JNUEE SIS 2012 SOLUTION PAPER

M.A. ECONOMICS (with specialization in the world economy)

1. $(C) Q^d = 10 - 2p$ & $Q^s = 3p-5$

$\therefore\ 10 - 2p = 3p - 5$.

$\therefore, p = 3; Q = 4 \rightarrow$ Equilibrium quantity

↓

Equilibrium price

$Q^d = 10 - 2p$ $\qquad$ $Q^s = 3p - 5$

$\therefore 2p = 10 - Q^d$ $\qquad$ $\therefore, 3p = Q^s + 5$

$\therefore, p = 5 - \frac{1}{2}Q^d$ $\qquad$ $\therefore, p = \frac{1}{3}Q^s + \frac{5}{3}$

Producer surplus at $p_s = 3$ is PS $= \frac{1}{2} \times 4 \times \left(3 - \frac{5}{3}\right) = \frac{1}{2} \times 4 \times \frac{4}{3} = \frac{8}{3}$

$$For\ p_s = 4 \therefore Q^s = 3(4) - 5 = 12 - 5 = 7$$

$\therefore$ $Producer\ surplus\ (PS_1) = \frac{1}{2} \times 7 \times \left(4 - \frac{5}{3}\right) = \frac{1}{2} \times 7 \times \frac{7}{3} = \frac{49}{6}$

$\therefore$ Gain in producer surplus $= PS_1 - PS = \frac{49}{6} - \frac{8}{3} = \frac{11}{2}$

2. (C) Consumer surplus at p $= 3\ is\ CS = \frac{1}{2} \times 4 \times (5-3) = \frac{1}{2} \times 4 \times 2 = 4$

At p $= 4$,

Quantity demanded $= 10 - 2p = 10 - 2(4) = 2$

$consumer\ surplus\ [(CS_1)] = \frac{1}{2} \times 2 \times 1 = 1$

$\therefore$ Change in consumer surplus $= CS - CS_1 = 4 - 1 = 3$

3. (B) $Q^d = 2$ at P $= 4$

$Q^s = 7\ at\ P = 4$;

The cost to the Govt. of this policy $= 4 \times (7-2) = 20$

4. (C) S $= \frac{5}{3}$

$\therefore\ p = 3 + \frac{5}{3} = \frac{14}{3}$

$\therefore, Q^s = 3p - 5 = 14 - 5 = 9$

Equilibrium quantity $= 4$

$\therefore$, Govt. expenditure $= (9 - 4) \times price = 5 \times 3 = 15$

5. (A) The demand is price elastic and price falls.

6. (D) $e_D = \frac{\%\Delta\ in\ quantity\ demanded}{\%\Delta\ in\ price} \Leftrightarrow\ -3.5 = \frac{\%\ \Delta\ qty.}{10\%}$

$\therefore\ 35\%$ fall in quantity.

7. (A) Any point outside the PPF (or PPC) is not feasible for given current resources & technology.

8. (B) MRP $=$ additional 20 packages $\times$ price per package $= 20 \times 5 =$ Rs. 100/–

9. (C) Marginal product of second worker is (30–20) $=$ 10 candles

Given: Price per candle = Rs. 2/–

So, MRP = $2 \times 10 = Rs.\ 20/-$

10. (A) Minimize y $= x_1 + x_2$ subject to: $1 - x^{1/2} - x_2 = 0$.

Lagrange's Multiplier = $L = x_1 + x_2 + \lambda(1 - \sqrt{x} - x_2)$

$$\frac{\partial L}{\partial x_1} = 1 - \lambda\frac{1}{2\sqrt{x}} = 0\ .$$

$$\therefore\ \lambda\frac{1}{2\sqrt{x}} = 1\ \text{.....(i)}$$

$$\frac{\partial L}{\partial x_2} = 1 - \lambda = 0$$

$$\therefore \lambda = 1 \text{ .....(ii)}$$

$$\frac{\partial L}{\partial \lambda} = 1 - \sqrt{x_1} - x_2 = 0$$

$$\therefore \sqrt{x_1} + x_2 = 1 \text{ .....(iii)}$$

From (i) and (ii),

$$\lambda \frac{1}{2\sqrt{x}} = \lambda$$

$$\therefore \frac{1}{2\sqrt{x}} = 1$$

$$\therefore, 2\sqrt{x} = 1$$

$$\therefore \sqrt{x} = 1/2$$

$$\therefore, x_1^* = 1/4$$

Putting $x = 1/4$ in (iii),

$$\frac{1}{2} + x_2 = 1$$

$$\therefore x_2^* = \frac{1}{2}$$

$$\therefore x_1^* = \frac{1}{4};\ x_2^* = \frac{1}{2}$$

11. (D) The function f:R→R is defined by

$$f(x) = \frac{x^2+2x-3}{x^2-x-2} = \frac{x^2+3x-x-3}{x^2-2x+x-2} = \frac{x(x+3)-1(x+3)}{x(x-2)+1(x-2)} = \frac{(x-1)(x+3)}{(x+1)(x-2)}$$

$\therefore$ two points of discontinuity at $x = -1$ or x =2.

