

Scholastic Aptitude Test, 2018 EC, social science, entrance exam, round 1, booklet 587

Grade 12 · Aptitude · 2018 E.C.

MARKING KEY: CONFIDENTIAL

Time allowed: 120 minutes

Questions: 47

Total marks: 47

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1. Choose the grammatically correct sentence:

(1)

- A. I asked the bank to lending me the money.
- B. I asked the bank to borrow me the money.
- C. ✓ **I asked the bank to lend me the money.**
- D. I asked the bank to borrowing me the money.

Answer: C

The correct infinitive structure is 'to lend', and the verb 'lend' (not 'borrow') is used when someone gives money to be returned later.

2. Choose the grammatically correct sentence:

(1)

- A. I think he was broken the cleaning machine.
- B. I think he did broken the cleaning machine.
- C. ✓ **I think he has broken the cleaning machine.**
- D. I think he did broke the cleaning machine.

Answer: C

The present perfect tense 'has broken' correctly expresses that the action of breaking has occurred and has a present result.

3. Choose the grammatically correct sentence:

(1)

- A. The price is dependent on how much pieces you buy.
- B. The price is depend on how much pieces you buy.
- C. ✓ **The price is dependent on how many pieces you buy.**
- D. The price is depend on how many pieces you buy.

Answer: C

Since 'pieces' is a plural countable noun, 'how many' must be used instead of 'how much', and 'dependent on' is the correct adjective-preposition combination.

4. Choose the grammatically correct sentence: (1)

- A. ✓ **Reducing inflation is central to the country's economic policy.**
- B. Reducing inflation is central in the countrys economic policy.
- C. Reducing inflation is central with the country economic policy.
- D. Reducing inflation is central to the countrys economic policy.

Answer: A

The adjective 'central' is followed by the preposition 'to', and the possessive 'country's' requires an apostrophe before the 's'.

5. What is the contradictory term for the word “prey”? (1)

- A. Animal
- B. Moth
- C. Chameleon
- D. ✓ **Predator**

Answer: D

In ecological terms, 'predator' (the hunter) is the direct counterpart or opposite of 'prey' (the hunted).

6. What does “...change color according to their background” mean in the passage? (1)

- A. ✓ **camouflage**
- B. evolutionary
- C. visibility
- D. variation

Answer: A

The ability of an animal to blend into its environment by changing color is the definition of camouflage.

7. What is the significance of mentioning Dr. Kettlewell's research? (1)

- A. ✓ **It relates research to real examples.**
- B. It shows how doubtful the research is.
- C. It shows why the research dates back to the 1950s.
- D. It shows why chameleons change color.

Answer: A

Kettlewell's classic research on the peppered moth serves as a concrete, real-world scientific example to illustrate natural selection and evolutionary change.

8. Why the chameleon's change of color is NOT considered evolutionary? (1)

- A. The chameleon cannot reproduce itself.
- B. The chameleon is different from moth in some ways.
- C. ✓ **The chameleon's change of color is not inherited.**
- D. The chameleon's change of color is not permanent.

Answer: C

Evolutionary changes are heritable and occur over generations; a chameleon's individual color change is a temporary, non-inherited physiological response.

9. What is the central idea of the passage? (1)
- A. Tools for sufficient renewable energy do not yet available.
 - B. Researchers are not working toward the need of renewable energy.
 - C. ✓ **The renewable energy sector is not growing at the required level.**
 - D. Infrastructure for renewable energy is undoubtedly accessible.

Answer: C

The passage outlines that the development of renewable energy infrastructure is lagging behind the rapid expansion and massive energy demands of modern technologies like AI.

10. Which of the following statement is used as evidence for the answer to question number 13? (1)
- A. Para 1 [...] simply because infrastructure ... does not yet exist.]
 - B. Para 2 [...] education ... tool to cutting back on A.I.'s emissions.]
 - C. Para 2 [Beyond improving investments ... carbon footprint.]
 - D. ✓ **Para 1 [...] energy sector is... the energy needs of data centers...]**

Answer: D

The cited phrase in Paragraph 1 explains that the energy sector's growth is insufficient to keep pace with the massive energy needs of AI data centers.

11. What is the third important way of reducing carbon footprint, according to the passage? (1)
- A. using fossil fuels
 - B. educating people
 - C. ✓ **efficient algorithmic optimization**
 - D. working on renewable energy

Answer: C

In addition to improving green energy and hardware, the researchers highlight algorithmic optimization (improving software efficiency) as a major way to reduce carbon footprints.

