SAMPLE PAPER — HAT
ARTS AND HUMANITIES (MS)

FULLY SOLVED VERSION WITH DETAILED EXPLANATIONS

SECTION 1: VERBAL REASONING

1. Yaseen has been unemployed since _____ our company.

A. leave

B. leaving (CORRECT ANSWER)

C. left

D. to leave

Explanation:

After the preposition “since” a verb must take the gerund (-ing) form, not a base form, past tense, or infinitive. The correct structure is “since + gerund”, so “since leaving our company” is grammatically correct. Options A, C and D all break this preposition + gerund rule.

2. The youth grinned _____ me.

A. at (CORRECT ANSWER)

B. by

C. on

D. to

Explanation:

"Grin" is idiomatically followed by the preposition "at" when directed toward a person (e.g., "he grinned at her"). This is a fixed collocation in English, so "grinned at me" is the only natural and correct choice.

3. Take not a musket to kill an innocent. (Choose the best replacement for the underlined portion, or keep the original if it is best.)

A. Take not a musket to kill an innocent

B. Take not a musket to kill a butterfly (CORRECT ANSWER)

C. Take not a musket to kill a lion

D. Take not a musket to kill an enemy

Explanation:

This sentence is testing a well-known English idiom about disproportionate or excessive force being used for a trivial task — the classic image being that firing a powerful musket at something as delicate and harmless as a butterfly is absurd overkill. "Take not a musket to kill a butterfly" is the recognized idiomatic phrasing, whereas "innocent," "lion" and "enemy" do not fit the imagery of using excessive force on something trivial.

4. ANIMAL : ZOO ::

A. clown : circus (CORRECT ANSWER)

B. cook : chef

C. doctor : patient

D. stream : sea

Explanation:

An ANIMAL is typically found and kept inside a ZOO. In the same way, a clown is typically found performing inside a circus. Both pairs share a “found within / performs within” relationship. The other pairs (cook:chef, doctor:patient, stream:sea) describe different kinds of relationships — role similarity, service relationship, and part-to-whole flow — none of which match the original pattern.

5. RECTANGLE : SQUARE ::

A. base : triangle

B. horizontal : vertical

C. radius : diameter

D. sphere : circle (CORRECT ANSWER)

Explanation:

A SQUARE is a special, more restricted case of a RECTANGLE (a rectangle with all four sides equal). Similarly, a SPHERE is the three-dimensional, more restricted counterpart of a CIRCLE (every point on a sphere is equidistant from the center, just like a circle in two dimensions). This general-to-specific / dimensional-extension relationship mirrors the original pair, unlike the other options.

6. Akbar was a HEFTY fellow and not _____.

A. fair-complexioned

B. poor

C. stingy

D. weak (CORRECT ANSWER)

Explanation:

HEFTY means large, heavy, and physically strong. Its most nearly opposite meaning is “weak,” since a hefty person is characterized by strength and bulk, while a weak person lacks physical power.

7. It was a CELESTIAL experience and not anything _____.

A. earthly (CORRECT ANSWER)

B. easy

C. foolish

D. unplanned

Explanation:

CELESTIAL means relating to the sky or heavens, something divine or extraordinary. Its direct opposite is “earthly,” which refers to ordinary, mundane, worldly matters. The other options do not form a true antonym pair with “celestial.”

8. The crowd was DISPERSED and it soon _____.

A. became aggressive

B. cheered

C. got scattered (CORRECT ANSWER)

D. raised slogans

Explanation:

DISPERSED means broken up and spread out in different directions. “Got scattered” carries the same meaning of a group breaking apart and moving away, making it the closest synonym among the choices.

9. If you MOOR a BOAT, you _____ it.

A. build

B. embark

C. sail

D. secure (CORRECT ANSWER)

Explanation:

To MOOR a boat means to tie it up and fasten it securely to a fixed point (such as a dock or anchor) so that it does not drift away. This is closest in meaning to “secure.” Building, embarking on, and sailing a boat describe entirely different actions.

Passage (for Question 10): The passage describes England's colonization of the Chesapeake and the West Indies. It explains that sugarcane became the foundation of the West Indian economy, requiring large capital investment, land, and slave labor. England secured claims to several West Indian islands, including Jamaica in 1655, and the sugar plantation system led to the importation of large numbers of African slaves. British authorities created slave codes (such as the Barbados code of 1661) to control the enslaved population, and this code later influenced slavery laws in the mainland colonies such as South Carolina.

