

# LET'S DO SOME PROBLEMS IN MATHEMATICS-XXIV

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*Union Public Service of India holds various examinations to select the administrative officers to work for the Central Government Policies. One of these examinations is the **Civil Services Examination**. Through this examination, the officers for **Indian Foreign Service (IFS)**, **Indian Administrative Service (IAS)**, **Indian Revenue Service (IRS)**, **Indian Forest Service (IFS)**, etc., are selected every year.*

*There are three stages of examinations: (a) Preliminary Exam (b) Main Exam, and (c) Personality Test*

*Preliminary Examination is very important stage and its qualifying is must for appearing in Mains. This section contains the mathematical section also. The standard of these questions is of class 10 standard with logical approach.*

*I have selected some questions for understanding the level of questions for the readers from the latest examination.*

*The Answers are given with the questions to check the solutions done by the readers. If any reader wants detail solution, he or she may request coordinator's desk for that.*

## QUESTIONS

Q1. The number of times the digit 5 will appear while writing the integers from 1 to 1000 is

- (a)269                      (b)271                      (c)300                      (d)302

**Answer: (c)**

Q2. A solid cube is painted yellow, blue, and blacks such that opposite faces are of same colour. The cube is then cut into 36 cubes of two different sizes such that 32 cubes are small and the other four cubes are big. None of the faces of the bigger cubes is painted blue. How many cubes have only one face painted?

- (a)44                      (b)6                      (c)8                      (d)10

**Answer: (c)**

Q3. A and B are two heavy steel blocks. If B is placed on the top of A, the weight increases by 60%. How much weight will reduce with respect to the total weight of A and B, if B is removed from the top of A?

- (a)60%                      (b)45.5%                      (c)40%                      (d)37.5%

**Answer: (a)**

Q4. Mr. X has three children. The birthday of the first child falls on the 5<sup>th</sup> Monday of April that of the second one falls on the 5<sup>th</sup> Thursday of November. On which day is the birthday of his third child, which falls on 20<sup>th</sup> December?

- (a)Monday                      (b) Thursday                      (c) Saturday                      (d) Sunday

**Answer: (d)**

Q5. Consider the following Statements and Conclusions:

Statements:

1. Some rats are cats.

2. Some cats are dogs.
3. No cat is a cow.

Conclusions:

- I. No cow is a cat.
- II. No dog is a rat.
- III. Some cats are rats.

Which of the above conclusions is/are drawn from the statements?

- (a) I, II, and III            (b) Only I and II            (c) Only III            (d) Only II and III

**Answer: (c)**

Q6. The number of parallelogram that can be formed from a set of four parallel lines intersecting another set of four parallel lines, is

- (a)18                            (b)24                            (c)32                            (d)36

**Answer: (d)**

Q7. When a runner was crossing the 12 km mark, she was informed that she had completed only 80% of the race. How many kilometers was the runner supposed to run in this event?

- (a)14                            (b)15                            (c)16                            (d)16.5

**Answer: (b)**

Q8. In 2002, Meenu's age was one third of the age of Meera, whereas in 2010, Meenu's age was half the age of Meera. What is Meenu's year of birth?

- (a)1992                            (b)1994                            (c)1996                            (d)1998

**Answer: (a)**

Q9. Rakesh and Rajesh together bought 10 balls and 10 rackets. Rakesh spent Rs1300 and Rajesh spent Rs 1500. If each racket costs three times a ball does, then what is the price of a racket?

- (a)70                            (b)90                            (c)210                            (d)240

**Answer: (c)**

Q10. In a conference, out of a total 100 participants, 70 are Indians. If 60 of the total participants are vegetarians, then which of the following statement is/are correct?

1. At least 30 Indian participants are vegetarian.
2. At least 10 Indian participants are non-vegetarian.

Select the correct answer using the codes given below:

- (a)1 only                            (b)2 Only                            (c) Both 1 and 2                            (d) Neither 1 nor 2

**Answer: (d)**

Q11. P, Q, and R are three towns. The distance between P and Q is 60km, whereas the distance between P and R is 80km. Q is in the West of P and R is in the South of P. What is the distance between Q and R?

- (a)140km                            (b)130km                            (c)110km                            (d)100 km

**Answer: (d)**

Q12. The ratio of a two-digit natural number to a number formed by reversing its digits is 4 : 7. The number of such pairs is

- (a)5                            (b)4                            (c)3                            (d)2

**Answer: (c)**

Q13. In an examination, "A" has scored 20 marks more than "B". If "B" has scored 5% less marks than "A", how much has "B" scored?

- (a)360                      (b)380                      (c)400                      (d)420

**Answer: (b)**

Q14. Seeta and Geeta go for a swim after a gap of every 2 days and every 3 days respectively. If on 1<sup>st</sup> January both of them went for a swim together, when will they go together next?

- (a)7<sup>th</sup> January              (b)8<sup>th</sup> January              (c) 12<sup>th</sup> January              (d) 13<sup>th</sup> January

**Answer: (a)**

Q15. X, Y and Z are three contestants in a race of 1000 m. Assume that all run with different uniform speeds. X gives Y a start of 40m and X gives Z a start of 64m. If Y and Z were to compete in a race of 1000 m, how many metres start will Y give to Z?

- (a)20                      (b)25                      (c)30                      (d)36

**Answer: (b)**

Q16. If  $x$  is greater than or equal to 25 and  $y$  is less than or equal to 40, then which one of the following is always correct?

