

SAMPLE PAPER - HAT - MANAGEMENT SCIENCES (MS)

Fully Solved Version with Answers & Explanations

VERBAL REASONING

Complete the sentences by choosing the best option from the given lettered choices (A to D) below each.

1. Saima _____ she was waiting at the bus stop.

A. has said

✓ B. said (CORRECT ANSWER)

C. say

D. says

Explanation: The sentence reports a past action ("she was waiting" is past continuous), so the reporting verb must also be in simple past tense. "Said" correctly matches the past time frame of the sentence, while "has said" (present perfect), "say" (present), and "says" (present) are inconsistent with the past tense clause that follows.

2. The explorers wanted to go inside the cave _____ danger.

A. although

✓ B. despite (CORRECT ANSWER)

C. even though

D. since

Explanation: “Despite” is a preposition and is followed directly by a noun (“danger”) without needing a full clause. “Although” and “even though” are conjunctions that require a subject + verb clause (e.g., “although it was dangerous”), and “since” indicates reason or time, which does not fit the contrast being expressed here.

Each of the following questions consists of a sentence with all or part of the sentence underlined. Select (A) if the original is best; otherwise choose the best phrase from the options.

3. We usually have lunch about two.

A. We usually have lunch about two

✓ B. We usually have lunch around two (CORRECT ANSWER)

C. We usually have lunch on two

D. We usually have lunch two o’ clock

Explanation: When referring to an approximate clock time, standard written English prefers “around two” over “about two.” “On two” is grammatically incorrect (wrong preposition for time), and “two o’clock” without a preposition creates an incomplete, unnatural construction. Option B is therefore the best revision.

Four lettered pairs (A to D) follow a related pair of words given in the question. Select the pair that best expresses a relationship similar to the original pair.

4. BUILDING : BRICKS ::

- A. children : home
- B. computer : monitor

✓ **C. language : words (CORRECT ANSWER)**

- D. satellite : star

Explanation: A building is constructed from (made up of many) bricks as its basic units. Similarly, a language is constructed from (made up of many) words as its basic units. "Computer : monitor" is a whole-and-one-part relationship, not whole-made-of-many-identical-units, so it does not match as precisely.

5. HEN : COOP ::

- A. cock : crow

✓ **B. dog : kennel (CORRECT ANSWER)**

- C. elephant : cow
- D. lion : charge

Explanation: A coop is the shelter/enclosure in which a hen is kept. In the same way, a kennel is the shelter in which a dog is kept. The other pairs describe an animal with a sound/action (crow, charge) or an unrelated pairing (elephant, cow), not an animal-and-its-shelter relationship.

Choose the lettered word or phrase that is MOST NEARLY OPPOSITE in meaning to the word in capital letters.

6. An ARDUOUS job is not _____.

- A. beneficial
- B. dangerous

✓ C. easy (CORRECT ANSWER)

- D. lucrative

Explanation: "Arduous" means difficult, requiring great effort. Its most direct opposite is "easy." The other options (beneficial, dangerous, lucrative) describe unrelated qualities rather than the opposite of "difficult."

7. The plan remained COVERT and was not _____.

- A. changed

✓ B. disclosed (CORRECT ANSWER)

- C. implemented
- D. rejected

Explanation: "Covert" means secret or hidden. Something that stays covert is, by definition, not "disclosed" (revealed/made public). "Changed," "implemented," and "rejected" describe actions unrelated to secrecy versus openness.

Choose the lettered word or phrase that is MOST NEARLY SIMILAR in meaning to the word in capital letters.

8. The presenter showed LEVITY and remained _____ all the time.

- A. angry
- B. confident
- C. nervous

✓ D. non-serious (CORRECT ANSWER)

Explanation: “Levity” means a lack of seriousness, or light-heartedness. A presenter who shows levity behaves in a “non-serious” manner throughout, which directly matches the meaning of the word.

9. If you PORE over something you _____ it _____.

- A. accept, happily
- B. create, unknowingly
- C. lend, grudgingly

✓ D. read, thoroughly (CORRECT ANSWER)

Explanation: To “pore over” something means to study or read it closely and carefully. This matches “read it thoroughly,” while the other options describe actions unrelated to careful reading/study.

Reading Passage (for Question 10): The passage describes how John Rolfe developed tobacco farming in the Virginia colony from 1610 onward, turning it into the colony's main economic crop. It explains that tobacco cultivation drove westward expansion, encouraged slave labor, and shaped Virginia's early history, including the founding of the House of Burgesses (representative government) and the arrival of the first enslaved Africans, both in 1619.

