Specimen Entrance Test Paper

General Information

1) This test is an illustration of the layout and format of what can be expected in a typical objective test. It is mainly for guidance, familiarization and practice. However, the exact number of questions, their difficulty levels and variety of the objective questions could vary from test to test.
2) Questions in this paper have been deliberately drawn from a number of test resources available in the market including your course books.

Instructions for this Test

1) Duration of test is 120 Minutes.
2) There are 120 MCQs; 30 each in biology, chemistry, and physics, 15 each in English and mathematics. All questions are compulsory.
3) Select **ONE** out of four possible options given with each question. All questions carry equal marks.
4) Please mark your answers on the **answer sheet** with a ball point or felt tip pen.
5) Do not stay for too long on any one question; maintain a rate of roughly a minute per question.
6) Each correct answer gets you **+4 score**, each wrong answer **–1**, and each un-answered question a **0 score**.
7) No mobile phones, calculators and wrist watches with calculator are allowed in the Examination Hall.
8) Entry in hall would not be allowed without Entrance test ticket.
9) Please return to the examiner both the question paper as well as the answer sheet at the end of the test. Any slippage on this will cost you the Entrance Test.
10) No questions will be answered in the examination hall regarding the contents of the test. You will have to rely entirely on your own understanding of the paper.
11) Students are supposed to detach carbon copy after the test is finished and may match their score three hours later while the answer key is uploaded on website.

Chemistry

1. 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

2. In neutralization:

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

3. 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. $C_{16}H_{32}$

4. **In 80 grams of NaOH, there are:**

   A. 2 moles of NaOH
   B. 1 mole of NaOH
   C. 3 moles of NaOH
   D. 0.5 moles of NaOH

5. **α -rays (Alpha) are:**

   A. fast moving electrons
   B. protons
   C. neutron
   D. positively charged helium nuclei

6. **Iso pentane and neo-pentane are the examples of:**

   A. Functional group isomerism
   B. Position isomerism
   C. Chain isomerism
   D. Metamerism

Physics

7. **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

8. **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

9. **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 usual
   E. vibrate more slowly than usual

10. **Which pair includes a scalar quantity and a vector quantity?**

    A. Kinetic energy and momentum
    B. Potential energy and work
    C. Velocity and acceleration
    D. Weight and force

11. **A particle performs simple harmonic motion of amplitude 0.020 m and frequency 2.5 Hz. What is its maximum speed?**

    A. $0.008\ \mathbf{ms^{-1}}$
    B. $0.050\ \mathbf{ms^{-1}}$
    C. $0.125\ \mathbf{ms^{-1}}$
    D. $0.157\ \mathbf{ms^{-1}}$
    E. $0.314\ \mathbf{ms^{-1}}$

12. A generator produces 100 kW of power at a potential difference of 10 kV. The power is transmitted through cables of total resistance 5 Ω. How much power is dissipated in the cables?

- **A.** 50 W
- **B.** 250 W
- **C.** 500 W
- **D.** 1000 W
- **E.** 50000 W

Biology

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

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

14. 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

15. 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

16. Molds and yeast are classified as

- **A.** Rhodophytes
- **B.** Bryophytes
- **C.** Fungi
- **D.** Ciliates
- **E.** Flagellates

17. Which compound captures light energy in plants?

- **A.** O_2
- **B.** CO_2
- **C.** H_2O
- **D.** Chlorophyll
- **E.** None of the above

18. Which is correctly associated?

- **A.** RNA: thymine
- **B.** DNA: uracil
- **C.** RNA: replication
- **D.** mRNA: picks up amino acids
- **E.** RNA: ribose sugars

Mathematics

19. 18 ÷ 0.04 =?

- **A.** 4.5
- **B.** 45
- **C.** 450
- **D.** 4,500
- **E.** 45,000

20. What is 0.1 percent expressed as a decimal?

A. 0.001
B. 0.01
C. 0.1
D. 1
E. 10.0

21. $\sqrt{30}$ is closest to:

A. 5
B. 5.4
C. 5.5
D. 5.6
E. 5.7

22. A boy takes 3 minutes to read a story of 315 words. How many minutes will it take him to read a story of 945 words at the same rate?

A. 2
B. 8
C. 6
D. 3
E. 9

23. The circumference of a circle whose diameter is 7 inches is approximately:

A. 22 inches
B. 28 inches
C. 38 inches
D. 154 inches
E. 14 inches

English

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

24. Sensory cells _____ impulses by producing electrical signals.

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

25. The first engine _____ heat to drive a machine was the steam engine.

A. made use of
B. to make use of
C. of using
D. of making use

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

26. SIMULATED:

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

27. MONOTHEIST:

- **A.** psychologist
- **B.** analyst
- **C.** polytheist
- **D.** physicist

Identify the word or phrase that needs to be changed for the sentence to be correct:

28. Yesterday one of the teacher was called by the principal. No error.
A B C D E

29. Ali finds it difficult to put his idea into words. No error **.**
A B C D E

Choose the word most similar in meaning to the capitalized ones.

30. DESPAIR:

- **A.** dejection
- **B.** confidence
- **C.** encouragement
- **D.** expectation
- **E.** hope

31. FEEBLE:

- **A.** faint
- **B.** strong
- **C.** vigorous
- **D.** sane

Read the passage to answer the question 9-10

It is important that we should develop an attitude of objective and clear thinking in the study of science. It will open and enlarge our minds which are the very soul of science. Experiments and research work have brought about great advancement in science. Therefore, we must realize that science is a creative activity.

32. Objective and clear thinking make the study of science

- **A.** Easier
- **B.** Difficult
- **C.** Fruitful
- **D.** Enjoyable

33. Experiments and research work are

- **A.** Different
- **B.** Related
- **C.** Unrelated
- **D.** Opposite