

HAT – MANAGEMENT SCIENCES (MS)

Fully Solved Sample Paper with Detailed Explanations

Correct answers are highlighted in green with a check mark (✓). Every question includes a step-by-step explanation. Compiled and solved by **scholareye.xyz**.

SECTION 1: VERBAL REASONING

Questions 1–3: Complete the sentences by choosing the best option from the given lettered choices (A to D).

Q1. Saima _____ she was waiting at the bus stop.

A. has said

✓ B. said

C. say

D. says

Explanation: The sentence describes a past, completed action reported in indirect speech, so the simple past tense “said” is required to match the past-tense clause that follows (“she was waiting”).

Q2. The explorers wanted to go inside the cave _____ danger.

A. although

✓ B. despite

C. even though

D. since

Explanation: “Despite” is a preposition and is correctly followed directly by a noun (“danger”) without a clause. “Although” and “even though” are conjunctions that must be followed by a subject + verb clause, not a single noun.

Q3. We usually have lunch about two.

A. We usually have lunch about two

✓ B. We usually have lunch around two

C. We usually have lunch on two

D. We usually have lunch two o’ clock

Explanation: “Around two” is the standard, natural way to express an approximate time in formal written English. “About two” is informal/less precise in this construction, and “on two” and the option without a preposition are grammatically incorrect.

Question 3 also tests standard written English usage: select the option that best replaces the underlined portion.

Questions 4–5: Analogies — select the lettered pair that best expresses a relationship similar to the original pair given in capital letters.

Q4. BUILDING: BRICKS::

A. children: home

B. computer: monitor

✓ C. language: words

D. satellite: star

Explanation: A building is constructed from bricks, i.e., bricks are the basic units that compose a building. Similarly, a language is composed of words as its basic units. A monitor is only one part of a computer (not its fundamental unit), so option B is a weaker match.

Q5. HEN: COOP::

A. cock: crow

✓ B. dog: kennel

C. elephant: cow

D. lion: charge

Explanation: A hen lives in a coop, its shelter. Likewise, a dog lives in a kennel, its shelter. The other pairs describe actions or unrelated categories, not an animal-to-shelter relationship.

Questions 6–7: Choose the word or phrase MOST NEARLY OPPOSITE in meaning to the word in capital letters.

Q6. An ARDUOUS job is not _____.

- A. beneficial
- B. dangerous
- ✓ C. easy
- D. lucrative

Explanation: "Arduous" means difficult and requiring great effort. Its opposite is "easy." The job could still be beneficial, dangerous, or lucrative while being arduous, so those are not true opposites.

Q7. The plan remained COVERT and was not _____.

- A. changed
- ✓ B. disclosed
- C. implemented
- D. rejected

Explanation: "Covert" means secret or hidden. Its opposite is "disclosed" (made known/revealed). A plan can remain secret whether or not it is changed, implemented, or rejected, so only "disclosed" directly opposes "covert."

Questions 8–9: Choose the word or phrase MOST NEARLY SIMILAR in meaning to the word in capital letters.

Q8. The presenter showed LEVITY and remained _____ all the time.

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

✓ **D. non-serious**

Explanation: "Levity" means a lack of seriousness, a light-hearted or flippant attitude. "Non-serious" is the closest synonym, matching the meaning of remaining light-hearted throughout.

Q9. If you PORE over something you _____ it _____.

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

✓ **D. read, thoroughly**

Explanation: To "pore over" something means to read or study it with close, careful attention. "Read it thoroughly" correctly captures this meaning; the other options describe unrelated actions.

Question 10 is based on the following paragraph:

John Rolfe became the father of the tobacco industry and an economic savior of the Virginia colony. By 1610 he perfected methods of raising and curing the pungent weed. Tobacco-rush days began as crops were planted in the streets of Jamestown and even between the numerous graves. Colonists who once had hungered for food now hungered for ever more land on

which to plant ever more tobacco. Relentlessly, they pressed the frontier of settlement up the river valleys to the west, further crowding the Indians.

Virginia's prosperity was built on tobacco. This “bewitching weed” played a vital role in putting the colony on firm foundations, and in setting an example for other successful colonizing experiments. But tobacco — King Nicotine — was something of a tyrant. It was ruinous to the soil when greedily planted in successive years, and it also enchained the prosperity of Virginia to the fluctuating price of a single crop. Tobacco also promoted the broad-acre plantation system, and with a brisk demand for slave labor.

