



# VIVEK TUTORIALS

X (English)

(Prelim)

Mathematics Part - I-(All)

DATE: 09-03-19

TIME: 2 hour

MARKS: 40

SEAT NO:

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Q.1 (A) Solve any four of the following.

(4)

- 1) Let  $A = \{-7, 5, 2\}$  and  $B = \{\sqrt[3]{125}, \sqrt{4}, \sqrt{49}\}$ .  
Are the sets A and B equal? Justify your answer.
- 2) Convert the ratio into percentage: 5:20
- 3) Compare the ratio  $\frac{4}{9}, \frac{7}{8}$
- 4)  $X + 2y = 5$  &  $2X + y = 7$  find the value of  $X + y$ .
- 5) If you got 165 marks out of 200 in competitive exam. What is your percentage marks?
- 6) For the class interval 20-25 write the lower class limit & upper class limit

(B) Solve any two of the following.

(4)

- 1) a, b, c are in continued proportion .if  $a = 3$  and  $c = 27$  then find b.
- 2) Find the ratio of the first quantity with the second in its simplest form  
Rs. 11; Rs 15 and paise 40
- 3) Alka spends 90% of the amount sent to her and saves Rs. 120 per month. Find the amount sent to her per month.

Q.2 (A) Choose the correct alternative answer and write.

(4)

- 1) What is the sum of the first 30 natural numbers ?  
a. 464      b. 465      c. 462      d. 461
- 2) There are 40 cards in a bag. Each bears a number from 1 to 40. One card is drawn at random. What is the probability that the card bears a number which is a multiple of 5 ?  
a.  $\frac{1}{5}$       b.  $\frac{3}{5}$       c.  $\frac{4}{5}$       d.  $\frac{1}{3}$
- 3) The rate of GST on stainless steel utensils is 18%, then the rate of State GST is .....  
a. 18%      b. 9%      c. 36%      d. 0.9%
- 4) If  $n(A) = 2$ ,  $P(A) = \frac{1}{5}$ , then  $n(S) = ?$   
a. 10      b.  $\frac{5}{2}$       c.  $\frac{2}{5}$       d.  $\frac{1}{3}$

(B) Solve any two of the following.

(4)

- 1) Find the fourth term from the end in an A.P. -11, -8, -5, . . . , 49.
- 2) In each of the following experiments, write the sample space S and the number of sample points  $n(S)$

- i. three coins are tossed simultaneously.
- ii. A die is rolled.
- iii. Form two-digit numbers using the digits 0,1,2,3 without repeating the digit.

- 3) For a certain frequency distribution, the values of Mean and Median are 62.6 and 62.5 respectively. Find the value of Mode.

Q.3 (A) Complete the following Activities. (Any two)

(4)

- 1) Rs. 1000 is invested at 10 percent simple interest. Check at the end of every year if the total interest amount is in A.P. If this is an A.P. then find interest amount after 20 years. For this complete the following activity.

$$\text{Simple interest} = \frac{P \times R \times N}{100}$$

$$\text{Simple interest after 1 year} = \frac{1000 \times 10 \times 1}{100} = \square$$

$$\text{Simple interest after 2 year} = \frac{1000 \times 10 \times 2}{100} = \square$$

$$\text{Simple interest after 3 year} = \frac{1000 \times 10 \times 3}{100} = \square$$

According to this the simple interest for 4, 5, 6 years will be 400,  $\square$ ,  $\square$  respectively.

From this  $d = \square$ , and  $a = \square$

Amount of simple interest after 20 years

$$t_n = a + (n - 1) d$$

$$\therefore t_{20} = \square + (20-1) \square$$

$$\therefore t_{20} = \square$$

- 2) Solve :  $x^2 + 8x - 48 = 0$

By Completing the square.

$$x^2 + 8x - 48 = 0$$

$$\therefore x^2 + 8x + 16 - 16 - 48 = 0$$

$$\therefore \square^2 - 64 = 0$$

$$\therefore (x + 4)^2 = 64$$

$$\therefore x + 4 = \square \text{ or } x + 4 = \square$$

$$\therefore x = \square \text{ or } x = \square$$

- 3) Write the correct number in the given boxes from the following A.P.

3, 6, 9, 12, .....

Here  $t_1 = \square$ ,  $t_2 = \square$ ,  $t_3 = \square$ ,  $t_4 = \square$

$$t_2 - t_1 = \square, t_3 - t_2 = \square$$

$$\therefore d = \square$$

(B) Solve any two of the following.

(4)

- 1) The following table shows the percentages of vehicles passing a signal. Find out the measures of central angle to show the information by a pie diagram and hence draw the pie diagram.

Type of Vehicle	Bicycle	Two Wheeler	Car	Bus	Rickshaw
Percentage	10	30	20	20	20

- 2) Find the values of a, b, c for following quadratic equations by comparing with standard form.

$$y^2 = 7y$$

- 3) Which of the following sequences are A.P ? If it is an A.P, find next two terms.  $\frac{3}{2}, \frac{1}{2}, -\frac{1}{2}, \dots$

Q.4 Solve any three of the following. (9)

- 1) Solve the following simultaneous equations.  
 $3a + 5b = 26$  ;  $a + 5b = 22$
- 2) Prashant bought 50 shares of FV Rs. 100, having MV Rs. 180. Company gave 40% dividend on the shares. Find the rate of return on investment.
- 3) Find the value of k for which given quadratic equation has real and equation roots.  
 $3y^2 + ky + 12 = 0$
- 4) The area under different crops in a certain village is given below. Represent it by a pie diagram :

Crop	Jowar	Wheat	Sugar cane	Vegetables
Area (in hectares)	40	60	50	30

Q.5 Solve any one of the following. (4)

- 1) Solve the following equations by Cramer's method.  
 $6x - 3y = -10$  ;  $3x + 5y - 8 = 0$
- 2) Solve the following simultaneous equation.  
 $\frac{41}{x} - \frac{47}{y} = 35$ ;  $\frac{47}{x} - \frac{41}{y} = 53$

Q.6 Solve any one of the following. (3)

- 1) Solve the following quadratic equations.  
 $\frac{1}{x+5} = \frac{1}{x^2}$  ( $x \neq 0, x + 5 \neq 0$ )
- 2) (i) What is the total number of skilled workers in all fields?  
(ii) What is the number of skilled workers in the field of constructions?  
(iii) How many skilled workers are in agriculture?  
(iv) Find the difference between the numbers of workers in the field of production and construction.

