SAMPLE PAPER — HAT MEDICAL (MS)

FULLY SOLVED with Detailed Explanations

scholareye.xyz

This document contains the complete Higher Aptitude Test (HAT) Medical (MS) sample paper with every Multiple Choice Question answered, the correct option highlighted and checked, and a detailed explanation provided for each question. Sections covered: Verbal Reasoning, Analytical Reasoning, and Quantitative Reasoning.

VERBAL REASONING

Complete the sentence by choosing the best option.

1. You shouldn't have a bath straight after _____ a meal.

A. ate

B. eat

C. eaten

✓ D. eating (Correct Answer)

Explanation:

After a preposition such as “after,” English grammar requires a gerund (the -ing form of the verb) rather than a base form, past tense, or past participle. “Eating” functions here as a noun (a gerund), correctly following the preposition “after,” giving “after eating a meal.”

---

2. The strange incident was also covered _____ national TV.

A. at

B. by

✓ C. on (Correct Answer)

D. onto

Explanation:

The standard English collocation for broadcast media is “on TV,” “on the radio,” or “on the news.” The preposition “on” is idiomatically fixed with television and broadcast media, so “covered on national TV” is the correct and natural phrasing.

Select the best version of the underlined sentence; choose (A) if the original is best.

3. If we ask, he might help us.

A. If we ask, he might help us

B. If we are asking, he might help us

✓ C. If we asked, he might help us (Correct Answer)

D. If we had asked, he might help us

Explanation:

“Might” signals a hypothetical or less-certain second conditional, which requires the simple past tense in the “if” clause (If + past simple, ... might/would + base verb). The original present-tense “ask” does not match this structure. Option D (past perfect) would describe an unreal past condition, which is not intended here. Option C, “If we asked, he might help us,” correctly forms the second conditional.

Select the pair that best expresses a relationship similar to the capitalized pair.

4. CHEW : EAT ::

A. inhale : exhale

✓ B. sip : drink (Correct Answer)

C. sleep : dream

D. swallow : digest

Explanation:

"Chew" describes a particular manner of performing the action "eat." Similarly, "sip" describes a particular manner of performing the action "drink." Both pairs share a "manner-of-doing" relationship, unlike the other options, which describe opposites, sequences, or unrelated states.

---

5. SMILE : FROWN ::

A. blush : shy

B. grin : smile

✓ C. laugh : cry (Correct Answer)

D. tear : eye

Explanation:

"Smile" and "frown" are opposite facial expressions of emotion (happiness vs. displeasure). "Laugh" and "cry" form the same type of opposite pair, expressing contrasting emotional reactions, making C the closest analogy.

Choose the word most nearly OPPOSITE in meaning to the capitalized word.

6. Please don't RAVE. Speak _____.

✓ A. calmly (Correct Answer)

B. clearly

C. fluently

D. loudly

Explanation:

“Rave” means to speak wildly, furiously, or incoherently, often in an agitated state. Its most nearly opposite quality is speaking in a controlled, composed manner — that is, “calmly.”

---

7. Shakeel's attitude was so INSIPID. She didn't show any _____.

A. courage

B. hope

✓ C. liveliness (Correct Answer)

D. nervousness

Explanation:

“Insipid” means dull, flat, and lacking in spirit, flavor, or energy. The quality most nearly opposite to “insipid” is “liveliness” — an insipid attitude is precisely one that shows no liveliness or vigor.

Choose the word or phrase MOST NEARLY SIMILAR in meaning to the capitalized word.

8. A SNAG is a/an _____.

A. boring program

B. casual talk

C. foolish prank

✓ D. unexpected difficulty (Correct Answer)

Explanation:

A “snag” refers to a small, often unforeseen problem or obstacle that complicates an otherwise smooth process. This matches “unexpected difficulty” most closely in meaning.

---

9. If you BROACH a topic you _____ it.

A. announce

✓ B. discuss (Correct Answer)

C. like

D. reject

Explanation:

To “broach” a topic means to raise or bring it up in order to talk about it. Among the given options, “discuss” is the closest match, since broaching a subject initiates discussion of it.

