

# Sample Paper NAT IM

**VERBAL**

Complete the sentences by choosing the most appropriate word, from the given lettered choices (A to D) below each.

1. Sensory cells \_\_\_\_\_ impulses by producing electrical signals.

- A. responding
- B. to respond
- C. respond to
- D. respond

2. \_\_\_\_\_ crude hydrocarbons into such products as gasoline and petrochemicals is at the heart of the petroleum industry.

- A. refine
- B. refined
- C. to refining
- D. refining

Each question below consists of a related pair of words, followed by five lettered pairs of words. Select the lettered pair that best expresses a relationship similar to that expressed in the original pair.

3. CINNAMON: BARK::

- A. pea: climber
- B. nutmeg: seed
- C. tea: shrub
- D. coffee: bush

4. SNAKE: FANG::

- A. vampire: teeth
- B. rabbit: hutch
- C. snail: antennae
- D. action: fin

Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters.

5. SIMULATED:

- A. real
- B. contrived
- C. unassuming
- D. false

Choose the word most similar in meaning to the capitalized

ones.

**6. INTERVENE:**

- A. come between
- B. withdraw
- C. contact
- D. construct
- E. require

**7. SLOTH:**

- A. sadness
- B. regret
- C. laziness
- D. forgetfulness

**Read the passage to answer question 8-10**

Exercise and vitamin D increase the amount of calcium in your bones. You can get all the vitamin D you need from simply being outdoors for thirty minutes. Milk is fortified with vitamin D, and drinking nonfat milk gives you calcium, vitamins, and energy. However, if you decide to take supplemental vitamin D, 400 to 800 IU per day will safely prevent any deficiencies.

**8. The word "fortified" is closest in meaning to:**

- A. blended
- B. flavored
- C. irradiated
- D. enhanced

**9. The word "supplemental" is closest in meaning to:**

- A. additional
- B. special
- C. natural
- D. concentrated

**10. The word "deficiencies" is closest in meaning to:**

- A. abnormalities
- B. insufficiencies
- C. illnesses
- D. excesses

## ANALYTICAL REASONING

### Questions 11-13

A spice farmer must harvest exactly five spices grown on her farm. The spices must be harvested consecutively, the harvest of one being completed before the harvest of the next begins. The five spices to be harvested are allspice, cloves, nutmeg, sage, and thyme.

Nutmeg must be harvested before thyme.  
Cloves must be harvested immediately after allspice.  
Sage must not be harvested first.

11. Which of the following is an acceptable order for the harvesting of the five spices?

- A. nutmeg, sage, allspice, cloves, thyme
- B. sage, nutmeg, thyme, allspice, cloves
- C. allspice, sage, thyme, cloves, nutmeg
- D. cloves, nutmeg, allspice, sage, thyme
- E. allspice, cloves, thyme, sage, nutmeg

12. If nutmeg is the fourth spice harvested, which of the following must be false?

- A. Allspice is the first spice harvested.
- B. Sage is harvested immediately after cloves.
- C. Exactly one crop is harvested between sage and thyme.
- D. Nutmeg is harvested immediately after cloves.
- E. Thyme is the last spice harvested.

13. If sage is the second spice harvested, allspice must be which of the following?

- A. the first or the third spice harvested
- B. the first or the fourth spice harvested
- C. the third or the fourth spice harvested
- D. the third or the fifth spice harvested
- E. the fourth or the fifth spice harvested

### Questions 14-17

Individual members from eight animal species are to be chosen for a special exhibit habitat. The eight species are P, Q, R, S, T, U, V and W. Because of the way these animals interact, certain guidelines must be followed.

Animals that will fight cannot be placed in the habitat together.  
Members of species V will fight with members of species S, T and U.  
A member of species R will fight with a member of species Q, but only if a member of species V is present.

If a member of species W is present, a member of species P will not fight with any animal.

If a member of species W is not present, a member of species P will fight with members of species Q and R.

No fights other than those described above will occur.

