DU MA Economics

Topic:- DU_J19_MA_ECO

1) The range of the function $f : \Re \to \Re$ defined by

$$f(x) = \frac{x^2 + x + 2}{x^2 + x + 1} \quad \text{is}$$

[Question ID = 2922]

1. $[\frac{1}{3}, \frac{8}{3}]$ [Option ID = 11688]

2. $(1, \infty)$ [Option ID = 11685]

3. $[1, \frac{7}{3}]$ [Option ID = 11687]

4. $[1, \frac{4}{3}]$ [Option ID = 11686]

Correct Answer :-

- $(1, \infty)$ [Option ID = 11685]

2)

Scenario 3 (this scenario appears in multiple questions):

Data from a random sample of 107 home sales in 2003 yielded the regression

$$\hat{P} = \underset{(23.9)}{119.2} + \underset{(2.61)}{0.485^*BD} + \underset{(10.76)}{23.4^*BA} + \underset{(0.011)}{0.156^*HS} + \underset{(0.00048)}{0.002^*PS} + \underset{(0.311)}{0.090^*A} - \underset{(10.5)}{35.6^*PC}$$

$R^2 = 0.72$; $SER = 41.5$, P is price or value (Rs. 1000), BD is number of bedrooms, BA is number of baths, HS is house size (sq. ft.), PS is plot size (sq. ft.), A is age (years), PC is a dummy variable $= 1$ if the house is in poor condition and $= 0$ otherwise; and the parentheses contain standard errors of the corresponding coefficients. SER is the standard error of the regression.

Question: If a homeowner adds a new bathroom to her house which increases the house size by 100 sq. ft., what is the expected increase in the value of the house?

[Question ID = 2951]

1. Rs. 37,000   [Option ID = 11801]

2. Rs. 39,450   [Option ID = 11802]

3. Rs. 39,000   [Option ID = 11804]

4. Rs. 37,200   [Option ID = 11803]

Correct Answer :-

- Rs. 37,000   [Option ID = 11801]

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3)

The maximum value attained by the function $f(x) = x^3 - x^2 - x - 1$ on the set $S = \{x | x^2 - x - 2 \leq 0\}$ occurs at

[Question ID = 2929]

1. $x = 2$ [Option ID = 11715]

2. $x = 5/2$ [Option ID = 11716]

3. $x = 1$ [Option ID = 11713]

4. $x = 1/3$ [Option ID = 11714]

Correct Answer :-

- $x = 1$ [Option ID = 11713]

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4) A random variable X has a standard normal distribution. What is the closest guess to the probability that X lies in the interval $[2, 3]$?

[Question ID = 2946]

1. 0.05   [Option ID = 11784]

2. 0.001   [Option ID = 11781]

3. 0.25   [Option ID = 11783]

4. 0.025   [Option ID = 11782]

Correct Answer :-

- 0.001   [Option ID = 11781]

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5)

Consider **Scenario 1** (this scenario appears in multiple questions):

Consider utility functions

$$u_1(x,y) = \begin{cases} 2x, & \text{if } y/x > 2 \\ \max\{x,y\}, & \text{if } y/x \in [1/2, 2] \\ 2y, & \text{if } y/x < 1/2 \end{cases}$$

and

$$u_2(x,y) = \begin{cases} 2x, & \text{if } y/x > 2 \\ x+y, & \text{if } y/x \in [1/2, 2] \\ 2y, & \text{if } y/x < 1/2 \end{cases}$$

Let $p_x > 0$ and $p_y > 0$ be the prices of goods x and y respectively. Let $w > 0$ denote wealth (or income).

Question: For $i = 1, 2$, let $h_i(p_x, p_y, U)$ denote the set of solutions of the problem: choose $x > 0$ and $y > 0$ to minimise $p_x x + p_y y$ subject to $u_i(x,y) \geq U$. Let $e_i(p_x, p_y, U) = p_x X + p_y Y$, where $(X, Y) \in h_i(p_x, p_y, U)$.

[Question ID = 2907]

1. None of the above hold necessarily. [Option ID = 11628]

2. $h_1(p_x, p_y, U) = h_2(p_x, p_y, U)$ [Option ID = 11627]

3. $h_1(p_x, p_y, U) \subset h_2(p_x, p_y, U)$ [Option ID = 11625]

4. $h_1(p_x, p_y, U) \supset h_2(p_x, p_y, U)$ [Option ID = 11626]

Correct Answer :-

- $h_1(p_x, p_y, U) \subset h_2(p_x, p_y, U)$ [Option ID = 11625]

6) $\lim_{x \to \infty} \left(\frac{x^2 - x + 1}{x+1} - c_1 x - c_2 \right) = -5$. So, it must be that (c_1, c_2) equals

[Question ID = 2924]

1. $(1, 3)$ [Option ID = 11696]