Question 10 is based on the passage above.

10. Tobacco was a _____ plant before the British colonists began to grow it for selling.

- A. aquatic
- B. poisonous
- C. unknown

✓ **D. wild (CORRECT ANSWER)**

Explanation: The passage states that John Rolfe “perfected methods of raising and curing” tobacco, implying it existed naturally beforehand and was not yet cultivated commercially. This indicates tobacco was originally a wild plant before the colonists began systematically growing and selling it as a cash crop.

ANALYTICAL REASONING

Only in a social milieu in which many parties are scheduled for the same time do party hosts buy visually striking invitations in order to attract the invited guests to the parties. A business that produces visually striking party invitations is currently located in Los Angeles. Thus, it can be concluded that the schedule of parties in Los Angeles must be very crowded.

11. The argument above is properly drawn if the truth of which of the following is assumed?

A. At most parties, there are uninvited guests who add to the number of people in attendance

✓ **B. Many of the visually striking party invitations produced in Los Angeles are bought for parties in Los Angeles (CORRECT ANSWER)**

C. Party guests can attend no more than one party per evening

D. There is also a business in Los Angeles that produces ordinary party invitations

Explanation: *The argument concludes something about Los Angeles's party schedule based only on the fact that a striking-invitation business is located there. This only follows logically if the invitations that business produces are actually being bought and used for parties in Los Angeles itself (rather than shipped elsewhere). Option B supplies exactly this missing link between "where the invitations are made" and "where they are used," which the argument needs to be valid.*

An oil company conducted an investigation of the environmental effects of oil spills and concluded that waterfowl exposed to oil spills have a 95 percent survival rate. The investigation, based on the examination of waterfowl admitted to a veterinary clinic near the site of a recent oil spill, noted that only one in twenty affected waterfowl died.

12. Which of the following, if true, would cast the most serious doubt on the investigation's conclusion about the survival rate of the waterfowl?

- A. Each affected waterfowl that died was larger than average for its species
- B. Many of the affected waterfowl that survived the spill had suffered serious injuries
- C. Most of the affected waterfowl were exposed to oil floating on the surface of the water

✓ D. Only those affected waterfowl that appeared to stand a good chance of survival were brought to the veterinary clinic (CORRECT ANSWER)

Explanation: *The survival-rate figure was based solely on waterfowl that were brought to the clinic. If only birds that already seemed likely to survive were the ones brought in (option D), the sample would be biased toward healthier birds, making the true survival rate among all affected waterfowl (including those not brought to the clinic, who may have died in the wild) much lower than 95 percent. This directly undermines the conclusion.*

In a recent study on the connection between brain abnormalities and violent behavior, the researcher examined more than three hundred people who had engaged in unusually violent behavior toward friends and family members. In most of the people studied, the researcher found clues of brain abnormalities, including evidence of past brain injury and physical abnormality. The researcher concluded that evidence of brain abnormalities could be used to predict violent behavior.

13. Which of the following, if true, would most seriously weaken the researcher's conclusion?

A. A wide variety of violent actions were exhibited by those studied

B. The brain abnormalities discovered in those studied are of two distinct kinds

✓ C. The incidence of brain abnormalities in the general population is as high as that in the group examined (CORRECT ANSWER)

D. Those studied in the experiment acted violently toward strangers as well as toward people they knew

Explanation: *The researcher's conclusion assumes that brain abnormalities are distinctive to violent individuals and can therefore predict violence. If, as option C states, non-violent people in the general population show brain abnormalities at an equally high rate, then brain abnormalities do not actually distinguish violent people from non-violent people, and cannot be used as a predictor of violent behavior.*

Questions 14–17 — The owner of a computer store is planning a window display of five products. Three are to be hardware items selected from K, L, M, N, and O, and two are to be software manuals selected from R, S, T, and U. The display items are to be selected according to the following conditions: (1) If K is displayed, U must be displayed. (2) M cannot be displayed unless both L and R are also displayed. (3) If N is displayed, O must be displayed, and if O is displayed, N must be displayed. (4) If S is displayed, neither T nor U can be displayed.

14. If N and O are not displayed, all of the following must be displayed EXCEPT:

- A. K
- B. M
- C. R

✓ D. T (CORRECT ANSWER)

Explanation: With N and O excluded, only K, L, and M remain as possible hardware items, and exactly 3 hardware items are needed — so K, L, and M must ALL be displayed. Since M is displayed, rule (2) forces R to be displayed as well (along with L, which is already in). Since K is displayed, rule (1) forces U to be displayed. That already fills both software slots with R and U, so S and T cannot be displayed. T is therefore the one item that must NOT be displayed — the exception.

