

SAMPLE PAPER — USAT COMPUTER SCIENCE

Fully Solved Version with Explanations

VERBAL REASONING

1. Naima met Salma _____ the afternoon.

- A. after
- B. at
- C. before

✓ D. in (Correct Answer)

Explanation: The preposition “in” is used with parts of the day such as “in the morning,” “in the afternoon,” and “in the evening.” “At” is reserved for clock times (at 5 o'clock) and “night” (at night), so “in the afternoon” is the correct idiomatic choice.

2. The Queen fell _____ ill and all hopes of her recovery vanished.

- A. easily
- B. hardly
- C. scarcely

✓ D. seriously (Correct Answer)

Explanation: "Seriously ill" is the standard collocation used to describe a severe illness that threatens recovery. "Easily," "hardly," and "scarcely" do not fit the meaning of the sentence, which implies a grave, life-threatening condition.

3. BELL : RING ::

- A. clock : watch
- B. guitar : music
- C. paper : pencil

✓ D. wind : whistle (Correct Answer)

Explanation: A BELL produces the sound RING. Likewise, WIND produces the sound WHISTLE. Both pairs share an object-to-characteristic-sound relationship, unlike the other pairs, which are not sound-based associations.

4. HELP : HINDER ::

✓ A. hurry : delay (Correct Answer)

- B. smile : laugh
- C. steal : thief
- D. travel : journey

Explanation: *HELP and HINDER are antonyms (opposites in meaning). Similarly, HURRY (to move quickly) and DELAY (to slow down) are antonyms. The other pairs are synonyms or noun-agent/action relationships, not opposites.*

5. A LOAFER is one who does not like to _____.

- A. shake
- B. sing
- C. smile

✓ D. work (Correct Answer)

Explanation: *A "loafer" is an idle person who avoids effort and responsibility. The word that logically completes the sentence is "work," since a loafer is, by definition, someone who avoids working.*

6. If information gets MIX-UP, it becomes _____.

✓ A. confusing (Correct Answer)

- B. dangerous
- C. old
- D. sensitive

Explanation: *"Mix-up" means a state of confusion or disorder. Information that gets mixed up therefore becomes "confusing," which is closest in meaning to the given word.*

Passage (for Questions 7 & 8):

Syed Ahmed had gone to England on a dual mission to learn and to teach. His mission of learning was fulfilled as well as it might be in a year and five months. He had learnt enough to understand what was there in the character, manner, modes, and instructions of the British that had made them rulers of a vast empire. His teaching mission, however, was not so successful. The British were not interested in being taught to understand and respect Islam. They had more important things to think about, such as the discoveries and inventions of science, the reforms of society, human progress, and freedom of thought and individual liberty. As for religion, if it was necessary or useful to have one, Christianity was good enough, whether as a mythology, a moral code, or a ritual system. Syed Ahmed, therefore, had to find other pupils to teach. So he came back home full of ambitious plans to impart to his Muslim countrymen all that he had learnt in England, as well as what he had gone there to teach but had been unable to.

7. The type of this paragraph is _____.

A. descriptive

B. expository

✓ C. narrative (Correct Answer)

D. science

Explanation: The passage recounts a sequence of events in Syed Ahmed's life — his journey to England, what he learned, his failed teaching mission, and his return home. This chronological telling of events is the hallmark of a **narrative** paragraph, which is the answer supported by the given answer key.

Note: A strict literary classification could also call this passage biographical/expository in tone since it explains a mission and its outcome; however, the official key marks it as narrative (option C) because it is structured as a story of events.

8. The paragraph revolves around _____.

✓ A. Syed Ahmed's dual mission (Correct Answer)

B. Syed Ahmed's failure to teach

C. Syed Ahmed's help for Muslims

D. Syed Ahmed's visit to England

Explanation: The very first line states Syed Ahmed went to England "on a dual mission to learn and to teach." The rest of the paragraph explains how each half of that dual mission unfolded, making "Syed Ahmed's dual mission" the central theme.

QUANTITATIVE REASONING

9. Evaluate $[-30 + 47] - 2[15 + (-119)] =$ _____.

- A. -289
- B. -191
- C. 191

✓ D. 225 (Correct Answer)

Explanation: First bracket: $-30 + 47 = 17$. Second bracket: $15 + (-119) = -104$. Multiply by -2: $-2 \times (-104) = 208$. Finally, $17 + 208 = 225$.

10. Which of the following is a binary operation?

✓ A. Intersection (Correct Answer)

- B. Square
- C. Square root
- D. Transpose

Explanation: A binary operation takes **two** inputs to produce a result. Intersection combines two sets ($A \cap B$). Square, square root, and transpose are all unary operations because each acts on only one input (one number or one matrix).

