Part I

1. If $A = \{1, 2, 3\}$, $B = \{2, 3, 4\}$, and C is the set consisting of all the fractions whose numerators are in A and whose denominators are in B, what is the product of all of the numbers in C?

   (A) 1/64   (B) 1/48   (C) 1/24   (D) 1/12

2. If $x = 1$ and $x = -1/3$ are roots of the equation $mx^2 - nx - 1 = 0$. Determine the value of m and n.

   (A) $m = -3$, $n = -4$ (B) $m = -3$, $n = 1$
   (C) $m = 3$, $n = 2$ (D) More than one of the above

3. The value of $\log_2 \log_2 \log_3 \log_3 27^3$ is

   (A) 0   (B) 1   (C) 2   (D) 3

4. If the simple interest on a sum of money for 2 years at 5% per annum is Rs. 50, what is the compound interest on the same sum at the same rate and for the same time?

   (A) Rs. 51.25   (B) Rs. 52   (C) Rs. 54.25   (D) Rs. 60

5. A bag contains 6 white and 4 red balls. Three balls are drawn at random. What is the probability that one ball is red and the other two are white?

   (A) 3/10   (B) 1/12
   (C) 1/2   (D) 7/12

6. Shyam invested certain amount in three different schemes A, B and C with the rate of interest of 10% p.a., 12% p.a. and 15% p.a. respectively. If the total interest accrued in one year was Rs. 3200 and the amount invested in Scheme C was 150% of the amount invested in Scheme A and 240% of the amount invested in Scheme B, what was the amount invested in Scheme B?

   (A) Rs. 5000   (B) Rs. 6500

   (C) Rs. 8000   (D) Cannot be determined

7. A train overtakes two persons who are walking in the same direction in which the train is going, at the rate of 2 $kmph$ and 4 $kmph$ and passes them completely in 9 and 10 seconds respectively. The length of the train is

   (A) 45 m (B) 50m

   (C) 54m (D) 72m

8. In a two-digit number, the digit in the unit's place is more than twice the digit in ten's place by 1. If the digits in the unit's place and the ten's place are interchanged, difference between the newly formed number and the original number is less than the original number by 1. What is the original number?

   (A) 25   (B) 37   (C) 49   (D) 52

9. If the radius of a circle is increased by 75%, then its circumference will increase by

   (A) 25%   (B) 50%   (C) 75%   (D) 100%

10. If x and y are integers such that $x^3 = y^2$, which of the following could **not** be the value of y?

    (A) −1   (B) 1   (C) 8   (D) 12

11. Ashok usually deposits the same amount of money each month into a travel fund. This year he decided not to make any contributions during November and December. To make the same annual contribution that he had originally planned, by what percent should he increase his monthly deposits from January through October?

    (A) 15%   (B) 20%
    (C) 30%   (D) Insufficient data

12. A rectangular tank has a base that is 10 centimeters by 5 centimeters and a height of 20 centimeters. If the tank is half full of water, by how many centimeters will the water level rise if 325 cubic centimeters of water are poured into the tank?

    (A) 3.25   (B) 4.25   (C) 6.5   (D) 9.5

13. If $1\frac{1}{2}$ cups molasses can be substituted for 1 cup of sugar in a recipe, how many cups of molasses should be used in a recipe requiring $1\frac{1}{2}$ cups of sugar?

    (A) 5/2   (B) 4/3   (C) 9/4   (D) 7/5

14. Ramlal can do a job in 10 days. After working 3 days, he hires a helper and the two complete the task in 5 days. How long would it have taken the helper to complete the task alone?

    (A) 20 days   (B) 25 days
    (C) 8 days   (D) 16 days

15. A tank can be filled by tap A in 2 hours and tap B in 5 hours. Tap C can empty the filled tank in 8 hours. If all the taps are opened simultaneously, how long will it take to fill the tank completely?

(A) 12 hours

(B) 10/3 hours

(C) 40/30 hours

(D) None of the above

Part II

Test of Reasoning Ability

Questions 16 – 17: *In each question below, is given a statement followed by two or three assumptions. An assumption is something supposed or taken for granted. You have to consider the statement along with the assumptions and decide which of the assumptions is implicit in the statement. Then decide which of the alternatives is the correct answer.*

16. *Statement:* "Use Xlin cream for fair complexion" – an advertisement.

    Assumptions:
    I. People like to use cream for fair complexion.
    II. People are easily fooled.
    III. People respond to advertisement.

    (A) Only I is implicit.

    (B) Both II and III are implicit.

    (C) Both I and III are implicit.

    (D) All are implicit.

17. *Statement:* Train fairs have been increased to meet the deficit.

    Assumptions:
    I. The present rates are very low.
    II. If the rates are not increased, the deficit cannot be met.

    (A) Only I is implicit.

    (B) Only II is implicit.

    (C) Both I and II are implicit.

    (D) Neither I nor II is implicit.