Reading Passage (for Question 10)

Late in the sixteenth century, the oppressed people of the Netherland unfurled the standard of rebellion against catholic Spain. After bloody and protracted fighting, they finally

succeeded with the aid of Protestant England, in winning their independence. This vigorous little lowland nation quickly emerged as a major commercial and naval power that ungratefully challenged the supremacy of her former benefactor England.

Holland also became a leading colonial power through the activities of the enterprising Dutch East India Company. The company's vast riches came mostly from the East Indies, where it maintained an enormous and profitable empire for three centuries. In 1609 it employed an English explorer, Henry Hudson, who ventured into what is now New York Bay and up the river that now bears his name, hoping that he had at last chanced upon the coveted shortcut through the continent. But, as the event proved, he merely filed a Dutch claim to the magnificently watered and wooded area.

New Netherland was permanently planted in 1623-1624 by the Dutch West India Company. Never more than a secondary interest of the founders, the colony was exploited for its quick-profit fur trade. The company's most brilliant stroke was to buy Manhattan Island from the Indians (who did not actually "own" it) for trinkets: 22,000 acres of what is now perhaps the most valuable real estate in the world for virtually worthless pennies per acre.

A threat to the New Netherland came from the Swedes, who trespassed on Dutch preserves by planting the colony of New

Sweden on the Delaware River from 1638 to 1665. Resenting the Swedish intrusion, the Dutch dispatched a small military expedition in 1655, led by the energetic and hot-headed director-general Peter Stuyvesant, who was dubbed "Father Wooden Led" by the Indians. The Swedish fort fell easily and the colony came to an abrupt end, leaving behind only a sprinkling of Swedish place names, log cabins (the first in America), and an admixture of Swedish blood in the area.

New Netherland absorbed New Sweden, but it was soon the turn of the Dutch to be swallowed up by the English. In 1664, after Charles II had granted the area to his brother, the Duke of York, a strong English squadron appeared off the decrepit defenses of New Amsterdam. A fuming Peter Stuyvesant, short of all munitions except courage, was forced to surrender without firing a shot. New Amsterdam was thereupon renamed New York, in honor of the duke. England won a splendid harbor, strategically located in the middle of the mainland colonies, and a stately Hudson River penetrating the interior. The English banner now waved triumphantly, with the removal of this foreign wedge, over a solid stretch of territory from Maine to the Carolinas.

10. Once independent the Dutch became the _____ of the English

A. benefactors

✓ **B. competitors (Correct Answer)**

C. explorers

D. saviors

Explanation:

The passage states that once independent, the Dutch nation “ungratefully challenged the supremacy” of England, its former benefactor, by rising as a major commercial and naval power. This directly shows the Dutch became England's rivals in trade and sea power — that is, its “competitors.”

ANALYTICAL REASONING

Passage for Questions 11–13

The relative hardness of five minerals N, O, R, S, and T is to be determined. One mineral is harder than another if drawing an edge of the first mineral across a surface of the second produces a scratch; otherwise, the first mineral is either equally hard or not as hard as the second. Known results:

- *N scratches O (N is harder than O)*
- *R scratches S (R is harder than S)*
- *O does not scratch T (O is NOT harder than T, so T is greater than or equal to O)*

11. Which of the following could be the five minerals in order from the hardest to the softest if no two of them are equally hard?

✓ A. N, R, T, S, O (Correct Answer)

B. N, T, S, O, R

C. R, N, O, S, T

D. R, O, S, T, N

Explanation:

Testing order N, R, T, S, O against the rules: N is before O (N > O) — satisfied; R is before S (R > S) — satisfied; T is before O (T > O, consistent with “O does not scratch T”) — satisfied. All three conditions hold with no contradictions, so this ordering is possible. The other options each place N after O, R after S, or O before T, violating one of the given facts.

12. If O scratches S, which of the following must be true?

A. N is harder than R

B. N is harder than T

C. R is harder than T

✓ D. T is harder than S (Correct Answer)

Explanation:

We know T is at least as hard as O (T ≥ O), and now O scratches S means O is harder than S (O > S). Combining T ≥ O > S gives T > S. This must be true regardless of how N and R relate to the others, so “T is harder than S” is the only guaranteed conclusion.

