

MA SEM II (ECONOMICS)
MATHEMATICAL TECHNIQUES FOR ECONOMISTS
SAMPLE PAPER

Q1. Let $A = \{2, 3, 4, 5, 6, 7\}$ $B = \{2, 4, 7, 8\}$ $C = \{2, 4\}$. Fill in the blanks by \subset or $\not\subset$ to make the resulting statements true. $C _ B$

- a) \subset
- b) $\not\subset$
- c) \cap
- d) U

Q2. If $P = \{0, 1, 2, 3, 4\}$, $Q = \{4, 6, 8\}$ $R = \{6, 12, 18\}$ Then what is $(P \cap Q) \cup (Q \cap R)$?

- a) $\{4\}$
- b) $\{4, 6\}$
- c) $\{4, 6, 8\}$
- d) $\{1, 2, 3, 4, 6, 8\}$

Q3. Let $C = \{2, 5, 7, 10\}$ and $B = \{x | x \text{ is an even whole number less than } 9\}$. Find $C \cup B$.

- a) $\{2, 4, 6, 8, 10\}$
- b) $\{2, 4, 5, 6, 7, 8, 10\}$
- c) $\{2, 4, 5, 6, 7, 8, 10\}$
- d) $\{4, 6, 8\}$

Q4. Differentiation is used to find -----

- a) Marginal from total
- b) Total from marginal
- c) Both marginal from total and total from marginal
- d) Neither marginal from total nor total from marginal

Q5. Integration is used to find or calculate -----

- a) Marginal from total
- b) Total from marginal
- c) Both marginal from total and total from marginal
- d) Neither marginal from total nor total from marginal

Q6. Which of the following is not true about the applications of integration in economics?

- a) It is useful to calculate consumer surplus
- b) It is useful to calculate producer's surplus
- c) It is useful to calculate gini coefficient
- d) It is not useful to calculate the capital accumulation over a specified period of time.

Q7. When the utility maximization equation $U(x, y) = 5 \log(x) + 2 \log(y)$, the limit $x + y = 40$ is converted to Lagrangian Equation:

- a) $L = 5(1/x) + 2 \log(y) + \lambda [2x + 3y - 4]$
- b) $L = \log(x) + 2(1/y) + \lambda [2x + 3y - 40]$
- c) $L = 5 \log(x) + 2 \log(y) * [2x + 3y]$
- d) $L = 5 \log(x) + 2 \log(y) + \lambda [2x + 3y - 40]$

Q8. If $L = \lambda 6x + \lambda 6y - \lambda 50$ then identify $dL / d\lambda$.

- a) $6x + 6y - 50$
- b) $2x + \lambda 3$
- c) $2x + 3x - 40$
- d) $2x + 3x - 40$

Q9. ----- is the associative law of addition.

- a) $A + B = A - B$
- b) $A + B \neq B + A$
- c) $A + B = B + A$
- d) $A + B = 0$

Q10. Two matrices can be added or subtracted if and only if those matrices have the ----- order.

- a) Different
- b) Same
- c) Sometimes different, sometimes same
- d) Always different