2. $(2, -3)$ [Option ID = 11693]

3. $(1, 2)$ [Option ID = 11695]

4. $(2, 3)$ [Option ID = 11694]

Correct Answer :-

$(2, -3)$
- [Option ID = 11693]

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7) The efficiency wage theory argues that

[Question ID = 2937]

1. Firms choose to pay a lower wage than the classical equilibrium wage, thus the real wage is lower than the wage at which the labor market clears.
[Option ID = 11747]

2. Firms choose to pay a higher wage than the classical equilibrium wage, thus the real wage is higher than the wage at which the labor market clears.
[Option ID = 11745]

3. Firms choose to pay a higher wage than the classical equilibrium wage, thus the real wage is lower than the wage at which the labor market clears.
[Option ID = 11746]

4. Firms choose to pay a lower wage than the classical equilibrium wage, thus the real wage is higher than the wage at which the labor market clears.
[Option ID = 11748]

Correct Answer :-

- Firms choose to pay a higher wage than the classical equilibrium wage, thus the real wage is higher than the wage at which the labor market clears.
[Option ID = 11745]

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8) According to the theory of comparative advantage, countries gain from trade because

[Question ID = 2913]

1. All firms can take advantage of cheap labor. [Option ID = 11650]

2. Trade makes firms behave more competitively, reducing their market power. [Option ID = 11649]

3. Output per worker in each firm increases. [Option ID = 11651]

4. World output can rise when each country specializes in what its does relatively best.
[Option ID = 11652]

Correct Answer :-

- Trade makes firms behave more competitively, reducing their market power. [Option ID = 11649]

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9)

In the 2-factor, 2-good Heckscher-Ohlin model, the two countries differ in

[Question ID = 2915]

1. tastes [Option ID = 11660]
2. relative availabilities of factors of production [Option ID = 11659]
3. labour productivities [Option ID = 11658]
4. technologies [Option ID = 11657]

Correct Answer :-

- technologies [Option ID = 11657]

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10)

The line $y = 2x + 5$ is tangent to a circle with equation $x^2 + y^2 + 16x + 12y + c = 0$, at point P. So, P equals

[Question ID = 2923]

1. $(-6, -7)$ [Option ID = 11691]
2. $(-9, -7)$ [Option ID = 11689]
3. $(-11, -15)$ [Option ID = 11692]
4. $(-10, -12)$ [Option ID = 11690]

Correct Answer :-

- $(-9, -7)$ [Option ID = 11689]

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11)

The random variable X denotes the number of successes in a sequence of independent trials, each with a probability p of success. Let $\overline{X}$ denote the mean number of successes. We know that $\overline{X}$

[Question ID = 2949]

1. approximates a Normal distribution with mean p [Option ID = 11795]
2. has a Binomial distribution with mean p [Option ID = 11793]
3. None of the above [Option ID = 11796]
4. has a Normal distribution with mean p [Option ID = 11794]

Correct Answer :-

- has a Binomial distribution with mean p [Option ID = 11793]

12)

Consider **Scenario 2** (this scenario appears in multiple questions):

Trader 1 is endowed with 100 identical Left shoes. Trader 2 is endowed with 99 identical Right shoes. Each trader's utility from her allocation of shoes is equal to the number of complete pairs of shoes in the allocation. Traders 1 and 2 trade shoes in competitive markets and arrive at a competitive equilibrium. Assume that shoes are infinitely divisible.

Question: Given their endowments, an efficient allocation

[Question ID = 2910]

1. must give trader 1 at least 99 Left shoes   [Option ID = 11639]

2. must give trader 1 at least 50 Right shoes   [Option ID = 11638]

3. none of the above   [Option ID = 11640]

4. must give trader 1 at least 50 Left shoes   [Option ID = 11637]

Correct Answer :-

- must give trader 1 at least 50 Left shoes   [Option ID = 11637]

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13)

A family has two children and it is known that at least one is a girl. What is the probability that both are girls given that at least one is a girl?

[Question ID = 2943]

1. $\frac{1}{2}$ [Option ID = 11769]

2. $\frac{2}{3}$ [Option ID = 11772]

3. $\frac{1}{3}$ [Option ID = 11770]

4. $\frac{3}{4}$ [Option ID = 11771]

Correct Answer :-

- $\frac{1}{2}$ [Option ID = 11769]

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14)

It is known that there is a rational number between any two distinct irrational numbers. Consider a continuous function $f : \Re \to \Re$ such that $f(x) = \sin x$ for every rational number x. If x is an irrational number, then

[Question ID = 2918]

1. $f(x) = \sin x$ [Option ID = 11672]

2. $f(x) = (\sin x)/2 + (\cos x)/2$ [Option ID = 11670]

3. $f(x) = \sin(x/2) + \cos(x/2)$ [Option ID = 11669]

4. $f(x) = \cos x$ [Option ID = 11671]

Correct Answer :-

- $f(x) = \sin(x/2) + \cos(x/2)$ [Option ID = 11669]

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15)

Consider **Scenario 2** (this scenario appears in multiple questions):

Trader 1 is endowed with 100 identical Left shoes. Trader 2 is endowed with 99 identical Right shoes. Each trader's utility from her allocation of shoes is equal to the number of complete pairs of shoes in the allocation. Traders 1 and 2 trade shoes in competitive markets and arrive at a competitive equilibrium. Assume that shoes are infinitely divisible.