---

13. If S scratches T, any of the following pairs of minerals could be the same hardness as each other EXCEPT:

A. N and R

B. N and S

C. N and T

✓ D. R and T (Correct Answer)

Explanation:

If S scratches T, then S is strictly harder than T (S > T). We already know R is harder than S (R > S). Chaining these gives R > S > T, so R must be strictly harder than T — they can never be equal. N's hardness is not fixed relative to R, S, or T by any rule, so N could equal any of them. Thus “R and T” is the one pair that could never be equal.

Reading passage: The average life expectancy of the population of Japan has risen steadily since 1960 and is now the highest national average in the world, even though heart disease among the Japanese has increased since they began to eat more of the fatty foods typical of the diets of people in Western countries.

14. Which of the following, if true, best helps to explain the steady rise in life expectancy that is cited above?

✓ A. Since 1960 the decline in illnesses that kill more Japanese people than does heart disease has been greater than the increase in heart disease (Correct Answer)

B. The average Westerner is still five times more likely to develop heart disease than is the average Japanese person

C. The Japanese diet has traditionally included many non-fatty foods that are thought to reduce the risk of developing heart disease

D. The life expectancy of the average Westerner has risen at a slower rate since 1960 than it did before 1960

Explanation:

The paradox to explain is: life expectancy keeps rising even though heart disease (a major killer) has increased. This is only resolved if some other, larger cause of death has declined by an even greater amount, offsetting the rise in heart disease deaths. Option A states exactly this net effect, directly explaining the overall rise in life expectancy.

Passage: One theory of the Moon's origin is that the Earth, early in its development, was a rapidly rotating body of molten rock in which most of the iron had settled to the core; some of this fluid was cast off from the surface of the spinning mass and later solidified to form the Moon.

15. Which of the following conclusions can best be supported by the theory above of the Moon's origin, if that theory is correct?

A. Most of the fluid cast off from the Earth was dispersed into outer space

✓ B. The Moon has proportionally less iron at its core than the Earth does (Correct Answer)

C. The Moon is the only sizable heavenly body in orbit around the Earth

D. The surface of the Moon solidified after the surface of the Earth did

Explanation:

The theory states that most of Earth's iron had already sunk to its core before the material that formed the Moon was cast off from Earth's surface. Since the Moon formed from this iron-depleted surface material, it logically follows that the Moon would have proportionally less iron at its core than Earth does.

Passage: Grammarians have for years condemned as ungrammatical the English phrase "between you and I," insisting the correct phrasing is "between you and me." Such condemnations, however, are argued to be unfounded because Shakespeare himself used "between you and I" in The Merchant of Venice.

16. Which of the following, if true, most seriously weakens the argument above?

✓ A. In his plays, Shakespeare intentionally had some of his characters use phrases he considered ungrammatical (Correct Answer)

B. Many modern speakers of English sometimes say "between you and I" and sometimes say "between you and me"

C. The more modern an English word or phrase, the less likely that modern grammarians will consider it acceptable for formal usage

D. The phrase "between you and I" appears infrequently in Shakespeare's writings

Explanation:

The argument assumes that because Shakespeare used the phrase, it must be grammatically acceptable. If Shakespeare deliberately gave characters lines he himself considered ungrammatical (for characterization, informality, etc.), his use of the phrase would not prove it is correct English — it would undercut the entire basis of the argument.

Passage: Senator: Jones is highly qualified for appointment as a judge, as evidenced by Jones's receiving a unanimous vote of "qualified" on the formal rating scale used by the Lawyers' Committee, which advises the Senate on judicial appointments.

17. Which of the following, if true, is the best reason for dismissing the senator's claim that Jones is highly qualified?