**14.If V is chosen for the habitat, which of the following CANNOT also be chosen?**

- A. P
- B. Q
- C. T
- D. R
- E. W

**15.If two other animals are to be added to a habitat containing a member of species Q and a member of species V in the habitat, which of the following could be those two animals?**

- A. members of species W and P
- B. members of species R and P
- C. members of species S and W
- D. members of species W and R
- E. members of species U and R

**16.If two habitats are set up, one containing members of species P, Q, W, and V, and the other containing members of species S, U, R, and T, which animals could be switched one for the other without provoking any fights?**

- A. species W and U
- B. species Q and R
- C. species P and R
- D. species V and S
- E. species W and T

**17.If S, P, and R are chosen for the habitat, which of the following must also be chosen?**

- A. W
- B. V
- C. U
- D. T
- E. Q

**Plant Y thrives in environments of great sunlight and very little moisture. Desert X is an environment with constant, powerful sunlight, and next-to-no moisture. Although Plant Y thrives in the areas surrounding Desert X, it does not exist naturally in the desert, nor does it survive long when introduced there.**

**18.Which of the following would be most useful in explaining the apparent discrepancy above?**

- A. Desert X's climate is far too harsh for the animals that normally feed on Plant Y.
- B. For one week in the fall, Desert X gets consistent rainfall.
- C. The environment around Desert X is ideally suited to the needs of Plant Y.
- D. Due to the lack of sufficient moisture, Desert X can support almost no plant life.
- E. Plant Y cannot survive in temperatures as high as those normally found in Desert X.

Although air pollution was previously thought to exist almost exclusively in our nation's cities, the recent increase in the number of persons suffering from illnesses attributed to excessive air pollution leaves us no choice but to conclude that ether, non-urban areas are now affected.

19. Which of the following, if true, would most seriously weaken the conclusion of the argument above?

- A. The nation's cities have seen a marked decrease in their levels of air pollution.
- B. The nation has experienced a sharp decrease in the number of people moving out of its cities.
- C. Illnesses due to air pollution are among the least common causes of death to urban dwellers.
- D. Many illnesses previously thought unrelated to air pollution are now considered to be caused by it.
- E. As a result of the problems in urban areas, non-urban areas have passed strict pollution control measures.

Agha Khan Blood Bank, Inc. is a private blood products company that buys blood only from qualified donors. To qualify, a person must weigh at least 105 pounds, must not have taken malaria medication in the last three years, must never have had hepatitis, and must never have used intravenous drugs. Agha Khan Blood Bank nurses know that traveling has an effect on the possibilities for blood donation: Everyone who travels to Malaysia is required to take malaria medication; no one who enters Singapore can have ever used intravenous drugs; everyone traveling to Gorisimi gets hepatitis.

20. Which of the following situations would not automatically disqualify a person from selling blood to Agha Khan Blood Bank?

- A. traveling to Malaysia two years ago
- B. having once weighed 110 pounds and now weighing 95 pounds
- C. being denied admission to Singapore
- D. traveling to Gorisimi five years ago
- E. using intravenous drugs that were legal at the time

**QUANTITATIVE**

21.  $\frac{4^3 - 4^2}{2^2} =$

- A. 1
- B. 2
- C. 4
- D. 12
- E. 16

22. What was the original price of an item if a discount of 20 percent reduced the price to Rs.100?

- A. Rs.80
- B. Rs.120
- C. Rs.125
- D. Rs.150
- E. Rs.250

23. The sum of 0.629, 4.3 and 2 is:

- A. 0.1259
- B. 6.74
- C. 12.59
- D. 6.929

24. In a basket containing 180 apples, 9 are spoiled. What percent of the apples in the basket are not spoiled?

- A. 95%
- B. 90%
- C. 50%
- D. 25%
- E. 20%

25. What is 5% of 20%?

- A. 1%
- B. 10%
- C. 100%
- D. 0.1

26. When -4 is added to -4, the sum is:

- A. -8
- B. +8
- C. -1
- D. +1
- E. +20

**27. 6 men can do a piece of work in 12 days. How many men are needed to do the work in 18 days?**

- A. 3 men
- B. 6 men
- C. 4 men
- D. 2 men

**28. The average of the first five multiples of 7 is:**

- A. 20
- B. 21
- C. 28
- D. 30

**29. The number missing in the series 2, 6, 12, 20, ?, 42, 56, 72 is:**

- A. 24
- B. 30
- C. 36
- D. 38
- E. 40

**30. Ahmad is 67. His son Raza is 29. In how many years will Raza be exactly half his father's age?**

- A. 2
- B. 5
- C. 7
- D. 9
- E. 12



**CHEMISTRY**

31. The rate of a chemical reaction is:

- A. determined from a balanced chemical equation
- B. the change in concentration of products and reactants in a certain amount of time
- C. not possible to determine experimentally
- D. expressed in units of time

