



# RBI Grade B – DEPR 2022

## Phase 1 (Objective Economics) Memory Based Questions

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# Q1. What is the basis of international trade in the Heckscher-Ohlin model ?

## ✓ Factor Endowments

Back To Chapter 

### Heckscher-Ohlin Theory (Factor Proportions Theory)

- Factor Proportions theory of international trade explains that in a two-country, two-factor, and two-commodity framework different countries are endowed with varying proportions of different factors of production. Some countries have large populations and large labour resources.
- In the early 1900s, two Swedish economists, Eli Heckscher and Bertil Ohlin, focused their attention on how a country could gain comparative advantage by producing products that utilized factors that were in abundance in the country. Their theory is based on a country's production factors—land, labor, and capital, which provide the funds for investment in plants and equipment. They determined that the cost of any factor or resource was a function of supply and demand.

00:28 

## Q2. Find MR when ed=0.5 and P=10

$$MR = P \left(1 - \frac{1}{e}\right)$$

$$MR = -10$$

### Relationship between revenue and elasticity of demand

The relationship between MR, AR and  $e_D$  is given by the formula:)

$$MR = AR \left(1 - \frac{1}{e_D}\right)$$

- (i) When  $e_D = 1$ , MR = zero
- (ii) When  $e_D > 1$ , MR is positive
- (iii) When  $e_D < 1$ , MR is negative

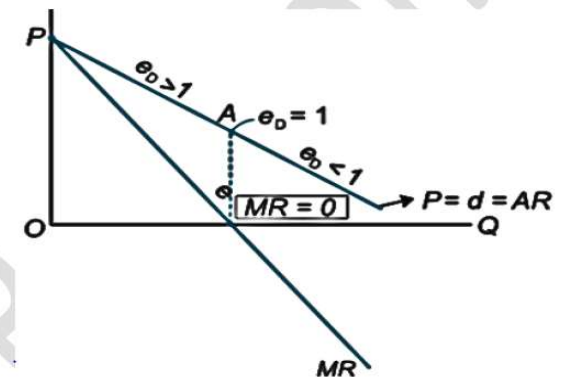


Fig 1.3 relationship between revenue and elasticity of demand source web

It is graphically shown in Fig. 1.3. A rational producer will always operate where  $e_D > 1$ .

## Q3. What is the rate of effective tariff ?

[

]

All the figures were given, you had to plug in the following formula:

$$g = \frac{t - \sum a_i t_i}{1 - \sum a_i}$$

Ans- 10%

Question No.39

Marks

+2 -1

Direction

This question obtained (2) Marks:

A country Kaishala imposes a 10% tariff on imported vehicles but no tariff on imports of machinery or other inputs to the manufacture of vehicles. Suppose that under free trade, the cost of imported material is \$8000 for a \$10000 vehicle. Calculate the effective rate of protection.

20%

25%

30%

40%

50%

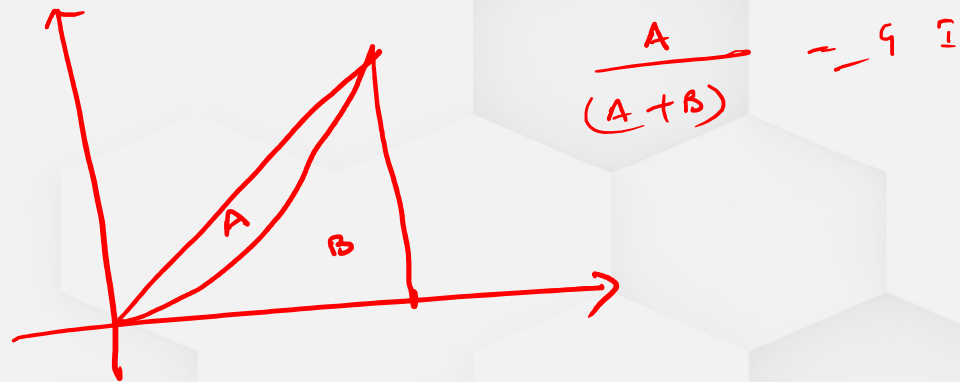
**Q4. What is the effective tariff rate on the commodity, when no imported inputs are used?**

**Equals the nominal tariff rate**

$$g = \frac{1 - \sum a_i t_i}{1 - \sum a_i} \rightarrow$$


## Q5. What is the range of Gini coefficient ?

Lies between 0 (perfect equality) to 1 (perfect inequality)



## Q6. Terms of trade formula?

$(\text{Price of exports} / \text{Price of imports}) * 100$  ✓

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Question No.31 Marks  
+1 -0.33

Direction  
This question obtained (1) Marks:

The index of import prices stands at 150 and that of exports is 180. What is the terms of trade

1.20

0.833

2.70

0.370

None of the above

Q7. While calculating Pearson's correlation coefficient, the following values are obtained for 25 pairs of observations. It was later discovered that two pairs of observations were not correctly copied they were taken as (X,Y)-(6,14) and (8,6), while the correct values were (8,12) and (6,8). What is the correct value of correlation coefficient?