12. Which sentence provides the evidence for the answer to question number 15? (1)
- A. Para 1 [According to Noman ... centers at such a rapid pace.]
 - B. Para 1 [The renewable energy ... Artificial Intelligence (A.I.)]
 - C. Para 2 [Bashir adds that ... cutting back on A.I.'s emissions.]
 - D. ✓ **Para 2 [Beyond improving investments into ... optimization...]**

Answer: D

The second paragraph clearly links the concept of reducing the carbon footprint to software-level 'optimization' beyond just energy investment.

13. Statement I : The victory of Adwa over Italian Fascism is said to be symbolic. Statement II : This victory sparked national liberation movements across sub-Saharan Africa. Statement III : The victory of Adwa has disproved the racial theory of Western superiority complex. Statement IV : More than 26 African countries adopted the tri-color flag of Ethiopia. What is the relationship among the above statements? (1)
- A. Statement III effect; statement I, II and IV causes
 - B. Statements II cause; statement I, III and IV effects
 - C. ✓ **Statement I cause; statement II, III and IV effects**
 - D. Statement IV cause; statement I, II and III effects

Answer: C

The victory of Adwa (Statement I) acted as the historical cause that produced multiple significant outcomes, such as inspiring liberation movements (II), defeating racist theories (III), and influencing flag designs (IV).

14. Statement: Almost all the characteristics that distinguish birds from other animals can be traced one way or another to the benefits brought by feathers. Indeed, the very possession of a feather is enough to define a creature as a bird. Which of the following assumption would logically follow from the above statement? (1)
- A. Some birds benefit from having feathers.
 - B. Having a feather characterizes birds as creatures.
 - C. If a creature is a bird, it might have a feather.
 - D. ✓ **If a creature has a feather, then it is a bird.**

Answer: D

The statement asserts that possessing a feather is a sufficient condition to define a creature as a bird, meaning if a creature has a feather, it must be a bird.

15. TREES is to FOREST as Tower is to: (1)
- A. Countryside
 - B. Landscape
 - C. Scenery
 - D. ✓ **City**

Answer: D

This is a part-to-whole analogy: many trees make up a forest, just as many buildings and towers make up a city.

16. GRAMMAR is to LANGUAGE as Culture is to: (1)
- A. ✓ **Society**
 - B. Philosophy
 - C. Knowledge
 - D. Fact

Answer: A

Grammar represents the system of rules that structures a language, while culture represents the system of customs and values that structures a society.

17. DOGMA : RELIGIOUS :: Ideology : (1)
- A. Theoretical
 - B. Hypothetical
 - C. Physiological
 - D. ✓ **Political**

Answer: D

Dogma is a characteristic system of authoritative tenets in a religious context, while an ideology is a corresponding system of beliefs in a political context.

18. COMMODITY : PRODUCTION :: _____ : Extraction (1)
- A. Agricultural
 - B. Medical
 - C. Industrial
 - D. ✓ **Mineral**

Answer: D

A commodity is obtained through the process of industrial production, whereas a mineral is obtained through the process of geological extraction.

19. The Fascist occupation of Ethiopia lasted for about five years in spite of the resistance movement. (1)
- A. business
 - B. ✓ **invasion**
 - C. civilization
 - D. transformation

Answer: B

In a military and historical context, 'occupation' refers to the invasion, conquest, and subsequent control of a sovereign territory by foreign forces.

20. Most of the advertisement people are exposed to falls into the consumer advertising category. (1)

- A. enjoying B. reading
C. suffering D. ✓ experiencing

Answer: D

To be 'exposed to' advertisements means to come into contact with them or experience them in daily life.

21. The premature death of the president was shocking to the nation at large. (1)

- A. ✓ untimely B. glorious
C. long overdue D. mysterious

Answer: A

The prefix 'pre-' means before, so 'premature' describes something occurring before the natural or expected time, which is synonymous with 'untimely'.

22. My brother wants to pursue a career in education. (1)

- A. leave B. engage
C. ✓ follow D. search

Answer: C

In this context, 'pursue' means to follow or try to achieve something over a period of time, such as a career path.

23. Girls are usually more inhibited than boys to ask questions in the classroom. (1)

- A. fearless
C. ✓ **reserved**
- B. unreserved
D. courageous

Answer: C

'Inhibited' means unable to act in a relaxed and natural way due to self-consciousness or mental restraint, which is synonymous with 'reserved'.

24. The Indian population is predominantly herbivorous in its dietary tradition. (1)

- A. ✓ vegetarian B. non-alcoholic
C. omnivorous D. carnivorous

Answer: A

'Herbivorous' describes an organism that feeds on plants, which in the context of human dietary traditions is synonymous with 'vegetarian'.

25. The receptionist apologized for the delay , explaining that it had been a hectic day. (1)

- A. ✓ rush B. wait
C. hustle D. urgency

Answer: A

'Hectic' means full of frantic, rushed activity, so 'rush' is the most appropriate synonym among the given choices.