In 1619, the year before the Plymouth Pilgrims landed in New England, what was described as a Dutch warship appeared off Jamestown and sold some twenty black Africans to the colonists. The scanty record does not reveal whether they were purchased as lifelong slaves or as servants committed to limited years of servitude. Yet blacks were too costly for most of the hard-pinched farmers to acquire, and for decades they were imported only in dribblets. Virginia counted but 300 blacks in 1650, although by the end of the century blacks — most of them enslaved — made up approximately 14 percent of the colony's population.

Representative self-government was also born in primitive Virginia, in the same cradle with slavery in the same year — 1619. The London Company authorized the settlers to summon

an assembly, known as the House of Burgesses. A momentous precedent was thus feebly established, for this assemblage was the first of the many miniature parliaments to mushroom in the soil of America.

As time passed, the English king James I grew increasingly hostile to Virginia. He detested tobacco and he distrusted the representative House of Burgesses, which he branded as a “seminary of sedition.” In 1624 he revoked the charter of the bankrupt Virginia Company, thus making Virginia a royal colony under his control.

Q10. Tobacco was a _____ plant before the British colonists began to grow it for selling.

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

✓ **D. wild**

Explanation: The passage explains that John Rolfe “perfected methods of raising and curing” tobacco around 1610, after which it became a cultivated cash crop. This implies tobacco existed naturally/uncultivated (i.e., as a wild plant) before it was deliberately farmed for commercial sale.

SECTION 2: ANALYTICAL REASONING

Q11. 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.

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

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 conclusion links the mere presence of the invitation business in LA to a crowded LA party schedule. This only follows if the invitations that business produces are actually being bought and used for parties in Los Angeles itself — otherwise the business's location tells us nothing about LA's own party schedule. Option B supplies exactly this missing link.

Q12. 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.

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**

Explanation: The 95% survival figure is based only on waterfowl that were admitted to the clinic. If the birds selected for treatment were pre-screened for having good survival odds, the sample is biased and does not represent all affected waterfowl (including those that died or were too far gone to bring in). This directly undermines the validity of the survival-rate conclusion.

Q13. 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.

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

Explanation: *The researcher's conclusion assumes brain abnormalities are distinctively linked to violent people. But if non-violent people in the general population show brain abnormalities at the same rate, then brain abnormalities cannot actually distinguish or predict violent behavior — destroying the basis of the conclusion.*

Q14. 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.

Conditions: If K is displayed, U must be displayed. M cannot be displayed unless both L and R are also displayed. If N is displayed, O must be displayed, and if O is displayed, N must be displayed. If S is displayed, neither T nor U can be displayed.

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

A. K

B. M

C. R

✓ D. T

Explanation: With N and O excluded, only K, L, M remain as hardware candidates — and exactly 3 hardware items are needed, so K, L, and M must ALL be displayed. Since M is displayed, L and R must both be displayed (already true for L; R becomes required). Since K is displayed, U must be displayed. That already fills both software slots with R and U, leaving no room for S or T. So T is the one item that must NOT be displayed — the exception.

Q15. (Same display conditions as above.) If T and U are displayed, which of the following must also be displayed?

A. K

B. L

C. M

✓ D. N

Explanation: *T and U already fill both software slots, so R cannot be displayed. Without R, M cannot be displayed (M needs L and R). That leaves only K, L, N, O as candidates for the 3 hardware slots. Since N and O must appear together (both or neither), and only K and L remain as the other two candidates (just 2 items, not enough to reach 3 alone), N and O must both be included to reach the required count of three hardware items.*

Q16. (Same display conditions as above.) Which of the following is an acceptable display?

✓ A. K, L, M, R, U

B. K, M, N, O, R

C. L, M, O, R, S

D. M, N, O, T, U

Explanation: *Checking K, L, M, R, U: K requires U — satisfied. M requires L and R — both present. N/O rule is vacuously satisfied since neither appears. S is absent, so its rule doesn't apply. All conditions hold, making this a fully acceptable display. (The other options each violate at least one rule — e.g., option B has M without L, and option D exceeds allowed items/violates the N-O-S-T-U interactions.)*

Q17. (Same display conditions as above.) 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**

B. 2

C. 3

D. 4

Explanation: *K requires U, so U must be added, using T and U as the two software slots (leaving no room for R or S). Without R, M is impossible. With M excluded, the remaining 2 hardware slots must come from L, N, O. Since N and O must appear together and using both already accounts for 2 slots, L cannot also be added (would exceed the count) — so N and O are forced in together as the only valid completion. This yields exactly one acceptable group: K, N, O with T, U.*

Q18. 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.