Question: An equilibrium allocation of shoes gives trader 2

[Question ID = 2909]

1. at most 50 Right shoes   [Option ID = 11636]

2. at least 99 Left shoes   [Option ID = 11634]

3. at most 50 Left shoes   [Option ID = 11633]

4. at most 99 Left shoes   [Option ID = 11635]

Correct Answer :-

- at most 50 Left shoes   [Option ID = 11633]

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16)

Assume that the aggregate production of an economy is $Y_t = \sqrt{K_t L_t}$, where $K_{t+1} = (1-\delta)K_t + I_t, S_t = sY_t$ and $L_t = L$ (i.e., the notation and meanings correspond to the setting for the Solow Model with constant population). Then, the savings rate s that maximizes the steady state rate of consumption equals

[Question ID = 2932]

1. $1/2$ [Option ID = 11726]

$\delta/(1+\delta)$

2.   [Option ID = 11725]

None of the above.

3.   [Option ID = 11728]

$1/(1+\delta)$

4.   [Option ID = 11727]

Correct Answer :-

$\delta/(1+\delta)$

•   [Option ID = 11725]

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17)

Consider a function $f : \Re^2 \to \Re$. Suppose, for every $p \in \Re^2$, there exists $x(p) \in \Re^2$ such that $f(x(p)) \geq 1$ and $p.x(p) \leq p.y$ for every $y \in \Re^2$ such that $f(y) \geq 1$. Define $g : \Re^2 \to \Re$ by $g(p) = p.x(p)$. Then, g is

[Question ID = 2920]

linear

1.   [Option ID = 11677]

quasi-convex

2.   [Option ID = 11679]

convex

3.   [Option ID = 11678]

concave

4.   [Option ID = 11680]

Correct Answer :-

linear

•   [Option ID = 11677]

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18)

Given nonempty subsets of $\Re^2$, say $Y_1, \ldots, Y_n$, let $Y^* = \{\sum_{j=1}^{n} y_j \mid y_1 \in Y_1, \ldots, y_n \in Y_n\}$. Given $p \in \Re^2$ and a nonempty set $Y \subset \Re^2$, let $V(p, Y) = \sup\{p.y \mid y \in Y\}$. Then, for every p,

[Question ID = 2921]

$v(p, Y^*) \geq \sum_{j=1}^{n} v(p, Y_j)$

1.   [Option ID = 11684]

$v(p, Y^*) = \sum_{j=1}^{n} v(p, Y_j)$

2.   [Option ID = 11682]

$v(p, Y^*) \leq \sum_{j=1}^{n} v(p, Y_j)$

3.   [Option ID = 11683]

$v(p, Y^*) < \sum_{j=1}^{n} v(p, Y_j)$ or $v(p, Y^*) \geq \sum_{j=1}^{n} v(p, Y_j)$

4.   [Option ID = 11681]

Correct Answer :-

$$v(p, Y^*) < \sum_{j=1}^{n} v(p, Y_j) \text{ or } v(p, Y^*) \geq \sum_{j=1}^{n} v(p, Y_j)$$

- [Option ID = 11681]

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19)

In a simple open economy framework, an increase in government spending leads to

[Question ID = 2939]

1. A rise in budget deficit and a fall in current account deficit [Option ID = 11753]

2. A fall in both budget and current account deficits [Option ID = 11756]

3. A fall in budget deficit and a rise in current account deficit [Option ID = 11754]

4. A rise in both budget and current account deficits [Option ID = 11755]

Correct Answer :-

A rise in budget deficit and a fall in current account deficit

- [Option ID = 11753]

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20) The matrix $Q = PAP^T$, where P^T is the transpose of the matrix P, and

$$P = \begin{pmatrix} \sqrt{3}/2 & 1/2 \\ -1/2 & \sqrt{3}/2 \end{pmatrix}$$

$$A = \begin{pmatrix} 1 & 1 \\ 0 & 1 \end{pmatrix}$$

Then, $P^T Q^{12} P$ equals

[Question ID = 2925]

1. $\begin{pmatrix} 1 & 0 \\ 144 & 1 \end{pmatrix}$ [Option ID = 11699]

2. $\begin{pmatrix} 1 & 144 \\ 0 & 1 \end{pmatrix}$ [Option ID = 11698]