A. The Lawyers' Committee gives a unanimous vote of "qualified" only to those candidates who meet the committee's stringent standards for appropriate prior experience and ethical conduct

B. The Lawyers' Committee does not advise the Senate on all judicial appointments

C. Several members of the Lawyers' Committee are not themselves qualified for judicial appointments

✓ D. The Lawyers' Committee gives a unanimous vote of either "highly qualified" or "very highly qualified" to 95 percent of all candidates for judicial appointments (Correct Answer)

Explanation:

The senator uses a unanimous “qualified” rating as strong evidence of high qualification. If the committee gives a top rating to 95 percent of all candidates as a matter of course, that rating carries little discriminating value — it would be achieved by almost anyone, undermining its use as meaningful evidence that Jones in particular is highly

qualified.

Passage: Bats emit sounds and generally use the echoes of these sounds highly efficiently to detect, locate, and catch their prey. However, it is claimed that the efficiency of this process is reduced by moths able to hear the sounds emitted by insect-eating bats.

18. Which of the following statements, if true, best supports the claim above?

✓ A. Moth species that can hear the sounds emitted by insect-eating bats are less likely to be caught by such bats than are moth species that cannot hear these sounds (Correct Answer)

B. Those moth species that cannot hear the sounds emitted by insect-eating bats are among the species of insects that are most likely to be caught by such bats

C. Those moths that cannot hear the sounds emitted by insect-eating bats live longer on average than those that can hear such sounds when both kinds of moth are in an environment continuously free of such bats

D. When a moth changes its speed or direction of flight, there is a change in the sound pattern generated by the moth's wing movements

Explanation:

The claim is that bats' hunting efficiency is reduced specifically because some moths can hear bat sounds and evade them. Option A directly demonstrates this effect by showing hearing-capable moths are caught less often than moths that cannot hear the bats, providing direct support for

the claim.

Passage for Questions 19–20

A map representing countries R, S, W, X, Y, and Z is to be drawn. Adjacent countries cannot be the same color on the map. The only countries adjacent to each other are as follows:

- *R, S, X, and Y are each adjacent to W*
- *X is adjacent to Y*
- *R and S are each adjacent to Z*

19. Which of the following is a pair of countries that must be different in color from each other?

A. R and X

B. S and X

✓ **C. S and Z (Correct Answer)**

D. X and Z

Explanation:

S and Z are explicitly stated to be adjacent (“R and S are each adjacent to Z”), so by the rule that adjacent countries cannot share a color, S and Z must be different colors. The other listed pairs are not stated to be directly adjacent, so they are not necessarily required to differ.

---

20. Which of the following is a pair of countries that can be the same color as each other?

✓ **A. R and S (Correct Answer)**

B. S and W

C. W and X

D. W and Y

Explanation:

R and S are never stated to be adjacent to each other — they are each adjacent to W and to Z, but not to one another. Since no rule forbids it, R and S can be assigned the same color. The other pairs listed (S-W, W-X, W-Y) are all explicitly adjacent and therefore must differ.

QUANTITATIVE REASONING

21. The sum of the terms of the geometric progression 1, 3, 9, 27, …, 729 is _____.

A. 899

B. 980

C. 1073

✓ D. 1093 (Correct Answer)

Explanation:

This is a geometric series with first term a = 1, common ratio r = 3, and last term 729 = 3^6, so there are 7 terms (n = 7). Sum = $a(r^n - 1)/(r - 1) = (3^7 - 1)/(3 - 1) = (2187 - 1)/2 = 2186/2 = 1093$.

---

22. Square root of 0.001369 is _____.

A. 0.031

B. 0.033

✓ C. 0.037 (Correct Answer)

D. 0.37

Explanation:

0.001369 = 1369/1,000,000. Since $37^2 = 1369$ and $1000^2 = 1{,}000{,}000$, $\sqrt{0.001369} = 37/1000 = 0.037$.

---

23. A project can be completed by 150 workers in 40 days. But project manager brought 30 more workers after 16 days. The remaining work will be completed in _____ days.

A. 10

B. 15

✓ C. 20 (Correct Answer)

D. 25

Explanation:

Total work = 150 workers × 40 days = 6000 worker-days. In the first 16 days, 150 workers complete 150 × 16 = 2400 worker-days of work, leaving 6000 – 2400 = 3600 worker-days remaining. With 30 more workers added, the team now has 150 + 30 = 180 workers, so the remaining work takes 3600 ÷ 180 = 20 days.

