SIS JNU 2020

Q1. Suppose the demand for burgers is given by $Q_d = 286 – 20p$ and the supply is $Q_s = 88+40p$. if the government imposes a per unit tax of 1.05, what is the:
A. new equilibrium price and
B. tax revenue?

a) A 2.6 B 247.7
b) A 3.3 B 220
c) A 4 B 216.3
d) None of these

Q2. Suppose a country has abundant labour and scarce, and good X requires capital-intensive production and good Y requires labour-intensive production. Then free trade will lead to:

a) Decrease in wage in the country
b) Decrease in the price of capital in the country
c) Decrease in the good X in the country
d) Increase in the price of good Y in the country

Q3. Suppose that a monopolist faces two markets with the demand curves given by $D_1(p_1) = 100 - p_1;\ D_2(p_2) = 100 - 2p_2$. Let the marginal cost be constant and equal to 20. If the monopolist must charge the same price in each market, what price should it charge?

a) $p^* = \left(43\frac{1}{3}\right)$
b) $p^* = 50$
c) $p^* = 60$
d) None of the above

Q4. On labour market equilibrium, Keynes made the following assumption:

a) Downwards rigidity of nominal wages
b) Perfectly flexible nominal wages
c) Downward rigidity of real wages
d) Perfectly flexible real wages

Q5. For what values of k does this system have infinite solutions:
$x + 2z = 0$
$x + 3y + 10z = 0$
$6y + k^2z = 0$

a) k =4 or k = - 4
b) k = -4 or k = 0
c) k = 16 or k – 16
d) k =4 or k = 0

Q6. Compared to the free trade equilibrium, when an import tariff is imposed on good X in a small country, then which of the following increase:

A. Domestic output of good X
B. Domestic demand of good X
C. Domestic price of good X
D. Domestic tariff revenue

Then the following is correct:

a) A and C only
b) B and D only
c) A, C and D only
d) A, B, C and D

Q7.Does the sequence $\sum_{n=0}^{\infty} \frac{n^7}{6^n}$ converge or diverge?

a) Always converges
b) Always diverges
c) Converges for some values of n and diverges for others
d) Not enough information to answer the question

Q8. A variable X has a uniform distribution on [0,1] and variable Y is defined as 2X + 5. Then the probability density function of Y is:

a) 1/7
b) 1/5
c) 1/2
d) 1

Q9. Suppose demand for labour is given by L = -50w + 450 and supply is L = 100w, where L is the number of labour and w is the wage rate per hour. Suppose the government wishes to raise the equilibrium wage to 4 by offering a subsidy to employers for each person hired.

A. What will be the new equilibrium level of employment?
B. How much total subsidy will be paid?

a) A 500 B 1000
b) A 400 B 1200
c) A 300 B 4
d) None of the above

Q10. Informal lender extends credit to the poor more than formal lenders because:

a) Relative to commercial banks, informal lenders can more easily circumvent informational asymmetries
b) Relative to commercial banks, informal lenders are less risk averse and change lower interest rates.
c) Informal lenders do not face transaction costs and therefore they can lend at more affordable rates of interest.
d) None of the above.

Q11. Which of the following function have inverses on (- ∞,∞) ?

A. $y = 5x - 2$
B. $y = 1 - x^2$
C. $y = x^3 - 2$

a) A only
b) A and B only
c) A and C only
d) A, B and C only

Q12. Suppose that 10 people live in a street and that each of them is willing to pay 2 for an extra streetlight. Let the cost of providing x streetlights be $c(x) = x^2$. What is the Pareto-efficient number of streetlights?

a) 1
b) 10
c) 5
d) None of the above

Q13. Which of the following will cause total revenue earned by cell phone producers to rise?

a) Demand is reduced because consumers learn of new hazards of cell phone use
b) The demand is price elastic and the price falls
c) The price falls and the demand in inelastic
d) None of the above

Q14. Which of the following statements related to the concept of disguised unemployment is False?

a) The marginal revenue product of labour is less than the wage
b) The marginal revenue product of labour is zero with a positive wage
c) More people are engaged in an activity than the numbers required for it
d) None of the above

Q15. For the demand function given by $q = \frac{30}{p^2}$, where q is quantity and p is the price. Find the consumer surplus at p = 2.

a) 15
b) 10
c) 30
d) None of the above

Q16. Consider a simple Keynesian model where equilibrium output is determined by aggregate demand. Assume investment to be autonomously determined and a constant (s) proportion of income is saved. A rise in "s" in this model will lead to:

a) An increase in equilibrium output
b) A decrease in equilibrium output
c) No change in equilibrium output
d) Can't say

Q17. The probability density function of a random variable X is given by $f(x) = a(1-x)^{a-1}$ where x is in the range [0,1] and a > 0. Then the median of X is:

a) $2^{-1/a}$
b) $1 - 2^{-1/a}$
c) $1/2$
d) $1/2^a$

Q18. If two countries have identical concave production possibilities curve then:

a) There would be no basis for gainful trade
b) Trade would depend on difference in demand condition
c) Trade depends on economies of large scale production
d) Trade would depend on the use of different currencies

Q19. The conjecture that inequality first increase with development, then decreases with further development, has been:

a) Strongly supported by most studies
b) Support by cross sectional studies, not time-series studies
c) Supported by time series studies, not cross sectional studies
d) Generally not support by empirical studies

Q20. The table below provides the total production possible in the two countries given their total endowment of labour.