- (a)  $x$  is greater than  $y$     (b)  $(y - x)$  is greater than 15  
(c)  $(y - x)$  is less than or equal to 15                      (d)  $(x + y)$  is greater than or equal to 65

**Answer: (c)**

Q17. Ena was born 4 years after her parents' marriage. Her mother is three years younger than her father and 24 years older than Ena, who is 13 years old. At what age did Ena's father get married?

- (a)22 years                      (b)23 years                      (c)24 years                      (d)25 years

**Answer: (b)**

Q18. Rakesh had money to buy 8 mobile handsets of a specific company. But the retailer offered very good discount on that particular handset. Rakesh could buy 10 mobile handsets with the amount he had. What was the discount the retailer offered?

- (a)15%                      (b)20%                      (c)25%                      (d)30%

**Answer: (b)**

Q19. The average marks of 100 students are given to be 40. It was found later that marks of one student were 53 which were misread as 83. The corrected mean marks are

- (a)39                      (b)39.7                      (c)40                      (d)40.3

**Answer: (b)**

Q20. What is X in the sequence 132, 129, 124, 117, 106, 93, X?

- (a)74                      (b)75                      (c)76                      (d)77

**Answer: (c)**

Q21. A wall clock moves 10 minutes fast in every 24 hours. The clock was set right to show the correct time at 8:00 a.m. on Monday. When the clock shows the time 6:00 p.m. on Wednesday, what is the correct time?

- (a)5:36p.m.                      (b)5:30p.m.                      (c)5:24p.m.                      (d)5:18p.m.

**Answer: (a)**

Q22. If the numerator and denominator of a proper fraction are increased by the same positive quantity which is greater than zero, the resulting fraction is

- (a) always less than the original fraction  
(c) always equal to the original fraction

- (b) always greater than the original fraction  
(d) such that nothing can be claimed definitely

**Answer: (a)**

Q23. In a group of 15 people; 7 can read French, 8 can read English while 3 of them can read neither of these languages. The number of people who can read exactly one language is What is X in the

- (a) 10 (b) 9 (c) 5 (d) 4

**Answer: (b)**

Q24. A printer numbers the pages of a book starting with 1 and uses 3089 digits in all. How many pages does the book have?

- (a) 1040 (b) 1048 (c) 1049 (d) 1050

**Answer: (d)**

Q25. A family has two children along with their parents. The average of the weights of the children and their mother is 50kg. The average of the weights of the children and their father is 52 kg. If the weight of the father is 60kg then what is the weight of the mother?

- (a) 48kg (b) 50kg (c) 52kg (d) 54kg

**Answer: (d)**

Q26. Suppose you have sufficient amount of rupee currency in three denominations: Rs 1, Rs 10, and Rs 50. In how many different ways can you pay a bill of Rs 107?

- (a) 16 (b) 17 (c) 18 (d) 19

**Answer: (a)**

Q27. "A" started from his house and walked 20m towards East, where his friend "B" joined him. They together walked 10m in the same direction. Then "A" turned left while "B" turned right and travelled 2m and 8m respectively. Again "B" turned left to travel 4m followed by 5m to his right to reach his office. "A" turned right and travelled 12m to reach his office. What is the shortest distance between the two offices?

- (a) 15m (b) 17m (c) 19m (d) 20m

**Answer: (b)**

Q28. Consider two statements S1 and S2 followed by a question:

S1:  $p$  and  $q$  both are prime numbers

S2:  $p + q$  is an odd integer

Question: Is  $pq$  an odd integer?

Which one of the following is correct?

- (a) S1 alone is sufficient to answer the question  
(b) S2 alone is sufficient to answer the question  
(c) Both S1 and S2 taken together are not sufficient to answer the question  
(d) Both S1 and S2 are necessary to answer the question

**Answer: (d)**

Q29. Which year has the same calendar as that of 2009?

- (a) 2018 (b) 2017 (c) 2016 (d) 2015

**Answer: (d)**

Q30. Number 136 is added to  $5B7$  and the sum obtained is  $7A3$ , where  $A$  and  $B$  are integers. It is given that  $7A3$  is exactly divisible by 3. The only possible value of  $B$  is

- (a)2                      (b)5                      (c)7                      (d)8

**Answer: (d)**

Q31. A joint family consists of seven members  $A, B, C, D, E, F$  and  $G$  with three females.  $G$  is a widow and sister-in-law of  $D$ 's father  $F$ .  $B$  and  $D$  are siblings and  $A$  is daughter of  $B$ .  $C$  is cousin of  $B$ . Who is  $E$ ?

1. Wife of  $F$
2. Grandmother of  $A$
3. Aunt of  $C$

Select the correct answer using the code given below:

- (a)1 and 2 only              (b)2 and 3 only              (c)1 and 3 only              (d)1,2, and 3

**Answer: (d)**

Q32. How many triplets  $(x, y, z)$  satisfy the equation  $x + y + z = 6$  where  $x, y,$  and  $z$  are natural numbers?

- (a)4                      (b)5                      (c)9                      (d)10

**Answer: (d)**

Q33. If  $\$$  means "divided by";  $@$  means "multiplied by";  $\#$  means "minus", then the value of  $10\#5@1\$5$  is

- (a)0                      (b)1                      (c)2                      (d)9

**Answer: (d)**

Q34. An 8-digit number  $4252746B$  leaves remainder 0 when divided by 3. How many values of  $B$  are possible?

- (a)2                      (b)3                      (c)4                      (d)6

**Answer: (c)**