Section : I - Aptitude and Logical Reasoning

1. Which of the following names will appear last in a telephone directory?
   (a) Mahinder   (b) Mahindra   (c) Mohinder   (d) Mahender

2. Select the related word from the given alternatives.
         Cow : Milk :: Bees : ?
   (a) Silk   (b) Honey   (c) Flower   (d) Water

3. If A = Z, B = Y and so on, code the following 'EDITOR'
   (a) VWRGLI   (b) VWRGVI   (c) VWVGLI   (d) VWRLLI

4. If South-East becomes North, North-East becomes West and so on.
   What will West become?
   (a) North-East   (b) North-West   (c) South-East   (d) South-West

5. If FROG : 9268, RANG : 2538, then FORT is coded as _____.
   (a) 9327   (b) 9762   (c) 9627   (d) 9672

Section : II - Mathematics

6. How many composite numbers are there from 1 to 15 ?
   (a) 7   (b) 12   (c) 8   (d) 6

7. If x and y are even numbers, which of the following is an odd number?
   (a) x^y (b) xy   (c) x+ y + xy   (d) x + y + 1

8. How many times is the place value of 6 that of the place value of 4 in the number 5, 67, 438, ?
   (a) 59,600   (b) 1500   (c) 150   (d) 5960

9. If $24.125 = 24 + \dfrac{1}{A} + \dfrac{2}{B} + \dfrac{5}{C}$ then sum of A and B is
   (a) 100   (b) 110   (c) 1100   (d) 1110

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10.   Which of the following are true?
       (i) Zero is the smallest integer.
       (ii) –11 is smaller than – 8.
       (iii) 1 is the smallest positive integer.
       (iv) –1 is the smallest negative integer.
       (v) Sum of two negative integers is a positive integer.
       (a) ii and iii   (b) ii, iii and iv   (c) i, ii and iii   (d) iv and v

11.   The least number which can be written in the form of n(n + 1) (n + 3), where n is a natural number is
       (a) 6   (b) 8   (c) 7   (d) 3

12.   For some integer number p, the odd number has the form.
       (a) P   (b) 2P   (c) P + 1   (d) 2P + 1

13.   How many times will you write even numeral if you write all the numbers from 291 to 300 ?
       (a) 11   (b) 13   (c) 15   (d) 17

14.   Find the difference between the largest and smallest four digit numbers formed by the digits 0, 1, 4
       and 7 without repeating the digits, using all of them at a time.
       (a) 6363   (b) 7410   (c) 6777   (d) 7263

15.   Which of the following statements is not true for the set of whole numbers?
       (a) a + b = b + a   (b) a – b = b – a   (c) a × b = b × a   (d) (a + b) + c = a + (b + c)

Section : III - Science
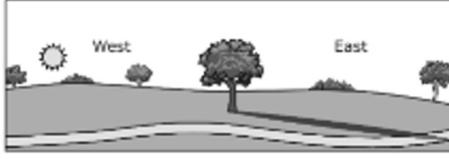
16.   The Earth's orbital speed around the Sun is approximately 29.8 km/s. Express this incredible speed
       in km/h.
       (a) 107, 280 km/h   (b) 178, 800 km/h   (c) 60, 180 km/h   (d) 45,000 km/h

17.   A pharmaceutical company is testing a compound and requires a precise sample mass of 0.005 kg
       (kilograms). Convert this mass to milligrams (mg).
       (a) 5×10^{-3} mg   (b) 5 mg   (c) 50 mg   (d) 5000 mg

18.   A futuristic jet is recorded traveling at a speed of 1.5×10^{4} km/h. Convert this speed into m/s and
       express the answer in standard scientific notation (with one digit before the decimal point).
       (a) 4.167×10^{6} m/s   (b) 4.167×10^{3} m/s   (c) 1.5×10^{7} m/s   (d) 4.167×10^{2} m/s

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19. Which of the following units is not a derived SI unit (i.e., it is an SI base unit)?
     (a) Newton (N)   (b) Candela (cd)   (c) Pascal (Pa)   (d) Watt (W)

20. Given that the SI unit for energy is the Joule (J) and the SI unit for charge is the Coulomb (C = A · s). The
     SI unit for Electric Potential (Voltage) is the Volt (V), defined as one Joule per Coulomb (1 V = 1 J/C).
     Which of the following correctly represents 1 V in terms of fundamental SI base units (kg, m, s, A)?
     (Recall $1\,J = 1\,kg \cdot m^2 \cdot s^{-2}$)