Country	Yards of Cloth	Tons of rice
Bangladesh	1000	500
India	5000	1500

a) Both countries would like to specialize in Cloth

b) Both countries would like to specialized in Rice
c) Both countries would benefit from trade with each other
d) Neither country would benefit from trade with each other

Q21. In the standard IS-LM model, we replace the assumption of exogenous money supply with an endogenous money supply as an increasing function of interest rate. Now the LM curve will:

a) Be flatter
b) Be steeper
c) Be negatively sloped
d) Remain unchanged

Q22. The table below gives the marginal product of labour in production of two commodities in the two countries. There are no other resources used for production

Country	Marginal Product in Cloth	Marginal Product in Rice
Bangladesh	4	2
India	5	5

Then for mutually beneficial trade between the two countries Bangladesh would be willing to:

a) Export Rice and import Cloth
b) Export Cloth and Import Rice
c) Export both Rice and Cloth at 1 : 1 terms of trade
d) Import both Rice and Cloth at 1 : 1 terms of trade

Q23. According to the Ranis-Fei-Lewis model, in order for the turning point to be reached:

a) Wage in agriculture sector must rise in response to a food shortage
b) Wage in agriculture sector must remain at subsistence
c) Wage in industrial sector must decrease
d) None of the above

Q24. $\lim_{n\to\infty} \frac{In(1+x)}{x}$ is equal to:

Q25. An unbiased coin is tossed 400 times, then the probability that the number of heads will be between 150 and 250 is at least:

a) 1/25
b) 12/25
c) 24/25
d) 1

Q26. A population consists of the number of defective mobiles in various shipments coing to India. The number of defective is 2 in the first shipment, 4 in the second, 6 in the third, and 8 in the fourth. What will be the mean and standard deviation of this population?

a) $5, \sqrt{5}$
b) $5, \sqrt{15}$
c) $3, \sqrt{3}$
d) $6, \sqrt{6}$

Q27. Solve min y = $x_1 + x_2$
Subject to $1 - \sqrt{x_1} - x_2 = 0$

a) $x_1 * = \frac{1}{9}, x_2 * = \frac{2}{3}$
b) $x_1 * = \frac{1}{4}, x_2 * = \frac{1}{2}$
c) $x_1 * = 1, x_2 * = 0$

d) None of the above

Q28. Solve for x given $2e^{6x} = 18$

a) $x = \frac{(\log 9)}{6}$
b) $x = (\log 18)$
c) $x = 18$
d) None of the above

Q29. Suppose the government imposes a profit tax on a monopoly so that the after-tax profit become $(1 - \alpha)\pi$, where p is the before tax profit. After the imposition of the tax:

a) The quantity sold remains the same
b) The quantity sold decreases
c) The price increases
d) None of the above happens

Q30. Find the probability of a '4' turning up at least once in two tosses of a fair dice (with six faces marked 1 to 6)

a) 1/36
b) 1/18
c) 11/36
d) 1/3

Q31. The probability density function of a random variable is given as $f(x) = \frac{\lambda^x e^{-\lambda}}{x!}$ Where x = 0,1,2, … then the expected value of x^2 is:

Q32. There are 2oo kgs of food that much be allocated between two sailors marooned at an. Island. The utility functions of the two sailors are given by $u_1 = \sqrt{F_1}, u_2 = \frac{1}{2}\sqrt{F_2}$ where F_i, i = 1,2 is the quantity of food consumed by sailor i. Suppose the social welfare function is of the firm $w = \sqrt{u_1}\sqrt{u_2}$. how should food be allocated between the sailors so as to maximise social welfare?

Q33. Consider a model where the R-squared is zero. Which of the following statements is true?

A. The estimated slope coefficients will be zero
B. The fitted line will be horizontal
C. The explanatory variables do not explain any of the variability in the outcome variable around its mean value.
D. The estimated intercept coefficient will be zero.

Q34. What conditions need to hold before you can apply Mean Value Theorem to a function f?