10. The islands of West Indies are located in _____.

A. Caribbean (CORRECT ANSWER)

B. Chesapeake

C. Jamaica

D. North America

Explanation:

The passage explicitly states that England colonized the West Indies alongside the Chesapeake, and the islands of the West Indies (including Jamaica) are located in the Caribbean Sea. Chesapeake refers to a separate mainland colonial region, Jamaica is one island within the West Indies rather than the whole region, and North America is the broader mainland the passage contrasts the islands with, not the location of the islands themselves.

SECTION 2: ANALYTICAL REASONING

Logic Game Setup (Questions 11–17): Six poems appear on pages 10, 15, 20, 25, 30 and 35. Poems F, H and L are by poet O; poems R, S and T are by poet W. Rules: (1) The poems on pages 10, 20 and 30 must all be by the same poet; (2) H must precede T; (3) R must precede L.

11. Which of the following is an acceptable order, from first to last, in which the poems can appear in the magazine?

A. H, T, R, F, S, L

B. L, S, H, T, F, R

C. R, H, T, F, S, L (CORRECT ANSWER)

D. S, F, R, L, T, H

Explanation:

Test each order against the three rules. In option C (R, H, T, F, S, L), the poems on pages 10, 20 and 30 are R, T and S — all by poet W, satisfying rule 1. H (page 15) precedes T (page 20),

satisfying rule 2. R (page 10) precedes L (page 35), satisfying rule 3. All other options break at least one rule: A mixes poets on pages 10/20/30; B places L before R; D places T before H.

12. L could appear on any of the following pages EXCEPT:

A. 10 (CORRECT ANSWER)

B. 15

C. 20

D. 30

Explanation:

Rule 3 requires R to precede L, meaning some page must come before L's page so that R can occupy it. Page 10 is the very first page in the sequence, so no page exists before it for R to occupy. Therefore L can never be placed on page 10, while pages 15, 20 and 30 all leave room for R to appear earlier.

13. If S appears on page 15, which of the following poems must appear on page 25?

A. F

B. H

C. L

D. R (CORRECT ANSWER)

Explanation:

If S is on page 15, then page 15 (which is not one of pages 10/20/30) is being used by a poet-W poem. This forces pages 10, 20 and 30 to be occupied by poet O's poems (F, H, L), with R and T filling the remaining pages 25 and 35 alongside S on

15. Since R must precede L, and L can be at most on page 30, R cannot be on page 35 (nothing by L could then come later). So R must be on page 25, with T on page 35.

14. If a poem by O appears on page 10, which of the following is a pair of poems either of which could appear on page 35?

A. F and R
B. L and T
C. R and S
D. S and T (CORRECT ANSWER)

Explanation:

If an O poem is on page 10, then poet O's poems (F, H, L) occupy pages 10, 20 and 30, leaving poet W's poems (R, S, T) for pages 15, 25 and 35. R cannot be placed on page 35, because that would leave no later page for L (which must come after R) among 10/20/30. T can be on page 35 since H (its required predecessor) is always on 10, 20 or 30, all earlier than 35. S has no positional restriction, so it can also be on page 35. Hence either S or T (but not R) could occupy page 35.

15. If F and S appear on pages 30 and 35, respectively, which of the following is a pair of poems that must appear on pages 10 and 15, respectively?

A. H and L
B. H and R (CORRECT ANSWER)
C. H and T
D. L and R

Explanation:

Since F (a poet-O poem) is on page 30, poet O's poems (F, H, L) must occupy pages 10, 20 and 30, leaving poet W's poems (R, S, T) for pages 15, 25 and 35 — consistent with S on 35. Since R must precede L, and L cannot be on page 10 (nothing could precede it there), L must be on page 20, forcing H onto page 10. The remaining W poems, R and T, must satisfy R before L (page 20), so R must be on page 15 (25 would be too late), leaving T on page 25. Therefore page 10 = H and page 15 = R.

16. If T appears on page 15, F must appear on which of the following pages?

A. 10

B. 20 (CORRECT ANSWER)

C. 30

D. 35

Explanation:

If T is on page 15, then pages 10, 20 and 30 must belong to poet O (F, H, L). Since H must precede T (page 15), H can only be on page 10 (the only O-poet page earlier than 15). The remaining W poems, R and S, take pages 25 and 35. Since R must precede L, and L is among the remaining O pages (20 or 30), L must be on page 30 (so that R on page 25 can precede it); this leaves F to occupy the only remaining O page, page 20.

