is not funded by concerns whose main interest is commercial viability, and a great deal of scientific research and development continues because multinationals and militaristic governments fund it and because scientists choose to do it, not 'because it is there to be done.'
c. To a scientist, research for nuclear weapons is just pure higher mathematics untrammelled by blood, poison and destruction. All that is none of his business.
d. Science and technology cannot be humanely applied in an inherently inhuman society

164. A valid logical argument must *guarantee* that whenever the premises are true then the conclusion is true; so an argument is not valid if one could find any case in which a false conclusion could, by that argument, be deduced from true premises.
Note that whereas propositions are either true or false, arguments are valid or not valid: they can*not* be true or false.
The premises and conclusions of the following arguments are all true, but the arguments by which the conclusions are arrived at are not all valid.

Which ones are not?

a. Every mathematician can solve this equation: $\sin z = 2$, but students doing Maths here are not mathematicians, so they cannot solve it.
b. Some Americans are black, and some Americans are criminals. Therefore some blacks are criminals.
c. If someone has a good heart, they will help others. And Mother Theresa definitely did help others, so she must have had a good heart.
d. None of the above

165. One reason that Darwin's theory has given rise to so much resistance is of course that it 'threatens' the special position human beings have assumed they have, as either especially created by God, or as the product of a purposeful development, culminating in *homo sapiens*. Even A. R. Wallace, an early champion of evolution, recognising that the hunters and gatherers of the time when we evolved were biologically our equals, in the end refused to accept that our highest faculty, the mind, could be the result of evolution.
"Our law, our government, and our science continually require us to reason through a variety of complicated phenomena to the expected result. Even our games, such as chess, compel us to exercise all these faculties in a remarkable degree. Compare this with the savage languages, which contain no words for abstract conceptions; the utter want of foresight of the savage man beyond his

simplest necessities; his inability to combine, or to compare, or to reason on any general subject that does not immediately appeal to the senses. ...

Which of the following judgments would most logically complement and complete A.R. Wallace's argument?

a. ... Natural selection could only have endowed savage man with a brain a few degrees superior to that of an ape, whereas he actually possesses one very little inferior to that of a philosopher."
b. … Darwinism received a hostile reception from most of the Christian world in the 19th century."
c. … We do not know how God created, what processes he used, for God used processes which are not now operating anywhere in the natural universe.
d. None of the above

166. The great debate about the usefulness of technology hinges on its subversion by scientism and the scientific imperative, which since the nineteenth century has been intimately linked with capitalism, centralisation, and the idea of progress.
Ecologists are not hostile to technology *per se,* and the use of advanced technologies of many kinds is essential to the development of an ecological society. ... It is a matter of choice whether technology works for the benefit of people or perpetuates certain problems, whether it provides greater equity and freedom of choice or merely intensifies the worst aspects of our industrial society.

Questions posed by ecologists to make their voice heard would include which of the following:

a. Which technologies are environmentally sound?
b. Who is technology benefiting?
c. Who is making decisions about which technologies are developed and which not?
d. All of the above

167. We can, and we should, expect a religious believer (or in fact anyone who holds — or claims to hold — some life-position) to lead their own life according to their faith or outlook.

In which of the following cases should we doubt the religious stand of a believer?

a. An atheist prays when he has a bad toothache.
b. Someone proclaims himself a Muslim and either defends the 1989 *fatwa* (= legal judgment; in this case a death sentence) against the author Salman Rushdie, or condemns as misguided, or plain wrong, the mullahs who pronounced it.
c. If someone proclaims himself a Christian but he incites others to violence.
d. (a) and (c)

168. For a great part of the history of mankind, and still in many parts of the world, religion and ideology have not just been an individual matter, to be discussed in a friendly and constructive way.

The conclusion would be more properly drawn if it were made clear that...
a. many people do not find it difficult to take a critical approach to something that is so fundamental as to who they are.
b. a certain kind of mutual understanding affects all discussions of religions and ideologies
c. differences of religion or ideology have been, and are, at the root of many conflicts, and many wars have been religious wars
d. None of the above

169. Predestination expresses the doctrine that all events are determined by the action of God's will; or the narrower doctrine associated with the French reformer Calvin (1509-64), that the final salvation of mankind is foreordained by God from eternity.

Which of the following, if true, would provide the strongest evidence against the above?
a. If God is omniscient and omnipotent, and if everything happens of necessity, then man does not have free will and therefore cannot commit sin.
b. Man can have free will despite God's foreknowledge of our actions.
c. God's absolute foreknowledge of the course of man's inclinations can be reconciled with human freedom.
d. None of the above

170. ''It is proved,'' Pangloss used to say, ''that things cannot be other than they are, for since everything is made for a purpose, it follows that everything is made for the best purpose. Observe: our noses were made to carry spectacles, so we have spectacles. Legs were clearly indented for breeches, and we wear them. ... And since pigs were made for eating, we eat pork all the year round. It follows that those who maintain that all is right talk nonsense; they ought to say that all is for the best.''
Which of the following, if true, most seriously weakens the conclusion drawn above?
a. Men were not born wolves, yet they have become wolves.
b. God did not give man bayonets, yet they have made themselves bayonets and guns to destroy each other.
c. Private misfortunes contribute to the general good.
d. (a) and (b) only