Q35. According to the big push theory of economic development, low income traps exist due to:

a) Moral hazard
b) Decreasing returns
c) Coordination failures
d) Population pressure

Q36. A strictly risk averse individual is offered a choice between a gamble that pays 1000 with a probability of 25% and 100 with a probability of 75%, and a payment of 325 for sure. Which one of the following is true?

a) Individual chooses the sure outcome
b) Individual chooses the gamble
c) Individual is indifferent between choosing the gamble and the sure outcome

d) We cannot say which one would the individual choose based on the above information

Q37. Can you apply the Mean Value Theorem to $f(x) = x^{1/3}$ on the interval [-1,1]? Why?

a) Yes, as f(x) is continuous in this interval
b) No, since f(x) is not differentiable on (-1,1)
c) No, since f(x) is not continuous on [-1,1]
d) Yes, as f(x) is continuous in [-1,1] and differentiable in (-1,1)

Q38. Which of the following constitute the "impossible trinity"?

A. Fixed exchange rate
B. No budget deficit
C. Free international capital mobility
D. Independent monetary policy
E. Balance in the balance of payments

a) A, B, C only
b) B, D, E only
c) A, C, D only
d) A, C, E only

Q39. A newspaper conducted a survey of its readers and asked everyone to fill out a survey form and send it in. almost 50% of readers responded. This type of sample is called:

a) A cluster sample
b) A simple random sample
c) A self-selected sample
d) A stratified random sample

Case study- 40 to 42

Consider an open economy simple Keynesian model with autonomous investment (I), constant propensity to save (s) out of disposal income, a constant rate of taxation (t) by the government on total income, an exogenous amount of government expenditure (G), an autonomous level of exports (X) and imports determined as a function of income with a constant import intensity (m)

Let

I = 4800
G = 6000
X = 1200
s = 0.5
t = 0.4
m = 0.1

Q40. In the above model the equilibrium level of income is:

a) 12000
b) 24000
c) 15000
d) None of the above

Q41. In the above model, at the equilibrium level of income, there is:

a) Trade surplus
b) Trade deficit
c) Balanced trade
d) Can't say

Q42. In the above model, the government decides to maintain trade balance by adjusting the tax rate (t) and thereby affecting domestic absorption, without changing anything else. It is:

a) Possible to attain this by increasing tax rate (t) to 0.8
b) Possible to attain this by reducing tax rate (t) to 0.2
c) Possible to attain this be keeping tax rate (t) unchanged at 0.4
d) None of the above

Q43. $f(x) = x^4 - 4x^2 + 4$

Find a local minimum and a local maximum of the function f(x)

a) 1,2
b) 3,4
c) 2,1
d) None of the above

Q44. Similar to import tariff, import quota tends to result in:

a) Increased consumer surplus and producer surplus
b) Decreased imports and decreased producer surplus
c) Increased government revenue and price
d) Increased producer surplus and price

Q45. Past data of a doctor's clinic tells that 10% of patients entering have live diseases and 5% are alcoholics. According to medical reports among those patients who are diagnosed with liver diseases, 7% are alcoholics. What is the probability of alcoholic people having liver diseases?

a) 0.14
b) 0.0005
c) 0.07
d) Cannot be derived

Q46. Which of the following statements is false?

a) Gini coefficient satisfies all four principles of measures of inequality.
b) The Pigou-Dalton principle states that a progressive transfer from a richer to a poorer person must make the resulting distribution more unequal.
c) Cross country evidence supports the Kuznets curve hypothesis.
d) If Lorentz curves cross, Gini and coefficient of variation may give different rankings of inequality.

Q47. A firm in a perfectly competitive industry has marginal cost MC =0.4q where q is quantity. The market price is 20 per unit. The production process of this firm is polluting the air and the social marginal cost is SMC = 0.5q

A. What is the socially optimal level of production for the firm?
B. What should be the per unit tax imposed by the government so that the firm produces socially optimal level of output?

a) A 40 B 4
b) A 50 B10
c) A 40 B 5
d) None of the above

Q48. What is $\frac{dy}{dx}$, when $\frac{e^{2x}+1}{e^{2x}-1}$

a) $\frac{e^{2x}}{e^{2x}-1}$

b) $\frac{e^{4x}}{(e^{2x}-1)^2}$
c) $\frac{-e^{4x}}{e^{2x}-1}$
d) $\frac{-4e^{2x}}{(e^{2x}-1)^2}$

Q49. In the complete Keynesian macro model, at the liquidity trap region, the aggregate demand curve will be:

a) Downward sloping
b) Upward rising
c) Horizontal
d) vertical

Q50. Consider a random variable X where

$P(X = k) = \frac{20!0.25^k(0.75)^{20-k}}{k!(20-k)!}$ For k = 0,1,2,…,20. What is the mean of X?

a) 2.5
b) 5
c) 7.5
d) 3