11. A train is moving with a speed of 30km/h crosses a pole in 21 seconds. The length of train is _____.

A. 25m

B. 150m

✓ C. 175m (Correct Answer)

D. 630m

Explanation: Convert speed to m/s: $30 \text{ km/h} = 30 \times (1000/3600) = 8.33 \text{ m/s}$. Distance covered while crossing a stationary pole equals the train's length: $\text{length} = \text{speed} \times \text{time} = 8.33 \times 21 \approx 175 \text{ m}$.

12. If $f(x) = (x^2 - 3)$ and $f(x) = 1$, then value of x is _____.

A. -3, 2

B. 2, -3

✓ C. -2, 2 (Correct Answer)

D. 4, -2

Explanation: Set $x^2 - 3 = 1$, so $x^2 = 4$, giving $x = \pm 2$, i.e. $x = 2$ or $x = -2$.

13. In a tournament 8 teams were playing. Each team has to play a match with every other team. Two semifinals and one final are played. How many total matches were played?

✓ A. 25 (Correct Answer)

B. 28

C. 31

D. 34

Explanation: This is marked as option A (25) in the official answer key. A pure single round-robin among 8 teams alone would need $8 \times (8-1)/2 = 28$ matches (option B), while adding 2 semifinals + 1 final on top of a round-robin would give 31 (option C). The intended reading behind the key's answer of 25 is that the teams played in shorter group-stage groupings before the knockout rounds rather than a full round-robin among all 8 teams.

Note: The original paper prints duplicated option letters for this question (A, B, A, B instead of A, B, C, D), which is a printing error in the source paper. We have kept the answer that matches the official key (25) while flagging this inconsistency for the student's awareness.

14. The angle between the hands of a clock at 4:30 is _____.

- A. 30°
- B. 35.5°
- C. 37.5°

✓ D. 40° (Correct Answer)

Explanation: This is marked as option D (40°) in the official answer key. Using the standard clock-angle formula, $\text{Angle} = |30H - 5.5M|$, at 4:30 this gives $|30(4) - 5.5(30)| = |120 - 165| = 45^\circ$, which is the mathematically correct value.

Note: 45° is not among the printed options, so there appears to be a discrepancy in this question of the original paper. We have kept the official key's choice (D) marked as correct, but 45° is the value a standard calculation actually produces.

PHYSICS

15. The mathematical formula $F = ma$ belongs to _____.

A. Newton's First Law

✓ B. Newton's Second Law (Correct Answer)

C. Newton's Third Law

D. Newton's Law of Interference

Explanation: Newton's Second Law states that the force acting on an object equals the product of its mass and acceleration: $F = ma$.

16. Which one of the following mechanisms is exhibited by an oil film floating on water surface with powerful color pattern?

A. Diffraction of light

✓ B. Interference of light (Correct Answer)

C. Reflection of light

D. Refraction of light

Explanation: The colorful patterns seen in a thin oil film are caused by **interference of light** — light waves reflecting off the top and bottom surfaces of the thin film interfere constructively and destructively at different wavelengths, producing the rainbow effect.

17. Which of the following maximum value reached by the voltage or current in one cycle of alternating current?

✓ A. Instantaneous value (Correct Answer)

B. Peak to peak value

C. Peak value

D. Root means square value

Explanation: This is marked as option A (Instantaneous value) in the official answer key. Conventionally, the **peak value** (option C) is the term used for the single maximum value reached by voltage or current in one cycle of AC, while the instantaneous value refers to the value at any given moment in time.

Note: Based on standard physics definitions, “peak value” (C) is the textbook-accurate answer for the maximum value in one AC cycle; we have retained the paper's official key (A) as marked, while noting this distinction for clarity.

COMPUTER SCIENCE

18. Computer register is a _____ in computer operation.

✓ A. memory type (Correct Answer)

- B. network device
- C. physical device
- D. program type

Explanation: A register is a small, extremely fast storage location built into the CPU that temporarily holds data, instructions, or addresses during processing — making it a type of memory used in computer operation.

19. 'Bootstrap' specifically helps in the _____ process of computer.

- A. arithmetic
- B. backup
- C. networking

✓ D. turn-on (Correct Answer)

Explanation: "Bootstrapping" (booting) refers to the process of starting up a computer and loading the operating system into memory when the machine is turned on.

20. The _____ is generally NOT a network topology of computer networks.

A. mesh

B. ring

✓ C. stage (Correct Answer)

D. star

Explanation: Mesh, ring, and star are all standard, well-known network topologies. "Stage" is not a recognized network topology, making it the correct choice for this "NOT" question.

MATHEMATICS

21. The sum of the series $2 + 2/3 + 2/9 + \dots$ is _____.

A. 2

✓ B. 3 (Correct Answer)

C. 3.4

D. 3.5

Explanation: This is an infinite geometric series with first term $a = 2$ and common ratio $r = 1/3$ (each term is one-third of the previous term). Sum to infinity $= a / (1 - r) = 2 / (1 - 1/3) = 2 / (2/3) = 3$.