     (a) $kg \cdot m^2 \cdot s^{-2} \cdot A^{-1}$ (b) $kg \cdot m^2 \cdot s^{-3} \cdot A^{-1}$ (c) $kg \cdot m^2 \cdot s^{-1} \cdot A^{-1}$ (d) $kg \cdot m^{-1} \cdot s^{-1} \cdot A^{-1}$

21. All of the following are examples of Natural light sources except one. Which is the exception?
     (a) Sun   (b) Firefly   (c) Oil lamp   (d) Stars

22. Light passes partially through _____ material.
     (a) Transparent   (b) Rough   (c) Opaque   (d) Translucent

23. What is the term for the area where the light is completely blocked by an object?
     (a) Penumbra   (b) Umbra   (c) Antumbra   (d) Eclipse

24. The diagram shows the shadow of a tree in a field at noon on a summer day.
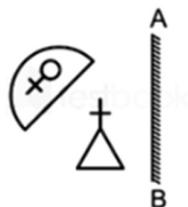
     The sun rises at 7:00 on this day. Which diagram best shows the shadow of the tree at 10:00 A.M. on
     the same day?
   (a)   (b)

     (c)   (d)
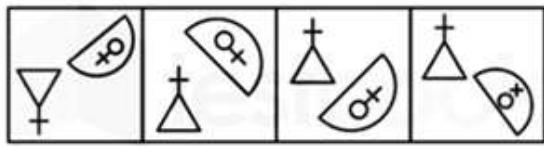
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25.   Choose the correct mirror image of the problem figure if the mirror if placed to the right of the figure.

Problem Figure

Answer Figures:

(a)   (b)   (c)   (d)

26.   The molecular formula of water
(a) H_2O (b) H_2O_2 (c) HO   (d) H_3O

27.   Water is a/an
(a) compound   (b) element   (c) mixture   (d) ion

28.   Nature of water is
(a) colourless   (b) odourless   (c) transparent   (d) all of these

29.   The freezing point and boiling point of water _____ and _____ respectively due to dissolved impurities
(a) decreases, increases   (b) increases, decreases
(c) decreases, decreases   (d) increases, increases

30.   The maximum density of water is at
(a) $4°C$ (b) $0°C$ (c) $1°C$ (d) $2°C$

31.   The change of state of substance from gas to liquid is called
(a) melting   (b) boiling   (c) condensation   (d) vaporization

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32. The number of atoms present in a molecule of an elements is known as:
    (a) Allotropy   (b) Isomerism   (c) Electrolysis   (d) Atomicity

33. The temperature at which a liquid starts converting into solid without any rise in temperature is called
    (a) melting point   (b) boiling point   (c) freezing point   (d) None of these

34. Freezing point of water is
    (a) $100^\circ C$ (b) $0^\circ C$ (c) 273.15K   (d) both b and c

35. Density is _____ per unit volume of a substance:
    (a) Pressure   (b) Mass   (c) Temperature   (d) Melting point

36. What part of the plant makes pollen and grows seeds?
    (a) Leaves   (b) Stem   (c) Roots   (d) Flower

37. The green leaf-like structure that protect the flower in its bud form is called _____.
    (a) Sepals   (b) Petals   (c) Pistil   (d) Stamen

38. The underground part of the plant forms which system?
    (a) Shoot system   (b) Both the systems   (c) Root system   (d) Leaf system

39. Pea's leaf has reticulated venation so what type of root system will be present?
    (a) Tap   (b) Fibrous   (c) Branched   (d) Dense

40. Plants breathe through tiny pores in the leaves called
    (a) pore   (b) leaf blade   (c) stomata   (d) trachea

41. From the given list select how many are biotic in aquatic habitat.
    I. Soil
    II. Fishes
    III. Whale
    IV. Plants
    V. Rocks
    VI. Water
    (a) 2   (b) 3   (c) 4   (d) 5

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42.   What is known as the production of offspring?
        (a) Homeostasis   (b) Growth   (c) Development   (d) Reproduction

43.   Boojho comes across an animal having a streamlined and slippery body. What is the habitat of the animal?
        (a) Water   (b) Desert   (c) Grassland   (d) Mountain

44.   A plant grows toward the light. The Plant's action is an example of
        (a) a stimulus   (b) development   (c) reproduction   (d) a response

45.   What do living things use energy for?
        (a) to succeed in school
        (b) to find friends
        (c) to do things like grow, repair, replace cells, and digest
        (d) to reach their goal

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