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

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 (public + private) decreased overall, since the public-sector loss outweighed the private-sector gain. If the unemployment RATE stayed the same while the number of employed people fell, the total labor force (employed + unemployed) counted by the government must also have shrunk — otherwise a smaller employed group with the same unemployment rate is only possible with a smaller overall labor force.

Q19. Luis has just seen two ravens; therefore, the next bird Luis sees will be a raven.

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

Explanation: The argument predicts the next bird will also be a raven. This is best supported if ravens are known to travel together in groups (flocks), making it more likely that a third raven would appear right after two were already seen in the same location.

Q20. 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.

Which of the following, if true, would most seriously weaken the argument made above?

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

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 argument assumes that failure to predict short-term daily weather implies an equal inability to predict long-term, large-scale climatic effects. Option B breaks this analogy by pointing out that nuclear-winter predictions concern broad, drastic climate shifts — a fundamentally different (and often more tractable) kind of prediction than minute day-to-day weather fluctuations, weakening the*

argument's core comparison.

SECTION 3: QUANTITATIVE REASONING

Q21. Sum of first hundred natural numbers is _____.

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

✓ D. 5050

Explanation: Using the formula for the sum of the first n natural numbers, $S = n(n+1)/2$. For $n = 100$: $S = 100 \times 101 / 2 = 10100 / 2 = 5050$.

Q22. 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

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

Q23. If $A = \{1, 2, 3\}$ and $B = \{a, b, c\}$ then A and B are _____ sets.

A. equal

✓ B. equivalent

C. inverse

D. power

Explanation: Two sets are called “equivalent” if they contain the same number of elements (here, both have 3 elements), even though the actual elements differ. They are not “equal” because equal sets must contain exactly the same elements.

Q24. Angles drawn inside the semi-circle are _____.

A. 30°

B. 60°

✓ C. 90°

D. 270°

Explanation: By the Thales' theorem (angle in a semicircle theorem), any angle inscribed in a semicircle — subtended by the diameter — is always a right angle, i.e., 90° .

Q25. The graph of the function $f(x) = -5x^2 + 3x + 7$, is concave _____.

✓ A. down

B. left

C. right

D. up

Explanation: For a quadratic $f(x) = ax^2 + bx + c$, the parabola is concave down when the leading coefficient a is negative. Here $a = -5 < 0$, so the graph is concave down (opens downward).

Q26. 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

D. 125

Explanation: After 2 hours, the west-moving car has travelled $30 \times 2 = 60$ km, and the north-moving car has travelled $40 \times 2 = 80$ km. Since the two directions are perpendicular, the distance between them is the hypotenuse: $\sqrt{(60^2 + 80^2)} = \sqrt{(3600 + 6400)} = \sqrt{10000} = 100$ km.

Q27. The value of $\log_3 27$ is _____.

A. 1

✓ B. 3

C. 6

D. 9

Explanation: $\log_3 27$ asks: to what power must 3 be raised to get 27? Since $3^3 = 27$, $\log_3 27 = 3$.

Q28. The probability of occurring two heads in tossing one coin twice is _____.

✓ A. $1/4$

B. $1/3$

C. $1/2$

D. 1

Explanation: Each toss has 2 equally likely outcomes (H or T), giving $2 \times 2 = 4$ total equally likely outcomes for two tosses (HH, HT, TH, TT). Only one outcome (HH) gives two heads, so the probability is $1/4$.

Q29. If one seventh number is 2, then three times of the number is _____.

A. $2/7$

B. 2

C. 14

✓ D. 42

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

Q30. 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

D. All real numbers except $5/3$

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

QUICK-REFERENCE ANSWER KEY

Q#	Ans	Q#	Ans	Q#	Ans
1	B	2	B	3	B
4	C	5	B	6	C
7	B	8	D	9	D
10	D	11	B	12	D
13	C	14	D	15	D
16	A	17	A	18	A
19	B	20	B	21	D
22	D	23	B	24	C
25	A	26	C	27	B
28	A	29	D	30	C

All answers above match the official answer key provided with the source paper. Where a calculation method could raise ambiguity, the explanation above flags it transparently.

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