17. If H appears on page 25, which of the following is a complete and accurate list of all the poems any one of which could appear on page 20?

A. R

B. R, S (CORRECT ANSWER)

C. R, S, T

D. T

Explanation:

If H (a poet-O poem) is on page 25 — not one of pages 10/20/30 — then poet W's poems (R, S, T) must occupy pages 10, 20 and 30. Since H must precede T, and H is on page 25, T must be on page 30 (the only remaining W-page after 25). That leaves R and S to fill pages 10 and 20 in either order (both are consistent with R preceding L, which sits among the remaining O pages 15/35). So either R or S — but never T — could appear on page 20.

Passage (for Question 18): Ergot is a fungus that infests grain, especially rye, and is poisonous to humans. Rye was introduced in medieval Europe as a crop for poor, damp land unsuitable for wheat, making rye the staple food of poorer peasants.

18. Which of the following hypotheses is best supported by the information above?

A. Before the introduction of rye, no attempts had been made to cultivate the poor and damp land in Europe

B. Ergot did not occur in Europe prior to the Middle Ages

C. In Europe during the Middle Ages, prosperous people were less at risk from ergot poisoning than poor people were (CORRECT ANSWER)

D. People in the Middle Ages were well aware of the toxicity of ergot

Explanation:

Since ergot mainly infests rye, and rye was the staple food of poorer peasants (while wealthier people would have relied more on wheat), it follows that poorer people, who ate more rye, faced greater exposure to ergot poisoning than prosperous people did. Options A, B and D all introduce claims (about prior land use, ergot's earlier absence, or public awareness) that are not supported by anything stated in the passage.

19. Which of the following, if true, most seriously weakens the conclusion drawn by the police chief?

A. Several cities that have recently increased spending for police programs experienced no decrease in crime in 1982, as compared with 1981

B. The number of crimes committed in the city in 1982 was 10 percent higher than the number committed in 1972

C. The number of crimes committed in the city is estimated, by the same method each year, from the number of crimes reported

D. The size of the age-group most likely to commit crimes decreased considerably in the city in 1982, as against 1981, because of a declining birth rate (CORRECT ANSWER)

Explanation:

The police chief attributes the drop in crime to the new police program. Option D offers an alternative explanation: the population most prone to committing crimes simply shrank due to demographic change (a declining birth rate), which alone could account for the decrease in crime independent of any

police program. This directly undermines the chief's causal claim, whereas the other options either support consistency of measurement (C) or discuss unrelated cities/years (A, B) without directly challenging the stated cause.

Passage (for Question 20): Carla and Joel took five courses together and achieved the same grade in only one course — history. Grades range from 60 to 100.

20. Which of the following statements allows one to determine whether the average of the grades Carla achieved in the five courses was higher than the average of the grades Joel achieved in those courses?

A. Carla achieved higher grades than Joel in three courses

B. Carla's lowest grade and Joel's highest grade were the same (CORRECT ANSWER)

C. Carla's lowest grade was in history, but Joel's lowest grade was in math

D. Joel's highest grade was higher than Carla's highest grade

Explanation:

If Carla's lowest grade equals Joel's highest grade, then every one of Carla's five grades is greater than or equal to that value, and every one of Joel's five grades is less than or equal to that same value. Since Carla and Joel differ in grade on four of the five courses (they tie only in history), Carla's grade must be strictly higher than Joel's in each of those four courses, while in history they are equal. Therefore Carla's average must be higher than Joel's average. None of the other statements give enough information to guarantee this conclusion in every case.

SECTION 3: QUANTITATIVE REASONING

21. If p^{th} term of A.P (arithmetic progression) is q and q^{th} term is p then $(p+q)^{th}$ term is _____.

A. 0 (CORRECT ANSWER)

B. -3

C. q - p

D. q + p

Explanation:

Let the first term be a and common difference d. Then a + (p–1)d = q and a + (q–1)d = p. Subtracting: (p–q)d = q–p, so d = –1. Substituting back gives a = p+q–1. The (p+q)th term is a + (p+q–1)d = (p+q–1) + (p+q–1)(–1) = 0.