18. *Statements:*

    Some sands are particles.

    Some particles are glasses.

    Conclusions:

    I. Some glasses are definitely not particles.

    II. Some glasses being sands is a possibility.

    (A) Only I follows.   (B) Only II follows.

    (C) Both I and II follow.   (D) Neither I nor II follow.

19. *Statements:*

    Some chairs are made up of wood.

    Some tables are made up of wood.

    Conclusions:

    I. All wooden things are either chairs or tables.

    II. Some chairs are tables.

    (A) Only I follows.   (B) Only II follows.

    (C) Both I and II follow.   (D) Neither I nor II follow.

Questions 20 − 21: *Each question given below has a statement followed by two courses of action numbered I and II. You have to assume everything in the statement to be true, then decide which of the two suggested courses of action logically follows for pursuing.*

20. *Statement:* Despite good economic progress of the country, significant number of under nourished children has been observed in the rural parts of the country.

    Courses of Action
    I. Government should increase wealth tax and Income tax and use that money for upliftment of the deprived class.
    II. Government should introduce schemes like free meals in primary schools and make primary education compulsory.

    (A) Only I follows.   (B) Only II follows.
    (C) Both I and II follow.   (D) Neither I nor II follow.

21. *Statement:* Most of the children in country X are not able to get education because they get employed to earn livelihood in their childhood only.

    Courses of Action
    I. Education should be made optional for all children upto age of 14.
    II. Employment of children below the age of 14 year should be banned.

    (A) Only I follows.   (B) Only II follows.
    (C) Neither I nor II follow.   (D) Both I and II follow.

Questions 22 – 23: *Read the following passage carefully to answer the given questions.*

Seven friends Anu, Beena, Kanika, Mohini, Samina, Easther and Rani study different disciplines such as Arts, Commerce, Science, Engineering, Architecture, Management and Pharmacy, not necessarily in the same order. Each of them belongs to a different state viz., Andhra Pradesh, Uttar Pradesh, Maharashtra, Karnataka, Kerala, Chhattisgarh and Punjab, but not necessarily in the same order. Kanika studies Engineering and does not belong to either Uttar Pradesh or Punjab. The one who belongs to Chhattisgarh does not study Architecture or Pharmacy. Anu belongs to Maharashtra. Samina belongs to Kerala and studies Science. The one who belongs to Andhra Pradesh studies Commerce. Mohini studies Management and Rani studies Arts. Beena belongs to Karnataka and does not study Architecture. The one who studies Arts does not belong to Punjab.

22. Which of the following student and subject combination is correct?

 (A) Anu – Architecture   (B) Easther – Pharmacy
 (C) Beena – Commerce   (D) None of these

23. Which of the following state and subject combination is/are correct?

 I. Chhattisgarh – Engineering
 II. Punjab – Pharmacy
 III. Andhra Pradesh – Commerce
 IV. Andhra Pradesh – Architecture

 (A) I and II   (B) II and III
 (C) I and IV   (D) I and III

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24. On a shelf six volumes are placed by side labelled A, B, C, D, E and F. Three volumes B, C and E have green covers while the other volumes have yellow covers. A, D and B are new volumes while the rest are old ones. A, C and B are law reports while the rest are gazetteers. Which of the following volumes is green covered, old and law report?

(A) A (B) B (C) C (D) D

25. In a certain code language, '3a, 2b, 7c' means 'Truth is Eternal'; '7c, 9a, 8b, 3a' means 'Enmity is not Eternal' and '9a, 4d, 2b, 8b' means 'Truth does not perish'. Which of the following means 'enmity' in that language?

(A) 3a   (B) 7c   (C) 9a   (D) 8b

Questions 26 − 27: *Which makes the best comparison?*

26. Love is to hate as valour is to

(A) Anger   (B) Security
(C) Courage   (D) Cowardice

27. Capricious : Reliability

(A) Heated : Boiling

(B) Extemporaneous : Predictability

(C) Arbitrary : Whimsicality

(D) Unreliable : Inhuman

28. The ratio of the age of a father to that of his son is 5:2. If the product of their ages is 1000, then the father's age (in year) after 10 years will be

   (A) 50   (B) 60   (C) 85   (D) 100

29. If $A + B$ means A is the brother of B; $A - B$ means A is the sister of B and A x B means A is the father of B. Then which of the following means that C is the son of M?

   (A) $M - N$ x $C + F$ (B) $F - C + N$ x M
   (C) $N + M - F$ x C (D) M x $N - C + F$

30. Seethal and Ramlal both start from a point towards North. Seethal turns to left after walking 10 km. Ramlal turns to right after walking the same distance. Seethal waits for some time and then walks another 5 km., whereas Ramlal walks only 3 km. They both then return to their respective South and walk 15 km. forward. How far is Seethal from Ramlal?

   (A) 10 km.   (B) 9 km.
   (C) 12 km.   (D) None of these