15. If T and U are displayed, which of the following must also be displayed?

- A. K
- B. L
- C. M

✓ D. N (CORRECT ANSWER)

Explanation: If T and U fill both software slots, then R is not displayed. Rule (2) says M requires both L and R, so without R, M cannot be displayed. That leaves K, L, N, and O to fill the 3 hardware slots. Rule (3) says N and O must appear together or not at all — but if both were excluded, only K and L would remain (just 2 items, not enough for 3 slots). So N and O must both be displayed, meaning N must be displayed.

16. Which of the following is an acceptable display?

✓ A. K, L, M, R, U (CORRECT ANSWER)

B. K, M, N, O, R

C. L, M, O, R, S

D. M, N, O, T, U

Explanation: Option A (K, L, M, R, U) satisfies every rule: K requires U — present; M requires L and R — both present; N/O are both absent, which is fine; S is absent, so rule (4) doesn't apply. Option B has 4 hardware items (K, M, N, O), which exceeds the allowed 3. Option C displays O without N, violating rule (3). Option D displays M without R, violating rule (2).

17. If K and T are the first two display items to be selected, how many acceptable groups of items are there that would complete the display?

✓ A. 1 (CORRECT ANSWER)

B. 2

C. 3

D. 4

Explanation: Since K is displayed, U must also be displayed (rule 1). Since T is displayed, S cannot be displayed (rule 4 works in reverse here — S and T cannot coexist), so the two software slots are forced to be exactly T and U, leaving no room for R. Without R, M cannot be displayed (rule 2). That leaves L, N, and O as candidates for the two remaining hardware slots alongside K. Since N and O must appear together or not at all, choosing just L with N (or just L with O) is invalid, and choosing L alone doesn't fill both remaining slots. The only valid combination is N and O together. This gives exactly one acceptable completion: K, N, O, T, U.

Figures issued by the government of a certain country show that in 1980 the public sector and the private sector each employed the same number of people. Between 1980 and 1984, according to the government, total employment decreased in the public sector more than it increased in the private sector.

18. If, according to governmental figures, the unemployment rate in this country was the same in both 1980 and 1984, which of the following statements must be true about this country?

✓ A. Fewer people were in the labor force, as counted by the government, in 1984 than in 1980 (CORRECT ANSWER)

B. The competition for the available work increased between 1980 and 1984

C. The government's figures for total employment increased between 1980 and 1984

D. The number of people counted by the government as unemployed was the same in 1980 and 1984

Explanation: Total employment fell between 1980 and 1984 (the public-sector loss exceeded the private-sector gain). If the unemployment RATE (unemployed $\div$ labor force) stayed the same while the number of employed people dropped, the total labor force counted by the government must also have shrunk — otherwise a drop in employment with a constant labor force would necessarily raise the unemployment rate. So the labor force must have been smaller in 1984.

Luis has just seen two ravens; therefore, the next bird Luis sees will be a raven.

19. Which of the following, if true, most strengthens the argument above?

- A. Luis has seen ravens in other places than the place where he is now
- B. Luis is in California, and ravens are occasionally seen in California
- C. Ravens generally build their nests at a considerable distance from the nests of other ravens

✓ **D. Ravens tend to move in flocks (CORRECT ANSWER)**

Explanation: The argument is a hasty generalization from seeing two ravens to predicting the next bird will also be a raven. Option D provides a genuine mechanism that supports the prediction: if ravens tend to move together in flocks, seeing two ravens together makes it more plausible that another raven (a flock member) would be the next bird seen, strengthening the argument more than the other options.

It is impossible to believe scientific predictions that a long “nuclear winter” would envelop the Earth as a result of nuclear war. Atmospheric scientists and weather experts cannot reliably and accurately predict tomorrow's weather. Yet the effect of nuclear explosions on local and worldwide atmospheric conditions must follow the same laws that control everyday weather changes. If the weather cannot be predicted with present knowledge, neither can a nuclear-winter scenario.

20. Which of the following, if true, would most seriously weaken the argument made above that if scientists cannot reliably predict the daily weather, their predictions of a “nuclear winter” cannot be believed?