---

24. (a – b) c = ac – bc is called _____ property.

A. associative

B. commutative

✓ C. distributive (Correct Answer)

D. identity

Explanation:

This equation shows multiplication being “distributed” over subtraction — each term inside the bracket is multiplied by c separately. This is the definition of the distributive property.

---

25. If A and B are two subsets of a universal set, then $(A \cup B)^c$ = _____.

A. $A \cap B$

B. $A^c \cup B^c$

C. $A \cup B$

✓ D. $A^c \cap B^c$ (Correct Answer)

Explanation:

This is one of De Morgan's laws for sets: the complement of a union equals the intersection of the complements. That is, $(A \cup B)^c = A^c \cap B^c$.

---

26. $(2/5)^{-3} \times (2/5)^3 + (3/5)^5 \times (3/5)^{-5}$ = _____.

A. $(6/5)^8$

B. 0

C. 1

✓ D. 2 (Correct Answer)

Explanation:

Using the exponent rule $x^m \times x^{-m} = x^0 = 1$: $(2/5)^{-3} \times (2/5)^3 = (2/5)^0 = 1$, and $(3/5)^5 \times (3/5)^{-5} = (3/5)^0 = 1$. Adding these gives 1 + 1 = 2.

---

27. If $f(x) = x^4 – 3x^2 – x – 192$, then value of $f(–4) =$ _____.

A. 10

B. 12

✓ **C. 20 (Correct Answer)**

D. 24

Explanation:

Substitute $x = –4$: $f(–4) = (–4)^4 – 3(–4)^2 – (–4) – 192 = 256 – 3(16) + 4 – 192 = 256 – 48 + 4 – 192 = 20$.

---

28. Solution of the equation $\sqrt{(3x – 2)} – \sqrt{x} = 2$, is _____.

A. 1

B. 3

C. 7

✓ **D. 9 (Correct Answer)**

Explanation:

Rearranging: $\sqrt{(3x – 2)} = 2 + \sqrt{x}$. Squaring both sides: $3x – 2 = 4 + 4\sqrt{x} + x$, which simplifies to $2x – 6 = 4\sqrt{x}$, or $x – 3 = 2\sqrt{x}$. Squaring again: $x^2 – 6x + 9 = 4x$, so $x^2 – 10x + 9 = 0$, giving $(x – 1)(x – 9) = 0$, so $x = 1$ or $x = 9$. Checking $x = 1$ in the original equation gives $1 – 1 = 0 \neq 2$ (rejected as extraneous). Checking $x = 9$ gives $\sqrt{25} – \sqrt{9} = 5 – 3 = 2$, which is correct. So $x = 9$.

---

29. 0.00345 in scientific notation can be written as _____.

A. 0.345×10^{-2}

✓ **B. 3.45×10^{-3} (Correct Answer)**

C. 0.345×10^{2}

D. 3.45×10^{3}

Explanation:

In scientific notation, a number is written as a value between 1 and 10 multiplied by a power of 10. Moving the decimal point in 0.00345 three places to the right gives 3.45, and since the original number is smaller than 1, the exponent is negative: 3.45×10^{-3}.

---

30. $\log_a n \times \log_n a \times \log_m b \times \log_b p \times \log_p m$ = _____.

A. 0

✓ **B. 1 (Correct Answer)**

C. $\log_b n$

D. $\log_m n$

Explanation:

Using the identity $\log_x y \times \log_y x = 1$ (reciprocal bases): $\log_a n \times \log_n a = 1$. For the remaining three terms, apply the chain rule $\log_m b \times \log_b p = \log_m p$, and then $\log_m p \times \log_p m = 1$ (reciprocal bases again). Multiplying the two results: $1 \times 1 = 1$.

— End of Fully Solved Paper —

For more fully solved HAT sample papers (General, Engineering, Management Sciences, and Arts & Humanities), visit scholareye.xyz