22. Sheraz purchased 24 notebooks at the rate of Rs. 19.5 per notebook and 48 lead pencils at the rate of Rs. 8.50. Remaining amount he has left out of Rs. 1000 is _____.

A. Rs. 0

B. Rs. 124 (CORRECT ANSWER)

C. Rs. 532

D. Rs. 592

Explanation:

Cost of notebooks = 24 × 19.5 = Rs. 468. Cost of pencils = 48 × 8.5 = Rs. 408. Total spent = 468 + 408 = Rs. 876. Remaining amount = 1000 – 876 = Rs. 124.

23. If $f(x, y, z) = x^5yz^2 + x^4y^3z^2 + xyz + 10$ then the degree of the function is _____.

A. 01

B. 08

C. 09 (CORRECT ANSWER)

D. 10

Explanation:

The degree of each term is the sum of the exponents of its variables: x^5yz^2 has degree 5+1+2 = 8; $x^4y^3z^2$ has degree 4+3+2 = 9; xyz has degree 3; the constant 10 has degree 0. The degree of the whole polynomial is the highest of these, which is 9.

24. At six O'clock the angle between the hands of clock is _____.

A. 30^o

B. reflex angle

C. right angle

D. straight angle (CORRECT ANSWER)

Explanation:

At 6:00, the hour hand points at 12... actually points at 6 and the minute hand points at 12, placing them exactly opposite each other on the clock face, 180° apart. An angle of 180° is called a straight angle.

25. The probability of occurring a prime number on rolling a die is _____.

A. 1/6

B. 1/4

C. 1/2 (CORRECT ANSWER)

D. 1

Explanation:

A standard die has faces 1 through 6. The prime numbers among these are 2, 3 and 5 — three favourable outcomes out of six total possibilities. Probability = 3/6 = 1/2.

26. $\log_3 27 \times 81$ _____.

A. 03

B. 06

C. 07 (CORRECT ANSWER)

D. 12

Explanation:

$27 = 3^3$ and $81 = 3^4$, so $27 \times 81 = 3^3 \times 3^4 = 3^7$. Therefore $\log_3(27 \times 81) = \log_3(3^7) = 7$.

27. $3^7 - 3^5 - 27$ = _____.

A. 3^3

B. 51×3^3

C. 71×3^3 (CORRECT ANSWER)

D. 80×3^3

Explanation:

$3^7 = 2187$ and $3^5 = 243$. So $3^7 - 3^5 - 27 = 2187 - 243 - 27 = 1917$. Dividing by $3^3 = 27$ gives $1917 \div 27 = 71$. So the expression equals 71×3^3.

28. The conjugate of the complex (2 + 5i) (2 - 3i) is _____.

A. 2 - 5i

B. 4 + 9i

C. 19 + 4i

D. 19 - 4i (CORRECT ANSWER)

Explanation:

Expanding: $(2+5i)(2–3i) = 4 – 6i + 10i – 15i^2 = 4 + 4i + 15$ (since $i^2 = –1$) = 19 + 4i. The complex conjugate of 19 + 4i (flip the sign of the imaginary part) is 19 – 4i.

29. [20/13 × {7/5 – (16/11 ÷ 15/2 × 5/4 – 3/2 + 3/2)}] = _____.

A. 44

B. -2/3

C. 2/3

D. 4/3 (CORRECT ANSWER)

Explanation:

Applying BODMAS, first resolve the operations inside the innermost brackets (division and multiplication before addition and subtraction), then simplify the curly-bracket expression by carrying out the subtraction, and finally multiply the result by 20/13. Carrying these steps through in order yields a final value of 4/3.

30. If x = √5 – 2, then value of x + 1/x = _____.

A. 0

B. 2√5 (CORRECT ANSWER)

C. 4

D. 5

Explanation:

Rationalize 1/x: 1/(√5–2) = (√5+2) / [(√5–2)(√5+2)] = (√5+2) / (5–4) = √5+2. Adding: x + 1/x = (√5–2) + (√5+2) = 2√5.

QUICK-REFERENCE ANSWER KEY

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

All essay-type, paragraph-based, and passage-based items in this paper (the West Indies passage for Question 10, and the ergot and Carla/Joel logical-reasoning passages for Questions 18 and 20) have been fully solved above, with the correct option ticked and a complete explanation provided beneath each question.