

2112H017

BACHELOR OF VOCATION
Public Services
Subject: Mathematics and Reasoning-II
Subject Code: MAR601
Semester: Third
December 2021
Theory (External): 70 Marks
Time: 03 Hours

Instructions to the Students

1. This Question paper consists of two Sections. All sections are compulsory.
2. Section A comprises 10 questions of objective type in nature. All questions are compulsory. Each question carries 2 marks.
3. Section B comprises 8 essay type questions out of which students need to do any 5. Each question carries 10 marks.
4. Read the questions carefully and write the answers in the answer sheets provided.
5. Do not write anything on the question paper.
6. Wherever necessary, the diagram drawn should be neat and properly labelled

Roll Number

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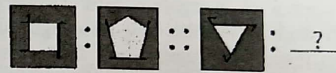
SECTION –A (SHORT/OBJECTIVE TYPE QUESTIONS)
(10x2=20 Marks)

- A. Usain Bolt completed 400m dash in just 45second in record time.
What was the speed of Usain Bolt in km per hour?
- B. A boat takes 19 hours for travelling downstream from point A to point B and coming back to a point C midway between A and B. If the velocity of the stream is 4 kmph and the speed of the boat in still water is 14 kmph, what is the distance between A and B?
a) 160 KM
b) 180 KM
c) 200 KM
d) 220 KM
- C. Find the H.C.F of $24x^6yz^3$, $32xy^2z^4$.
a) $4xyz^3$
b) $8xyz^3$
c) $4x^6y^2z^4$
d) $2x^5z$
- D. Simplify: $\left(\frac{343}{64 \times 8 \times 27}\right)^{\frac{2}{3}} \times (625)^{\frac{1}{5}}$.
- E. A can finish a work in 18 days and B can do the same work in 15 days, B worked for 10 days and left the job. In how many days, A alone can finish the remaining work?
a) 5 days
b) $5\frac{1}{2}$ days
c) 6 days
d) 8 days
- F. If + stands for "division"; \times stands for "subtraction"; – stands for "addition" and \div stands for "multiplied by" what is the value of the expression $24 \times 6 + 3 \div 5 + 4$?

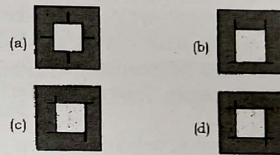
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- G. Mohan walked 20 m towards the north, then he turned right and walks 30 m. Then he turns right again and walks 35 m. Then he turns left and walks 15 m. Finally, he turns left and walks 15 m again. In which direction and how many meters is he from the starting position?
- a) 15 m West
 - b) 30 m East
 - c) 30 m West
 - d) 45 m East

- H. From the given pair of figures on left side (\therefore) have a certain relationship. To establish the same relationship between the pair of the figures on the right side of (\therefore) select a figure from the four alternatives to replace the mark “?”



Answers



- I. Find the missing number?

	16	4		
T	D	C	G	
P	M	K	H	
	3	?		

- a) 1
- b) -1
- c) 3
- d) -3

- J. A tank is filled in 5 hours by three pipes A, B and C. The pipe C is twice as fast as B and B is as fast as A. How much time will pipe A alone take to fill the tank?
- 20 hours
 - 25 hours
 - 35 hours
 - Cannot be determined
 - None of these

SECTION -B (ESSAY TYPE QUESTIONS)
(10x5=50 Marks)

- Sixteen men can complete a work in twelve days. Twenty-four children can do the same work in eighteen days. Twelve men and eight children started working together and after eight days three more children joined them. How many days they now take to complete the remaining work?
- In a survey it was found that 31 people liked Cricket, 36 liked football and 39 liked baseball. If 24 people liked cricket and football, 22 people liked baseball and cricket, 24 people liked football and baseball and 18 liked all the three games. Then answer the following questions:
 - How many people liked baseball only?
 - How many of them liked two games only?
- Simplify

$$\frac{1}{1.2} + \frac{1}{2.3} + \frac{1}{3.4} + \dots + \frac{1}{14.15}$$
- If + stands for division; × stands for subtraction; - stands for addition and ÷ stands for multiplied by. Then simplify the following equations.
 - $9 \div 8 \times 7 - 6 + 5$
 - $5 \times 2 \div 4 + 6 - 1$
 - $12 - 6 + 13 \div 2 \times 4$
 - $15 + 2 \times 5 \div 16 - 3$

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- If $A + B$ means A is the mother of B; $A - B$ means A is the brother of B, $A \% B$ means A is the father of B and $A \times B$ means A is the sister of B. Then how A is related to D from the given equation? $A - B + C \times D$.
 - Kunal decided to drive from his college to his home. He headed in east direction and covered 10 km and then he turned left. After driving for 5 km in this direction, he turned in right direction at an angle of 135° and reaches his home after covering another 20 km. Find the direction of his home with respect to his college?
 - In the question, statement(s) are given, followed by two conclusions, I and II. You have to consider the statement(s) to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given conclusions, if any, follows from the given statement(s).
 - Statements:**
 - Some kids are clever.
 - Some kids are players.**Conclusion:**
 - Some players are clever.
 - Some clever kids are players.
 - Statements:**
 - Smoking is injurious to health and one of the causes of cancer.
 - Government has prohibited smoking in public places.**Conclusion:**
 - Smoking causes cancer.
 - Sale of cigarette should be banned.
 - Find the L.C.M. of the two expressions $a^2 - b^2 - 2bc - c^2$, $a^2 + b^2 + c^2 + 2ab + 2bc + 2ca$ with the help of their H.C.F.?

===END OF PAPER===