3. $\begin{pmatrix} 2+\sqrt{3} & 1 \\ -1 & 2-\sqrt{3} \end{pmatrix}$ [Option ID = 11700]

$$\begin{pmatrix} 1 & 12 \\ 0 & 1 \end{pmatrix}$$

4.   [Option ID = 11697]

Correct Answer :-

$$\begin{pmatrix} 1 & 12 \\ 0 & 1 \end{pmatrix}$$

•   [Option ID = 11697]

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21)

Nitin is a stamp collector and consumes only stamps and cheese sandwiches. His utility function is $u(s,c) = s + \log c$. If Nitin is at a point where he is consuming both goods, then the total amount that he is spending on cheese sandwiches depends

[Question ID = 2912]

1. on all three of the above
                   [Option ID = 11648]

2. only on the price of stamps
                   [Option ID = 11646]

3. only on the price of sandwiches
                   [Option ID = 11645]

4. only on his income
                   [Option ID = 11647]

Correct Answer :-

• only on the price of sandwiches
                   [Option ID = 11645]

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22)

A consumer lives for two periods 1 and 2. The lifetime utility function is $U = u(c_1) + \frac{u(c_2)}{(1+\rho)}$. The consumer earns w_1 and w_2 in the two periods, and her consumption c_1 and c_2 satisfies a lifetime budget constraint $c_1 + \frac{c_2}{1+r} = w_1 + \frac{w_2}{1+r}$. Assume that $u(c_t) = \frac{c_t^{1-\sigma}}{1-\sigma}$, $t = 1, 2$. Then, if $r \geq \rho$, it follows that

[Question ID = 2933]

1. None of the above is necessarily true.
                   [Option ID = 11732]

2. $c_1 \leq c_2$ [Option ID = 11730]

3. $c_1 \geq c_2$ [Option ID = 11729]

4. $c_1 = c_2$ [Option ID = 11731]

Correct Answer :-

• $c_1 \geq c_2$ [Option ID = 11729]

23)

Consider the following set of 2 equations:

$$(2x)^{\ln 2} = (3y)^{\ln 3}$$

$$3^{\ln x} = 2^{\ln y}$$

Suppose a pair (x, y) of numbers is a solution to this set of equations. Then x equals

[Question ID = 2930]

1. $1/3$ [Option ID = 11719]
2. $1/6$ [Option ID = 11720]
3. $1/2$ [Option ID = 11718]
4. $1/4$ [Option ID = 11717]

Correct Answer :-

- $1/4$ [Option ID = 11717]

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24)

The price-setting relation determines the real wage paid by firms depending on the level of technology (A) and mark-up m, and is represented by $\frac{W}{P} = \frac{A}{1+m}$. Under the wage-setting relation, the real wage is determined by the level of productivity (A) and the unemployment u. This is represented by $\frac{W}{P} = A(1-u)$. The effect of an increase in the level of technology on the unemployment is:

[Question ID = 2934]

1. Ambiguous   [Option ID = 11736]
2. Zero   [Option ID = 11735]
3. Positive   [Option ID = 11733]
4. Negative   [Option ID = 11734]

Correct Answer :-

- Positive   [Option ID = 11733]

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25)

Your budget is such that if you spend your entire income, you can afford either 4 units of good x and 6 units of good y or 12 units of good x and 2 units of y. What is the ratio of the price of x to the price of y?

1. $1/3$ [Option ID = 11643]

2. $2/3$ [Option ID = 11644]

3. $1/2$ [Option ID = 11641]

4. 2 [Option ID = 11642]

Correct Answer :-

- $1/2$ [Option ID = 11641]

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26) Let

$$A = \begin{pmatrix} 1 & 1 \\ 1 & 3 \end{pmatrix}$$

Then $A^4 - 4A^3 + 2A^2 + A$ equals

[Question ID = 2927]

1. I (the 2×2 identity matrix).   [Option ID = 11705]

2. $I + A$ [Option ID = 11707]

3. A [Option ID = 11708]

4. A^{-1} [Option ID = 11706]

Correct Answer :-

- I (the 2×2 identity matrix).   [Option ID = 11705]

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27)

Scenario 3 (this scenario appears in multiple questions):

Data from a random sample of 107 home sales in 2003 yielded the regression

$$\hat{P} = 119.2 + 0.485^*BD + 23.4^*BA + 0.156^*HS + 0.002^*PS + 0.090^*A - 35.6^*PC$$
$$\quad\;\; (23.9) \quad (2.61) \qquad\quad (10.76) \qquad (0.011) \qquad\quad (0.00048) \qquad (0.311) \qquad (10.5)$$

$R^2 = 0.72$; $SER = 41.5$, P is price or value (Rs. 1000), BD is number of bedrooms, BA is number of baths, HS is house size (sq. ft.), PS is plot size (sq. ft.), A is age (years), PC is a dummy variable $= 1$ if the house is in poor condition and $= 0$ otherwise; and the parentheses contain standard errors of the corresponding coefficients. SER is the standard error of the regression.

