N-ACST-2022

CLASS – XI: - (Mental Ability, Physics, Chemistry & Biology)
(Class X Moving to XI - PCB)

(SET-1)
N-ACST (12-06-2022)

Time Duration: 1 Hour   *Maximum marks: 140*

Please read the instructions carefully. You are allotted 5 minutes specifically for this purpose.

INSTRUCTIONS:

1. This question paper contains **35** questions: **Mental Ability (Q. No. 1 to Q. No. 7)**, Biology **(Q. No. 8 to Q. No. 17)**, **Physics (Q. No. 18 to Q. No. 26), and Chemistry (Q. No. 27 to Q. No. 35).**

2. There will be individual qualifying cut-offs for all sections.

3. **For Each correct answer 4 marks will be awarded. No Negative Marking.**

4. Use OMR-Sheet for answering

5. Use HB Pencil / Pen to darken the circles.

6. If you wish to change your answer, erase the already darkened circle completely and then darken the appropriate circle.

7. Use of a calculator and mobile phone is strictly prohibited during the exam.

MENTAL ABILITY (MAT)

1. If I stand by keeping my mouth in the east direction and turn 100° clockwise and turn again 145° anticlockwise, then in which direction keeping my mouth will I stand?
   (A) North - East
   (B) South - East
   (C) North - West
   (D) West

2. Complete the figure by replacing the question mark (?) with a suitable number (logically).

   (A) 13
   (B) 15
   (C) 17
   (D) 19

3. In a certain code, MONKEY is written as XDJMNL. How is TIGER written in that code?
   (A) QDFHS
   (B) SDFHS
   (C) SHFDQ
   (D) UJHFS

4. A, B, C, D, and E play a game of cards. A says to B, "If you give me 3 cards, you will have as many as I have at this moment while if D takes 5 cards from you, he will have as many as E has." A and C together have twice as many cards as E has. B and D together also have the same number of cards as A and C have taken together. If together they have 150 cards, how many cards have C got?
   (A) 28   (B) 29   (C) 31   (D) 35

5. If Nishant is the brother of Brijesh, Mitali is the sister of Nishat, Jai is the brother of Purnima, and Purnima is the daughter of Brijesh. Who is the uncle of Jai?
   (A) Brijesh
   (B) Mitali
   (C) Nishant
   (D) Purnima

6. In a row of 40 girls, when Komal was shifted to her left by 4 places her number from the left end of the row became 10. What was the number of Swati from the right end of the row if Swati was three places to the right of Komal's original position?
   (A) 22
   (B) 23
   (C) 25
   (D) 24

7. If 'S' means '+', '#' means '-', @ means '×' and '*' means '÷', then what is the value of 16 S 4 @ 5 # 72 * 8?
   (A) 25
   (B) 27
   (C) 29
   (D) 36

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BIOLOGY

8. During dark reactions of photosynthesis,

   (A) CO_2 Is reduced to organic compounds   (B) Chlorophyll is activated

   (C) 6C Sugar is broken down into 3C sugar   (D) Photolysis occurs

9. Choose the correct sequence

   (A) Pulmonary vein $\rightarrow$ Pulmonary artery $\rightarrow$ Left auricle $\rightarrow$ Right ventricle

   (B) Pulmonary artery $\rightarrow$ Right auricle $\rightarrow$ Left ventricle $\rightarrow$ Pulmonary vein

   (C) Right auricle $\rightarrow$ Pulmonary artery $\rightarrow$ Pulmonary vein $\rightarrow$ Left ventricle

   (D) Left ventricle $\rightarrow$ Pulmonary vein $\rightarrow$ Pulmonary artery $\rightarrow$ Right auricle

10. In ecosystem the flow of energy is

    (A) Unidirectional   (B) Bidirectional   (C) Multidirectional   (D) All of These

11. A pea plant with yellow and round seeds (YYRR) is crossed with a pea plant having green and wrinkled (yyrr) seeds then in F_2 generation of this dihybrid cross 320 plants are produced. Out of which 180 plants have same phenotypic characters. Identify this phenotype.

    (A) Yellow and wrinkled seeds   (B) Yellow and round seeds

    (C) Green and round seeds   (D) Green and wrinkled seeds

12. In plants, the developing embryo is nourished by endospermic tissues. Its cells consist of _____.

    (A) One genome (haploid)   (B) Two genomes (diploid)

    (C) Three genomes (triploid)   (D) Four genomes (tetraploid)

13. The mismatched pair from the following is:

    (A) Gibberellins – Delaying dormancy in seeds
    (B) Ethylene – Ripening of fruit
    (C) Auxins – Cell elongation   (D) Abscisic acid – Closing of stomata

14. Match Column I with Column II and identify the correct answer.

Column I	Column II
A. Oxytocin	i. Reabsorption of water
B. Luteinising hormone	ii. Regulation of diurnal rhythm of our body

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C. Vasopressin   iii. Uterus contraction during childbirth

D. Melatonin   iv. Body growth

         v. Induces ovulation

(A) A – iii, B – v, C – i, D - ii   (B) A – ii, B – iii, C – iv, D – i

(C) A – v, B – i, C – ii, D - iv   (D) A – v, B – iv, C – i, D - iii

15. Which of the following are present in woody stems for the exchange of gases?

     (A) Tendrils   (B) Lenticel   (C) Stomata   (D) Root

16. In a plant, red fruit (R) is dominant over yellow fruit (r) and tallness (T) is dominat over dwarf (t). If a plant with RRTt is crossed with a plant with rrtt, then _____.