32. In neutralization:

- A. the base is neutralized
- B. the acid is neutralized
- C. a salt is formed
- D. all of the above

33. An alkene with 16 carbons has a molecular formula of:

- A.  $C_{16}H_{16}$
- B.  $C_{16}H_{34}$
- C.  $C_{16}H_8$
- D.  $C_{16}H_{32}$

34. Splitting of atoms is also called:

- A. merging
- B. moderating
- C. fusion
- D. fission

35. Which formula represents sodium sulfate?

- A.  $NaSO_4$
- B.  $NaSO_3$
- C.  $Na_2SO_3$
- D.  $Na_2SO_4$

**PHYSICS**

**36. As the temperature of a solid increases, its specific heat:**

- A. increases
- B. decreases
- C. increases, then decreases
- D. decreases, then increases
- E. remains the same

**37. Radiation is the chief method of energy transfer:**

- A. from the Sun to an Earth satellite
- B. from a gas flame to water in a teakettle
- C. from a soldering iron to metals being soldered
- D. from water to an ice cube floating in it
- E. from a mammal to the surrounding air

**38. If a vibrating body is to be in resonance with another body, it must:**

- A. be of the same material as the other body
- B. vibrate with the greatest possible amplitude
- C. have a natural frequency close to the natural frequency of the other body
- D. vibrate faster than usually
- E. vibrate more slowly than usually

**39. If the distance between a point source of light and a surface is tripled, the intensity of illumination on the surface will be:**

- A. tripled
- B. doubled
- C. reduced to  $\frac{1}{2}$
- D. reduced to  $\frac{1}{3}$
- E. reduced to  $\frac{1}{9}$

**40. In a cathode ray tube:**

- A. electrons go from cathode to plate and then from plate to cathode
- B. electrons go from cathode to plate only
- C. electrons go from plate to cathode only
- D. electrons go from cathode to plate and protons go from plate to cathode
- E. protons go from cathode to plate and electrons go from plate to cathode

**BIOLOGY**

41. End of menstrual cycle in old age is called:

- A. Andropause
- B. Menopause
- C. Gametopause
- D. All of the above

42. Genotype ratio of Mendel's Law of independent assortment is:

- A. 3 : 1
- B. 1 : 2 : 1
- C. 9 : 3 : 3 : 1
- D. None of the above

43. Proteins are made up of:

- A. Proteases
- B. Peptides
- C. Carboxylic acid
- D. Amino acid

44. Which of the following is a characteristic of land plants?

- A. Multicellular plant body
- B. Heterogamy
- C. Alternation of generations
- D. All of the above

45. Blood from head, neck and arms enters the heart by way of the:

- A. Superior vena cava
- B. Inferior vena cava
- C. Pulmonary artery
- D. Pulmonary vein

46. A woman receives her X chromosomes from:

- A. Her mother only
- B. Her father only
- C. Both her mother and her father
- D. Extranuclear DNA in her mother's egg

47. Sea horse is:

- A. a fish
- B. a reptile
- C. a mammal
- D. an invertebrate

**48. Euglena:**

- A. is capable of functioning as a heterotroph**
- B. is capable of functioning as a autotroph**
- C. is capable of functioning both as heterotroph and autotroph**
- D. is a parasite**

**49. In Earthworm, the gaseous exchange takes place:**

- A. Through moist skin rich in blood capillaries**
- B. By coelomic fluid**
- C. Through mouth**
- D. By nephridia**

**50. Animal behavior is identified as:**

- A. Instinctive**
- B. Learned**
- C. Both A & B**
- D. None of the above**

## Answer Keys

Q #.	Right Choice
1	C
2	D
3	B
4	A
5	A
6	A
7	C
8	D
9	A
10	B
11	A
12	D
13	C
14	B
15	A
16	D
17	D
18	E
19	B
20	C
21	D
22	C
23	D
24	A
25	A
26	A
27	C
28	B
29	B
30	D
31	B
32	D
33	D
34	D
35	D
36	E
37	A
38	C
39	E
40	B
41	B
42	C
43	D
44	D
45	A
46	C
47	A

<b>48</b>	<b>C</b>
<b>49</b>	<b>A</b>
<b>50</b>	<b>C</b>