Question: Are the coefficients of BA and PC individually statistically significant at the 5% level?

[Question ID = 2954]

1. Both coefficients are significant. [Option ID = 11815]

2. The coefficient of BA is significant, but that of PC is not [Option ID = 11813]

3. Neither coefficient is significant. [Option ID = 11816]

4. The coefficient of PC is significant, but that of BA is not [Option ID = 11814]

Correct Answer :-

- The coefficient of BA is significant, but that of PC is not [Option ID = 11813]

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28)
Consider a small open economy. If there is a positive productivity shock in the country, how will the domestic capital market be affected?

[Question ID = 2938]

1. There will be net capital inflow. [Option ID = 11749]

2. Net capital inflow is zero. [Option ID = 11751]

3. The investment demand will fall. [Option ID = 11752]

4. There will be net capital outflow. [Option ID = 11750]

Correct Answer :-

- There will be net capital inflow. [Option ID = 11749]

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29)

Functions f, g from $\Re$ to $\Re$ are defined by:

$$f(x) = \begin{cases} 0, & \text{if } x \text{ is rational} \\ x, & \text{if } x \text{ is irrational} \end{cases}$$

$$g(x) = \begin{cases} 0, & \text{if } x \text{ is irrational} \\ x, & \text{if } x \text{ is rational} \end{cases}$$

Then the function $(f - g)(x)$ is

[Question ID = 2917]

1. surjective but not injective. [Option ID = 11666]

2. injective but not surjective. [Option ID = 11665]

3. bijective. [Option ID = 11668]

4. neither injective nor surjective. [Option ID = 11667]

Correct Answer :-

- injective but not surjective. [Option ID = 11665]

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30)
Let $\|.\|_n$ and $\|.\|_m$ be norms on $\Re^n$ and $\Re^m$ respectively. Let $\mathcal{L}$ be the space of linear transformations from $\Re^n$ to $\Re^m$. Then,

[Question ID = 2919]

1. Neither $\|.\|_*$, nor $\|.\|_{**}$, is a norm on $\mathcal{L}$ [Option ID = 11676]

2. $\|.\|_*$ and $\|.\|_{**}$ are norms on $\mathcal{L}$ [Option ID = 11675]

3. $\|L\|_* = \sup\{\|L(x)\|_m \mid x \in \Re^n\}$ defines a norm on $\mathcal{L}$ [Option ID = 11673]

4. $\|L\|_{**} = \sup\{\|L(x)\|_m \mid x \in \Re^n \text{ and } \|x\|_n \leq 1\}$ defines a norm on $\mathcal{L}$ [Option ID = 11674]

Correct Answer :-

- $\|L\|_* = \sup\{\|L(x)\|_m \mid x \in \Re^n\}$ defines a norm on $\mathcal{L}$ [Option ID = 11673]

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31)

Consider **Scenario 2** (this scenario appears in multiple questions):

Trader 1 is endowed with 100 identical Left shoes. Trader 2 is endowed with 99 identical Right shoes. Each trader's utility from her allocation of shoes is equal to the number of complete pairs of shoes in the allocation. Traders 1 and 2 trade shoes in competitive markets and arrive at a competitive equilibrium. Assume that shoes are infinitely divisible.

Question: The equilibrium price of Left shoes divided by the equilibrium price of Right shoes is

[Question ID = 2908]

1. slightly less than 1   [Option ID = 11630]

2. slightly more than 1   [Option ID = 11631]

3. 1   [Option ID = 11629]

4. 0   [Option ID = 11632]

Correct Answer :-

- 1   [Option ID = 11629]

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32)
Scenario 3 (this scenario appears in multiple questions):

Data from a random sample of 107 home sales in 2003 yielded the regression

$$\hat{P} = \begin{array}{cccccccc} 119.2 + & 0.485^*BD + & 23.4^*BA + & 0.156^*HS + & 0.002^*PS + & 0.090^*A - & 35.6^*PC \\ (23.9) & (2.61) & (10.76) & (0.011) & (0.00048) & (0.311) & (10.5) \end{array}$$

$R^2 = 0.72$; $SER = 41.5$, P is price or value (Rs. 1000), BD is number of bedrooms, BA is number of baths, HS is house size (sq. ft.), PS is plot size (sq. ft.), A is age (years), PC is a dummy variable $= 1$ if the house is in poor condition and $= 0$ otherwise; and the parentheses contain standard errors of the corresponding coefficients. SER is the standard error of the regression.

Question: What is the loss in value if a homeowner allows his house to get into 'poor condition'?