     (A) 75% will be tall with red fruit   (B) 100% will be tall with red fruit

     (C) 25% will be tall with red fruit   (D) 50% will be tall with red fruit

17. Study the relationship of the given pairs and choose the correct option to fill in the blank.

     Estrogen: Oogenesis

     Prolactin: Lactation

     Oxytocin: _____

     (A) Thickness of endometrium   (B) Secondary sexual character

     (C) Rhythmic contraction of the uterus during delivery of the baby

     (D) Provides protection against intestinal and respiratory functions

PHYSICS

18. Determine the number of electrons flowing per second through a conductor, when a current of 32 A flows through it.
(A) 2×10^{20} (B) 10^{20}
(C) 2×10^{19} (D) 10^{19}

19. Image formed by concave mirror can be:
(A) real   (B) inverted
(C) diminished   (D) all of these

20. Three resistances each of 4Ω are connected in the form of an equilateral triangle. The effective resistance between two consecutive vertices of the triangle is:
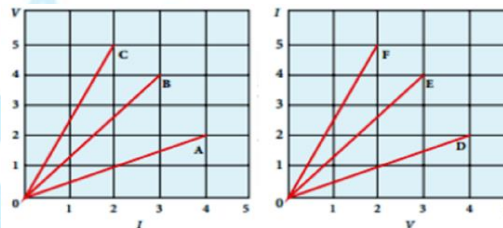
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(A) 8Ω (B) 2.67Ω
(C) 10Ω (D) 1.6Ω

21. The following graphs represent the current versus voltage and voltage versus current for the six conductors A, B, C, D, E and F. Which conductor has least   resistance and which has maximum resistance?

    (A) Least: $R_F = 0.8\ \Omega$, maximum $R_C = 2.5\ \Omega$
    (B) Least: $R_F = 0.4\ \Omega$, maximum $R_C = 2.5\ \Omega$
    (C) Least: $R_F = 0.8\ \Omega$, maximum $R_C = 5.5\ \Omega$
    (D) Least: $R_F = 8.4\ \Omega$, maximum $R_C = 2.5\ \Omega$

22. If the absolute refractive indices of water, glass and diamond are 1.33, 1.50 and 2.42, respectively, then which medium is optically densest?
    (A) Water   (B) Glass
    (C) Diamond   (D) none of these

23. The magnetism of a magnet is due to
    (A) Earth
    (B) Cosmic rays
    (C) Due to pressure of big magnet inside the earth
    (D) Spin motion of electrons

24. A powerful magnet loses its magnetism when:
    (A) A high mechanical stress is applied on it
    (B) A high electric field is applied on it
    (C) It is heated to very high temperature
    (D) It is buried inside the earth for a long time

25. If a ray of light passes from a denser medium to a rarer medium in a straight line, the angle of incidence must be
    (A) 60^0 (B) 45^0
    (C) 0^0 (D) 30^0

26. The change of focal length of an eye lens to focus the image of objects at varying distances is done by the action of the -
    (A) Pupil   (B) Retina
    (C) Ciliary muscles   (D) Blind spot

CHEMISTRY

27. Sodium carbonate reacts with hydrochloric acid and produces
    (A) NaCl   (B) CO_2
    (C) H_2O (D) All of these

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28. The one from the following will turn red litmus into blue is:
    (A) Vinegar (B) Baking soda solution
    (C) Lemon juice (D) Soft drinks

29. Which of the following are exothermic processes
    (i) Reaction of water with quicklime. (ii) Dilution of an acid
    (iii) Evaporation of water (iv) Sublimation of camphor
    (A) (i) & (ii) (B) (ii) & (iii)
    (C) (i) & (iv) (D) (iii) & (iv)

30. When Ag is exposed to air the black coating appears on the surface is
    (A) $AgNO_3$ (B) Ag_2S
    (C) Ag_2O (D) Ag_2CO_3

31. On the prolonged reaction of iron with steam. The oxide of iron will be obtained is:
    (A) FeO (B) Fe_2O_3
    (C) Fe_3O_4 (D) Fe_2O_3 and Fe_3O_4

32. When a non-metal is allowed to react with water _____ .
    (A) CO_2 gas is formed (B) H_2 gas is formed
    (C) Product formed depends on temperature (D) No products are formed

33. A student studies that vinegar which is a diluted form of ethanoic acid, freezes during winter. This suggest about the physical properties of pure ethanoic acid as:
    (A) It has a low boiling point (B) It has a low melting point
    (C) It has a very high boiling point (D) It has a very high melting point.

34. In hydrocarbon a minimum number of carbon atoms which are required to show isomerism is:
    (A) Three (B) Four
    (C) Five (D) Six

35. The correct order of electronegativity is
    (A) $Cl > F > O > Br$ (B) $F > O > Cl > Br$
    (C) $F > Cl > Br > O$ (D) $O > F > Cl > Br$

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