A. Scientists' predictions about a nuclear winter are necessarily speculative, since they cannot be verified by harmless experimentation

✓ B. The scientific theory of a nuclear winter is concerned with drastic climatic changes rather than day-to-day fluctuations in the weather (CORRECT ANSWER)

C. The scientific theory of a nuclear winter uses data that is available to those who forecast the daily weather

D. Weather forecasters usually do not insist that their predictions are infallible

Explanation: The original argument assumes that predicting large-scale nuclear-winter climate effects requires the same kind of precision as predicting day-to-day weather. Option B breaks this assumed equivalence: nuclear-winter theory addresses broad, drastic long-term climatic shifts, not the short-term, minute fluctuations that make daily weather forecasting hard. This shows the two types of prediction aren't really comparable, weakening the argument.

QUANTITATIVE REASONING

21. Sum of first hundred natural numbers is _____.

- A. 4500
- B. 4850
- C. 5000

✓ D. 5050 (CORRECT ANSWER)

Explanation: Using the sum formula $n(n+1)/2$ with $n = 100$: $100 \times 101 / 2 = 10100 / 2 = 5050$.

22. The price of 15 birds is Rs. 180. Then the price of such 20 birds is Rs. _____.

- A. 200
- B. 220
- C. 225

✓ D. 240 (CORRECT ANSWER)

Explanation: Price per bird = $180 \div 15 = \text{Rs. } 12$. Price of 20 birds = $12 \times 20 = \text{Rs. } 240$.

23. If $A = \{1, 2, 3\}$ and $B = \{a, b, c\}$ then A and B are _____ sets.

- A. equal

✓ B. equivalent (CORRECT ANSWER)

- C. inverse
- D. power

Explanation: Sets A and B contain different elements, so they cannot be “equal.” However, both sets contain exactly 3 elements each, meaning there is a one-to-one correspondence between them — this makes them “equivalent” sets (same cardinality), not equal sets.

24. Angles drawn inside the semi-circle are _____.

A. 30°

B. 60°

✓ C. 90° (CORRECT ANSWER)

D. 270°

Explanation: By the Angle in a Semicircle Theorem (Thales' theorem), any angle inscribed in a semicircle — formed by joining the two endpoints of the diameter to any point on the circle — is always a right angle, i.e., 90° .

25. The graph of the function $f(x) = -5x^2 + 3x + 7$, is concave _____.

✓ A. down (CORRECT ANSWER)

B. left

C. right

D. up

Explanation: For a quadratic function $ax^2 + bx + c$, the sign of the leading coefficient a determines concavity. Here $a = -5$, which is negative, so the parabola opens downward and is concave down (this also means the graph has a maximum point rather than a minimum).

26. Two cars leave a point and one moves west with a speed of 30km/h and other moves towards north side with a speed of 40km/h. After 2 hours they will be at a distance of _____ km from each other.

A. 50

B. 70

✓ C. 100 (CORRECT ANSWER)

D. 125

Explanation: After 2 hours, the westbound car has travelled $30 \times 2 = 60$ km, and the northbound car has travelled $40 \times 2 = 80$ km. Since west and north are perpendicular directions, the distance between the cars is the hypotenuse of a right triangle: $\sqrt{(60^2 + 80^2)} = \sqrt{(3600 + 6400)} = \sqrt{10000} = 100$ km.

27. The value of $\log_{\blacksquare} 27$ is _____.

A. 1

✓ B. 3 (CORRECT ANSWER)

C. 6

D. 9

Explanation: $\log_{\blacksquare} 27$ asks: "3 raised to what power equals 27?" Since $3^3 = 27$, the value of $\log_{\blacksquare} 27$ is 3.

28. The probability of occurring two heads in tossing one coin twice is _____.

✓ A. $1/4$ (CORRECT ANSWER)

B. $1/3$

C. $1/2$

D. 1

Explanation: Each toss has 2 possible outcomes (Head or Tail), so two tosses have $2 \times 2 = 4$ equally likely outcomes total (HH, HT, TH, TT). Only one of these outcomes is "two heads" (HH), so the probability is $1/4$.

29. If one seventh number is 2, then three times of the number is _____.

A. $2/7$

B. 2

C. 14

✓ D. 42 (CORRECT ANSWER)

Explanation: If one-seventh of a number equals 2, the number itself = $2 \times 7 = 14$. Three times that number = $14 \times 3 = 42$.

30. If $f(x) = (3x - 5) / (2x + 6)$. What will be the domain of function?

A. $\{5/3, -3\}$

B. All real numbers

✓ C. All real numbers except -3 (CORRECT ANSWER)

D. All real numbers except $5/3$

Explanation: A rational function is undefined wherever its denominator equals zero. Setting $2x + 6 = 0$ gives $x = -3$. So the function is defined for all real numbers except $x = -3$, making the domain "all real numbers except -3."

End of Solved Paper — All 30 Questions Answered & Explained

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