[Question ID = 2952]

Rs. 34,300

1. [Option ID = 11805]

Rs. 35,600

2. [Option ID = 11807]

Rs. 36,000

3. [Option ID = 11806]

Rs. 35,100

4. [Option ID = 11808]

Correct Answer :-

- Rs. 34,300 [Option ID = 11805]

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33)

Suppose that the mark-up over cost is 20% for a representative firm in an economy with labour being the single factor; and the wage-setting equation is: $W = P(1-u)$ (where, u = the unemployment rate, P = Price and W = wage rate). Then the natural rate of unemployment is:

[Question ID = 2931]

1. 10% [Option ID = 11724]

2. 20% [Option ID = 11721]

3. 13% [Option ID = 11723]

4. 17% [Option ID = 11722]

Correct Answer :-

- 20% [Option ID = 11721]

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34)

You have a single draw from a Bernoulli distribution. The maximum likelihood estimate of the probability of success p is

[Question ID = 2947]

1. 0 [Option ID = 11785]

2. strictly between 0 and 1 [Option ID = 11788]

3. 1 [Option ID = 11786]

4. either 0 or 1 [Option ID = 11787]

Correct Answer :-

- 0 [Option ID = 11785]

35)

Scenario 3 (this scenario appears in multiple questions):

Data from a random sample of 107 home sales in 2003 yielded the regression

$$\hat{P} = 119.2 + 0.485^*BD + 23.4^*BA + 0.156^*HS + 0.002^*PS + 0.090^*A - 35.6^*PC$$
$$(23.9) \quad (2.61) \qquad (10.76) \qquad (0.011) \qquad (0.00048) \qquad (0.311) \qquad (10.5)$$

$R^2 = 0.72$; $SER = 41.5$, P is price or value (Rs. 1000), BD is number of bedrooms, BA is number of baths, HS is house size (sq. ft.), PS is plot size (sq. ft.), A is age (years), PC is a dummy variable $= 1$ if the house is in poor condition and $= 0$ otherwise; and the parentheses contain standard errors of the corresponding coefficients. SER is the standard error of the regression.

Question: If a homeowner converts a bedroom into a bathroom, what is the expected increase in the value of the house?

[Question ID = 2950]

1. Rs. 23,915   [Option ID = 11800]

2. Rs. 21,800   [Option ID = 11799]

3. Rs. 22800   [Option ID = 11797]

4. Rs. 22,915   [Option ID = 11798]

Correct Answer :-

- Rs. 22800   [Option ID = 11797]

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36)

What is the money demand function when the utility of money for the representative household is given by, $U(Y, M/P) = 0.5lnY + 0.5ln(M/P)$ (i represents the opportunity cost of holding money)?

[Question ID = 2936]

1. $M^D/P = Y/(0.5i)$ [Option ID = 11744]

2. $M^D/P = 0.5Y/i$ [Option ID = 11743]

3. $M^D/P = 2Y/i$ [Option ID = 11742]

4. $M^D/P = Y/i$ [Option ID = 11741]

Correct Answer :-

- $M^D/P = Y/i$
  [Option ID = 11741]

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37)

Scenario 3 (this scenario appears in multiple questions):

Data from a random sample of 107 home sales in 2003 yielded the regression

$$\hat{P} = \underset{(23.9)}{119.2} + \underset{(2.61)}{0.485^*BD} + \underset{(10.76)}{23.4^*BA} + \underset{(0.011)}{0.156^*HS} + \underset{(0.00048)}{0.002^*PS} + \underset{(0.311)}{0.090^*A} - \underset{(10.5)}{35.6^*PC}$$

$R^2 = 0.72$; $SER = 41.5$, P is price or value (Rs. 1000), BD is number of bedrooms, BA is number of baths, HS is house size (sq. ft.), PS is plot size (sq. ft.), A is age (years), PC is a dummy variable $= 1$ if the house is in poor condition and $= 0$ otherwise; and the parentheses contain standard errors of the corresponding coefficients. SER is the standard error of the regression.

Question: What is the adjusted coefficient of determination?

[Question ID = 2953]

1. 0.7052 [Option ID = 11812]

2. 0.7022 [Option ID = 11811]

3. 0.7032 [Option ID = 11809]

4. 0.7042 [Option ID = 11810]

Correct Answer :-

- 0.7032 [Option ID = 11809]

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38)

Let

$$A = \begin{pmatrix} 1 & 0 & 0 \\ 2 & 1 & 0 \\ 3 & 2 & 1 \end{pmatrix}$$

and B_1, B_2, B_3 be three 3×1 column vectors, such that,

$$AB_1 = \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix}, AB_2 = \begin{pmatrix} 2 \\ 3 \\ 0 \end{pmatrix}, AB_3 = \begin{pmatrix} 2 \\ 3 \\ 1 \end{pmatrix}$$