26. Liquid matters are characterized by volatility among other things. (1)

- A. acidity
B. velocity
C. density
D. ✓ fluidity

Answer: D

Liquids are fundamentally characterized by their ability to flow and change shape easily, which is described as 'fluidity'.

We are given that $50\% \times \frac{1}{5} \times 120 = 20\% \times \frac{2}{3} \times x$. Simplifying the left side gives 12, and the right side gives $\frac{2}{15}x$. Solving $12 = \frac{2}{15}x$ yields $x = 90$.

33. A person is given the colors blue, red and green and asked to paint six houses in a row. The rules are: R1: No two neighboring houses can have the same color. R2: The second and the last houses must have same color. R3: The third and fifth houses cannot have the same color. Then which houses will always have the same color? (1)

A. ✓ **The fourth and the sixth**
C. The first and the fourth

B. The first and the sixth
D. The second and the fifth

Answer: A

Let $H_2 = H_6 = c_1$. Since H_3 and H_5 are adjacent to H_2 and H_6 respectively, neither can be c_1 . Since they must have different colors (R3), one is c_2 and the other is c_3 . Thus, H_4 (being adjacent to both H_3 and H_5) must be c_1 , meaning H_4 and H_6 will always have the same color.

34. In a household, there are three mothers, six daughters and four granddaughters living together. What is the smallest possible number of females in the house? (1)

A. 9
C. 12

B. ✓ **7**
D. 13

Answer: B

By structuring the family tree with four generations (e.g., one great-grandmother who has two daughters, each of whom has two daughters of her own), we get 3 mothers, 6 daughters, and 4 granddaughters with only 7 females in total.

35. For $x, y \neq 0, x \neq y$, which one of the following is the simplified form of (1)

$$\frac{(x-y)^2}{x^2-y^2} \left[\left(\frac{1}{x} + \frac{1}{y} \right) \div \left(\frac{1}{y} - \frac{1}{x} \right) \right]$$

A. $\emptyset$
C. -1

B. 0
D. ✓ **1**

Answer: D

The first term simplifies to $\frac{x-y}{x+y}$. The bracketed term simplifies to $\frac{x+y}{xy} \div \frac{x-y}{xy} = \frac{x+y}{x-y}$. Multiplying them gives $\frac{x-y}{x+y} \times \frac{x+y}{x-y} = 1$.

36. Let x and y be real numbers such that $0 < x < 1$ and $0 < y < 1$. Consider the two quantities A and B given in the following table. Quantity A Quantity B xy $x + y$ Which one of the following is true? (1)

A. The two quantities are equal.
C. Quantity A is greater than quantity B.

B. The relationship cannot be determined.
D. ✓ **Quantity B is greater than quantity A.**

Answer: D

Since $0 < y < 1$ and $x > 0$, we have $xy < x$. Also, since $y > 0$, we have $x < x + y$. Combining these inequalities gives $xy < x + y$, meaning Quantity B is always greater than Quantity A.

37. Three people X, Y and Z can finish a certain job in 3, 4 & 6 hours respectively. All the three started to do the job together, but after 1 hour X decides to quit and left the group. How many minutes will it take for Y and Z together to finish the remaining job? (1)

A. 20
C. ✓ **36**

B. 25.7
D. 30

Answer: C

In 1 hour, X, Y, and Z completed $\frac{1}{3} + \frac{1}{4} + \frac{1}{6} = \frac{3}{4}$ of the job. The remaining $\frac{1}{4}$ of the job is done by Y and Z at a combined rate of $\frac{1}{4} + \frac{1}{6} = \frac{5}{12}$ per hour, taking $\frac{1/4}{5/12} = \frac{3}{5}$ hours, which is 36 minutes.

38. Suppose that a driver drives a car at a speed of 20 km/hr for the first one hour, then increases the speed to 45 km/hr for the next three hours and lastly decreases the speed to 30 km/hr for the two hours. How many kilometers has the driver covered in total? (1)

A. 95
B. 100
C. ✓ 215
D. 75

Answer: C

The total distance is calculated by summing the distance for each interval: $(20 \times 1) + (45 \times 3) + (30 \times 2) = 20 + 135 + 60 = 215$ kilometers.

39. Consider the two quantities A and B given in the following table. Quantity A Quantity B Circumference of a circle with radius 2 units Perimeter of an equilateral triangle with side length 4 units Which one of the following is true? (1)

A. ✓ Quantity A is greater than quantity B.
B. The relationship cannot be determined.
C. Quantity B is greater than quantity A.
D. The two quantities are equal.

Answer: A

Quantity A is $2\pi(2) = 4\pi \approx 12.57$ units, and Quantity B is $3(4) = 12$ units. Since $12.57 > 12$, Quantity A is greater than Quantity B.