22. What is the rank of the matrix $\begin{bmatrix} 1 & 2 & 3 \\ 2 & 4 & 6 \\ 5 & 10 & 15 \end{bmatrix}$?

✓ A. 1 (Correct Answer)

B. 2

C. 3

D. 0

Explanation: Row 2 = $2 \times$ Row 1, and Row 3 = $5 \times$ Row 1 — every row is a scalar multiple of the first row. Since all rows are linearly dependent, only one row is independent, so the rank of the matrix is 1.

23. Solution of the equation $\sin^2 x = 1$ is _____.

A. $\pi/4, 3\pi/4$

B. $3\pi/4, \pi/2$

C. $\pi/4, 3\pi/2$

✓ D. $3\pi/2, \pi/2$ (Correct Answer)

Explanation: $\sin^2 x = 1 \Rightarrow \sin x = \pm 1$. Within the standard range, $\sin x = 1$ at $x = \pi/2$ and $\sin x = -1$ at $x = 3\pi/2$. So the solutions are $\pi/2$ and $3\pi/2$.

ESSAY SECTION — MODEL SOLUTIONS

24. Argumentative Essay — Topic Chosen: “Are Standardized Tests Effective?”

Standardized tests have long been the backbone of academic evaluation across the world, and Pakistan is no exception. From board examinations to national aptitude tests, these

assessments are used to measure a student's knowledge on a common scale. Yet the question of whether such tests are truly effective remains a subject of heated debate.

Proponents argue that standardized tests provide an objective, uniform method of comparing students across different schools, cities, and backgrounds. Because every student answers the same set of questions under the same conditions, examiners can rank and evaluate performance fairly, without the bias that might creep into subjective grading such as classroom assessments or teacher recommendations. Standardized tests also make large-scale evaluation practical: universities and employers can efficiently screen thousands of applicants using a single, comparable metric, saving considerable time and resources.

However, critics raise valid concerns about the limitations of this approach. Standardized tests often reward rote memorization and quick recall rather than genuine understanding, creativity, or problem-solving ability. Many capable students who excel in practical or creative tasks perform poorly under timed, high-pressure testing conditions, meaning the results may not truly reflect their abilities. Furthermore, students from under-resourced schools or lower-income families frequently lack access to the same quality of test preparation as their wealthier peers, which can turn standardized tests into a measure of privilege rather than pure merit.

A balanced view suggests that standardized tests are effective as one tool among many, rather than as the sole determinant of a student's worth. When combined with continuous classroom assessment, project work, and interviews, they can provide a fuller, fairer picture of a student's true capabilities. Education systems that rely on standardized testing alone risk narrowing the definition of success to a single number, discouraging the diverse skills that a well-rounded education should nurture.

In conclusion, standardized tests do serve an important and practical purpose in ensuring fairness and comparability in large education systems, but their effectiveness is limited when used in isolation. The most effective assessment strategy is one that blends standardized testing with holistic, continuous evaluation, ensuring that every student's true potential is recognized.

25. Narrative Essay — Topic Chosen: “A Day at the Amusement Park”

A day at the amusement park had been circled on my calendar for weeks, and when the morning finally arrived, I could barely sit still through breakfast. My cousins and I piled into the car with sunhats, sunscreen, and a picnic basket, buzzing with excitement about the rides we had seen only in pictures.

The moment we stepped through the gates, the park greeted us with the smell of popcorn, the distant screams from the roller coaster, and cheerful music floating over the crowd. We

wasted no time and rushed straight toward the towering roller coaster, its silver tracks twisting and looping high above the trees. My heart pounded as we climbed into the seats and the safety bar clicked into place. Slowly, the coaster crept up the first hill, and then — in a heart-stopping instant — it plunged downward. We screamed, laughed, and screamed again as the coaster whipped through loops and sharp turns, until it finally rolled to a gentle stop, leaving us breathless and grinning from ear to ear.

After catching our breath, we wandered toward the milder rides — a giant Ferris wheel that lifted us above the entire park, offering a spectacular view of the rides, the food stalls, and the lake shimmering in the afternoon sun. We also tried the bumper cars, laughing uncontrollably as we crashed into each other again and again, and the haunted house, where we jumped at every creaking door and sudden flash of light.

By midday, hunger caught up with us, so we settled at a shaded bench and unpacked our picnic — sandwiches, chips, and cold lemonade that tasted better than any feast after all that excitement. As the sun began to dip lower, we squeezed in one last ride: the swinging pirate ship, which sent us soaring back and forth until our stomachs fluttered with every swing.

As evening lights began twinkling across the park and we made our way back to the car, tired but joyful, I realized this was a day I would remember for a long time — a perfect blend of thrill, laughter, and togetherness with the people I loved

most.