Let B be the 3×3 matrix whose 3 columns are B_1, B_2 and B_3 respectively. Then the determinant $det(B)$ equals

[Question ID = 2926]

1. $\frac{3}{2}$ [Option ID = 11704]

2. $-\frac{3}{2}$ [Option ID = 11703]

3. 3 [Option ID = 11702]

4. -3 [Option ID = 11701]

Correct Answer :-

• -3 [Option ID = 11701]

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39)

Scenario 3 (this scenario appears in multiple questions):

Data from a random sample of 107 home sales in 2003 yielded the regression

$$\hat{P} = \quad 119.2 + \quad 0.485^*BD + \quad 23.4^*BA + \quad 0.156^*HS + \quad 0.002^*PS + \quad 0.090^*A - \quad 35.6^*PC$$
$$\quad (23.9) \quad (2.61) \qquad (10.76) \qquad (0.011) \qquad (0.00048) \qquad (0.311) \qquad (10.5)$$

$R^2 = 0.72; SER = 41.5$, P is price or value (Rs. 1000), BD is number of bedrooms, BA is number of baths, HS is house size (sq. ft.), PS is plot size (sq. ft.), A is age (years), PC is a dummy variable $= 1$ if the house is in poor condition and $= 0$ otherwise; and the parentheses contain standard errors of the corresponding coefficients. SER is the standard error of the regression.

Question: If variable 'Age' were measured in decades, what would be its coefficient?

1. 0.090 [Option ID = 11817]

0.900

2. [Option ID = 11818]

0.009

3. [Option ID = 11820]

9.000

4. [Option ID = 11819]

Correct Answer :-

• 0.090 [Option ID = 11817]

40)

A random number X, uniformly distributed on $[0, 1]$, divides $[0, 1]$ into 2 segments of lengths X and $(1 - X)$. Let R be the ratio of the smaller to the larger segment (i.e., $R = X/(1 - X)$, or $R = (1 - X)/X$, depending on whether $X \leq 1/2$ or $X > 1/2$. The distribution of R, $F(r)$, that is the probability that $R \leq r$ equals

[Question ID = 2945]

1. $1/(r + 1)$ [Option ID = 11779]

2. $2r/(r + 1)$ [Option ID = 11778]

3. $(1 - r)/(1 + r)$ [Option ID = 11780]

4. $r/(r + 1)$ [Option ID = 11777]

Correct Answer :-

• $r/(r + 1)$ [Option ID = 11777]

41)

The function $f(x)$ is twice differentiable, and $f(2) = 4, f(3) = 9, f(4) = 16$. Then, it must be that

[Question ID = 2928]

1. $f''(x) = 3$, for some $x \in (2, 4)$. [Option ID = 11712]

2. $f''(x) = 4$, for some $x \in (2, 3)$. [Option ID = 11711]

3. $f''(x) = 3$, for some $x \in (2, 3)$. [Option ID = 11709]

4. $f''(x) = 2$, for some $x \in (2, 4)$. [Option ID = 11710]

Correct Answer :-

$f''(x) = 3$, for some $x \in (2,3)$.
- [Option ID = 11709]

42)

If the marginal propensity to save is 0.3 and the marginal propensity to import is 0.1, and the government increases expenditures by Rs. 10 billion, ignoring foreign-income repercussions, by how much will GDP rise?

[Question ID = 2940]

1. Rs. 15 billion. [Option ID = 11760]
2. Rs. 10 billion. [Option ID = 11758]
3. Rs. 20 billion. [Option ID = 11757]
4. Rs. 25 billion. [Option ID = 11759]

Correct Answer :-

- Rs. 20 billion. [Option ID = 11757]

43)

Under a floating exchange rate regime, following an expansion in the money supply, monetary authorities will:

[Question ID = 2941]

1. Buy domestic currency in the foreign exchange market. [Option ID = 11762]
2. Sell domestic currency in the foreign exchange market. [Option ID = 11764]
3. Do nothing in the foreign exchange market. [Option ID = 11763]
4. Buy foreign currency in the foreign exchange market. [Option ID = 11761]

Correct Answer :-

- Buy foreign currency in the foreign exchange market. [Option ID = 11761]

44)

In a roll of two fair dice, X is the number on the first die and Y is the number on the second die. Which of the following statements is true

[Question ID = 2944]

1. $X - Y$ and $X + Y$ are dependent random variables [Option ID = 11774]
2. X^2 and Y are independent random variables. [Option ID = 11773]

3. X^2 and Y^2 are independent random variables [Option ID = 11775]

4. All of the above [Option ID = 11776]

Correct Answer :-

- X^2 and Y are independent random variables. [Option ID = 11773]

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45)

The formula for the effective tariff rate is given by the following formula:

$$e = \frac{(n - ab)}{1 - a}$$

where e = the effective rate of protection, n = the nominal tariff rate on the final product, a = the ratio of the value of the imported input to the value of the final product, and b = the nominal tariff rate on the imported input.