40. Given a rectangular region, which one of the following is the possible unit of measure of area? (1)

A. meters
B. inches
C. cubic centimeter
D. ✓ Hectare

Answer: D

Among the options, 'meters' and 'inches' are units of length, 'cubic centimeter' is a unit of volume, and 'Hectare' is a metric unit of area.

41. Which one of the following is true about the lines $2x - y = 2$ and $x - 2y = 2$? (1)

A. They are parallel lines.
B. ✓ They are intersecting lines.
C. They have the same y-intercept.
D. They are Perpendicular lines.

Answer: B

The slopes of the two lines are 2 and $1/2$. Since their slopes are unequal and not negative reciprocals, the lines are neither parallel nor perpendicular, but they do intersect at exactly one point.

42. Given a parallelogram with length of base is $2x$ units and length of the other side x units. An equilateral triangle of side length x units and height equal to the height of the parallelogram is removed from one side of the parallelogram. What is the area of the remaining trapezoid? (1)

A. ✓ $\frac{3\sqrt{3}}{4}x^2$
B. $2\sqrt{3}x^2$
C. $\frac{\sqrt{3}}{4}x^2$
D. $\sqrt{3}x^2$

Answer: A

The height of the equilateral triangle of side x is $h = \frac{\sqrt{3}}{2}x$, which is also the height of the parallelogram. The area of the parallelogram is base $\times$ height $= 2x \times \frac{\sqrt{3}}{2}x = \sqrt{3}x^2$, and removing the triangle (area $\frac{\sqrt{3}}{4}x^2$) leaves $\sqrt{3}x^2 - \frac{\sqrt{3}}{4}x^2 = \frac{3\sqrt{3}}{4}x^2$.

43. Which one of the following is the simplified form of the expression $\frac{\sqrt{6}}{\sqrt{12}+\sqrt{8}} \left(\frac{1}{\sqrt{2}} + \frac{1}{\sqrt{3}} \right)$? (1)
- A. $\sqrt{2}$ B. $\checkmark \frac{1}{2}$
 C. 1 D. $\frac{1}{\sqrt{2}}$

Answer: B

Since $\sqrt{12} + \sqrt{8} = 2(\sqrt{3} + \sqrt{2})$ and $\frac{1}{\sqrt{2}} + \frac{1}{\sqrt{3}} = \frac{\sqrt{3}+\sqrt{2}}{\sqrt{6}}$, the expression simplifies directly to $\frac{\sqrt{6}}{2(\sqrt{3}+\sqrt{2})} \times \frac{\sqrt{3}+\sqrt{2}}{\sqrt{6}} = \frac{1}{2}$.

44. What is the nature of the roots of the equation $x^2 - 3x + 3 = 0$? (1)
- A. $\checkmark$ No real roots B. one root rational
 C. Distinct real roots D. Repeated real roots

Answer: A

The discriminant of the quadratic equation is $D = b^2 - 4ac = (-3)^2 - 4(1)(3) = 9 - 12 = -3$. Since $D < 0$, the equation has no real roots.

45. An employer deals with a worker to start with monthly salary of Birr 1,000 and promise to double the salary every year. For how many years will the worker stay in the job to get a better salary not exceeding Birr 10,000? (1)
- A. 5 B. 6
 C. $\checkmark$ 4 D. 9

Answer: C

The monthly salary in successive years is Birr 1000 (Year 1), Birr 2000 (Year 2), Birr 4000 (Year 3), and Birr 8000 (Year 4). In Year 5, it would double to 16000 which exceeds 10000, so the worker stays for 4 years.

46. A tour company has a discount package for a round trip from place P to place Q. The discount price is Birr $(1000 - 4x)$ per person from x travelers. How many people should use the package so that the company has maximum income? (1)
- A. 150 B. 200
 C. 250 D. $\checkmark$ 125

Answer: D

The total revenue is $R(x) = x(1000 - 4x) = 1000x - 4x^2$. This quadratic function opens downwards and reaches its maximum value at the vertex $x = -b/(2a) = -1000/(2 \times -4) = 125$ people.

47. If $3x - 2y = 1$, then what is the value of $\frac{36^{2y+1}}{9^{3x+1} \cdot 8^{2y-x}}$? (1)
- A. $\frac{2^x}{9}$ B. $\checkmark \frac{8}{9}$
 C. $\frac{2}{9}$ D. 4^x

Answer: B

By expressing the bases 36, 9, and 8 in terms of their prime factors (2 and 3), the expression simplifies to $2^{3x-2y+2} \cdot 3^{-2(3x-2y)}$. Substituting the given equation $3x - 2y = 1$ yields $2^{1+2} \cdot 3^{-2(1)} = 2^3 \cdot 3^{-2} = \frac{8}{9}$.

END OF THE MARKING KEY

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