12. (C)

$$A = \begin{pmatrix} 3 & 1 & 1 \\ 1 & 2 & 1 \end{pmatrix}_{2\times 3};\quad B = \begin{bmatrix} 4 & 5 & 0 \\ 5 & 3 & 2 \\ 2 & 0 & 6 \end{bmatrix}_{3\times 3}$$

$\therefore$ C *is a* 2×3 matrix.

$$\text{Rank} = \min\{2, 3\} = 2$$

∴ Rank of C is 2.

13. (B) P (The statement is indeed true/they make the same statement) $= \frac{pq}{pq+(1-p)(1-q)}$

14. (D) P(A) $= \frac{3}{7}$; $P(B) = \frac{3}{8}$; $P(C) = \frac{1}{3}$

P(Problem is not solved) $= \left(1-\frac{3}{7}\right) \cap \left(1-\frac{3}{8}\right) \cap \left(1-\frac{1}{3}\right) = \frac{4}{7} \times \frac{5}{8} \times \frac{2}{3} = \frac{5}{21}$.

15. (A)

X	P(X = x)
0	C/2
1	2C $-3C^2$
2	2C–1
3	C/2

$\frac{C}{2} + 2C - 3C^2 + 2C - 1 + \frac{C}{2} = 1$

⇔ 5C $-3C^2 - 1 = 1$

∴ $3C^2 - 3C - 2C + 2 = 0$

∴ $3C(C-1) - 2(C-1) = 0$

3C $= 2$; C$= 1$

⇔ C$= 2/3$

16. $(B)\ \bar{x} = \frac{n_1\bar{x_1}+n_2\bar{x_2}+n_3\bar{x_3}}{n_1+n_2+n_3}$

650 $= \frac{14\times575+7\times400+9\times\bar{x_3}}{30}$

$\therefore 19500 - 8050 - 2800 = 9\overline{x_3}$

$\therefore \overline{x_3} = 961.11$

17. (B) P(some mistake in page) $= 1 - P$ (no mistake)

$$= 1 - \left(\frac{e^{-m} \times m^x}{x!}\right)$$

$$= 1 - \left(\frac{e^{-3} \times 3^0}{0!}\right)$$

$$= 0.950212$$

18. (A) P(X < 30) $= \frac{X-\mu}{\sqrt{var(X)}} = \frac{30-46}{20} = -0.8$

P (X < 30) $= 1 - 0.788 = 0.212$

19. (C) An increase in equilibrium level of output and a decrease in price level.

20. (B) An increase in the equilibrium level of output and the price level.

[Since increase in govt. spending will give rise to increase in output, as well as employment. Increase in employment will lead to increase in demand and hence price rise].

21. Do Yourself.
22. Do Yourself.
23. (A)

	A	B
Food	$\frac{500}{0.29}$ 500/1700	$\frac{1200}{0.70}$ 1200/1700
Cloth	$\frac{700}{0.47}$ 700/1500	$\frac{800}{0.53}$ 800/1500

∴ A has comparative advantage in food (0.29 < 0.47).

B has comparative advantage in cloth (0.53 < 0.70).

∴ A will specialize in food and export food and import cloth from B.

24. (C)

$Q^d = a - bP$ $Q^s = a + bP$

900$= a - 100b$ 0$= a + 100b$

700$= -a + 200b$ $-200 = -a \pm 200b$

…… ……

200$-100b$ $-200 = -100b$

b$= 2$ $b = 2$

$\therefore a = 1100$ $\therefore a = -200.$

Import dd. Function $= d - S = (1100 - 2P^1) - (-200 + 2P^1) = 1300 - 4P^1$

$\therefore\ 300 = 1300 - 4P^1$

$\therefore 1000, = 4P^1$.

$\therefore, P^1 = 250\$$

Price 'p' earlier $= 100\$$

$\therefore, P^1 - P = 250 - 100 = 150\$$

∴Price will go up by $150.

25. (B)multiplier effect on GDP $= \frac{1}{1-mpc+mpi} = \frac{1}{mps+mpi}$

Plugging values:

Multiplier effect on GDP $= \frac{1}{0.15+0.05} = \frac{1}{1/5} = 5$