Suppose that the tariff rate on the final product is 5 percent. If no imported inputs are used in the domestic production of the final product, the effective tariff rate is

[Question ID = 2914]

1. 5 percent [Option ID = 11654]

2. 3 percent [Option ID = 11653]

3. 12 percent [Option ID = 11656]

4. 8 percent [Option ID = 11655]

Correct Answer :-

- 3 percent [Option ID = 11653]

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46)

Suppose that in the Solow Model of an economy with some positive savings rate, population growth rate, and rate of depreciation, k^* is the steady state capital-labour ratio. Suppose k_1 and k_2 are capital-labour ratios such that $k_1 < k_2 < k^*$, and let g_1, g_2 be the growth rates of per capita output at k_1 and k_2 respectively. Then

[Question ID = 2935]

1. None of the above. [Option ID = 11740]

2. $g_1 < g_2$ [Option ID = 11739]

3. $g_1 = g_2$ [Option ID = 11738]

$g_1 > g_2$

4. [Option ID = 11737]

Correct Answer :-

$g_1 > g_2$

• [Option ID = 11737]

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47)

A random variable has a Uniform distribution on the interval $[-1, 1]$. The probability density function of X conditional on $X > 0.3$ is given by

[Question ID = 2948]

1. 1 [Option ID = 11792]

2. $10/7$ [Option ID = 11790]

3. $7/10$ [Option ID = 11789]

4. $3/10$ [Option ID = 11791]

Correct Answer :-

$7/10$

• [Option ID = 11789]

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48) The set $(0, \infty)$ can be expressed as

[Question ID = 2916]

1. $\cup_{n=1}^{\infty}[a_n, b_n]$, where each a_n and b_n is a real number
   [Option ID = 11662]

2. $\cup_{n=1}^{\infty}(a_n, b_n)$, where each a_n and b_n is a real number
   [Option ID = 11661]

3. $\cup_{n=1}^{\infty}[a_n, b_n]$, where each a_n and b_n is a rational number
   [Option ID = 11663]

4. all of the above
   [Option ID = 11664]

Correct Answer :-

$\cup_{n=1}^{\infty}(a_n, b_n)$, where each a_n and b_n is a real number

• [Option ID = 11661]

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49) What is the probability that at least one 6 appears when 6 fair dice are rolled?

[Question ID = 2942]

1. $1 - \left(\frac{5}{6}\right)^6$ [Option ID = 11767]

2. $\frac{5}{6}$ [Option ID = 11768]

3. $\left(\frac{5}{6}\right)^6$ [Option ID = 11765]

$\frac{1}{6}$

4.　　　[Option ID = 11766]

Correct Answer :-

$(\frac{5}{6})^6$

•　　　[Option ID = 11765]

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50)

Consider Scenario 1 (this scenario appears in multiple questions):

Consider utility functions

$$u_1(x,y) = \begin{cases} 2x, & \text{if } y/x > 2 \\ \max\{x,y\}, & \text{if } y/x \in [1/2, 2] \\ 2y, & \text{if } y/x < 1/2 \end{cases}$$

and

$$u_2(x,y) = \begin{cases} 2x, & \text{if } y/x > 2 \\ x + y, & \text{if } y/x \in [1/2, 2] \\ 2y, & \text{if } y/x < 1/2 \end{cases}$$

Let $p_x > 0$ and $p_y > 0$ be the prices of goods x and y respectively. Let $w > 0$ denote wealth (or income).

Question: Let $m_i(p_x, p_y, w)$ denote the set of Marshallian demands for utility u_i and let $v_i(p_x, p_y, w) = u_i \circ m_i(p_x, p_y, w)$. Then,

[Question ID = 2906]

1. $m_1(p_x, p_y, w) \subset m_2(p_x, p_y, w)$ and $v_1(p_x, p_y, w) \le v_2(p_x, p_y, w)$
　　　[Option ID = 11623]

2. $m_1(p_x, p_y, w) \supset m_2(p_x, p_y, w)$ and $v_1(p_x, p_y, w) \ge v_2(p_x, p_y, w)$
　　　[Option ID = 11624]

3. $m_1(p_x, p_y, w) \subset m_2(p_x, p_y, w)$ and $v_1(p_x, p_y, w) = v_2(p_x, p_y, w)$
　　　[Option ID = 11621]

4. $m_1(p_x, p_y, w) \supset m_2(p_x, p_y, w)$ and $v_1(p_x, p_y, w) = v_2(p_x, p_y, w)$
　　　[Option ID = 11622]

Correct Answer :-

• $m_1(p_x, p_y, w) \subset m_2(p_x, p_y, w)$ and $v_1(p_x, p_y, w) = v_2(p_x, p_y, w)$
　　　[Option ID = 11621]