$\Sigma X = 125; \Sigma X^2 = 650; \Sigma Y = 100; \Sigma Y^2 = 460, \Sigma XY = 500$

0.66

$\frac{2}{3}$

$r$   
 $n = 25$

$$r = \frac{\text{Cov}(X,Y)}{\sigma_x \cdot \sigma_y}$$

$$r = \frac{\frac{\Sigma XY}{n} - \frac{\Sigma X}{n} \cdot \frac{\Sigma Y}{n}}{\sqrt{\frac{\Sigma X^2}{n} - (\bar{X})^2} \sqrt{\frac{\Sigma Y^2}{n} - (\bar{Y})^2}}$$

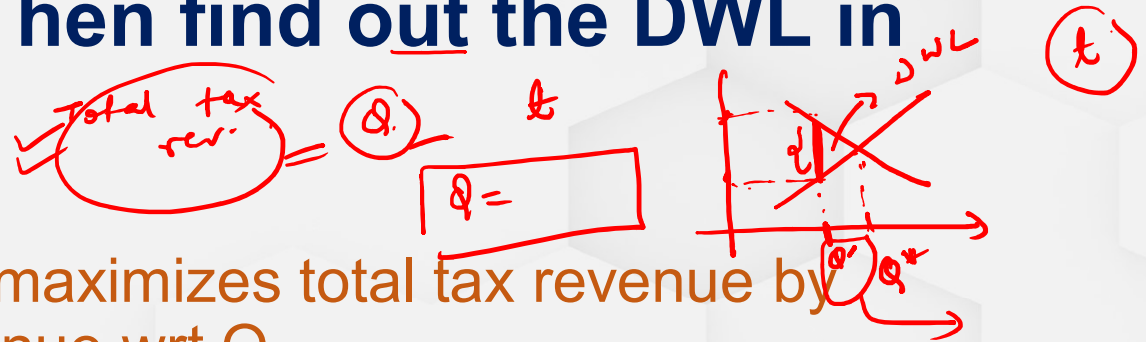


## Q8. Find Saddle point from a payoff matrix

	True	False	<u>Row</u>
True	18	6	18
False	12	10	12

Point which is max in row and min in column

Q9.  $Q_d = 300 - P$ ,  $Q_s = Q/2$ . Government imposes specific tax in such a way that it maximizes the total tax revenue. Then find out the DWL in such a situation.



- $P_d - P_s = t$
- You had to find Q that maximizes total tax revenue by differentiating Tax revenue wrt Q
- Once you get that quantity, you can get DWL (area of triangle)
- $DWL = 7500$

$\checkmark$

$$\frac{1}{2} \times b \times h$$

**Q10. Demand and supply equations were given and govt imposes specific tax you had to find quantity at which tax revenue is maximized?**

Ans - 20

Q.

# Q11. What is the dual problem for given linear programming problem?

- Objective function and constraints were given, from that you had to find the right dual problem among the given options

Primal  
↓  
Dual

- $Z = \text{Max} (4x_1 + 5x_2 + 7x_3)$  *→ min*
- S.t.  $3x_1 + x_2 + 6x_3 \leq 3$  ✓
- And  $x_1 + 2x_2 + x_3 \leq 4$  ✓

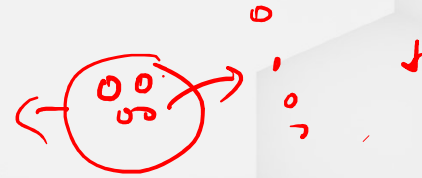
دوال  
DUAL

**Q12. A society in which there was garbage collection problem. But there was voluntary problem of payment so some people would participate and some wouldn't participate.**

**Free Rider Problem** 

**Q13. Vaccination dose by some individuals benefits the individuals around them by reducing the pace with which the disease spreads.**

**Positive Externality** ✓



Q14. GDP= 12000, tax rate was 15% of GDP, Private savings was 12% of GDP and public savings was 360. Find consumption level of closed economy.

$$\checkmark C = Y - T - S$$

8400

*Handwritten diagram:* The equation  $C = Y - T - S$  is written in orange. A checkmark is to the left. Below  $Y$  is the value 8400. The variables  $T$  and  $S$  are circled in red. A red arrow points down from  $T$ . A red arrow points right from  $S$  to the text  $+ 360$ . Another red arrow points up and right from  $S$  to the text  $Pr$ .

## Q15. Assertion and Reason on Tarapore Committee:

**Assertion:** According to Tarapore Committee, CAC refers to the freedom to convert the local financial assets into foreign financial assets or vice versa at the market determined rates of exchange.

**Reason:** Committee had laid down some pre-conditions as follows:

Gross Fiscal deficit to GDP ratio has come down from a budgeted 4.5% in 1997-97 to 3.5% in 1999-2000.

A ✓  
✓  
x  
x

→ x  
✓  
✓  
x }



Q16. Assertion: In steady state, growth rate of output in Solow Model is not dependent on the savings rate in the economy. (15)

Reason: In steady state, growth rate of per capita income is not dependent on the technological growth rate.

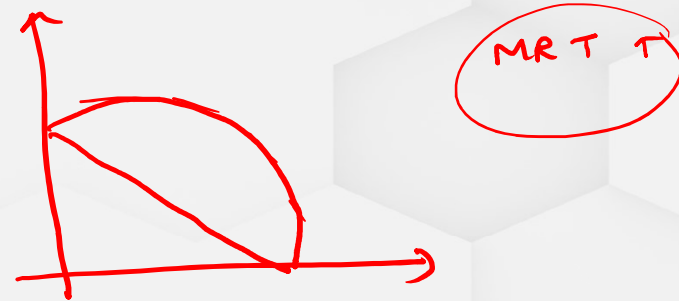
Assertion correct, reason wrong

Q17. What is the Slope of the Straight line PPC curve between cloth and wheat?

$MRT_{cw}$  ✓

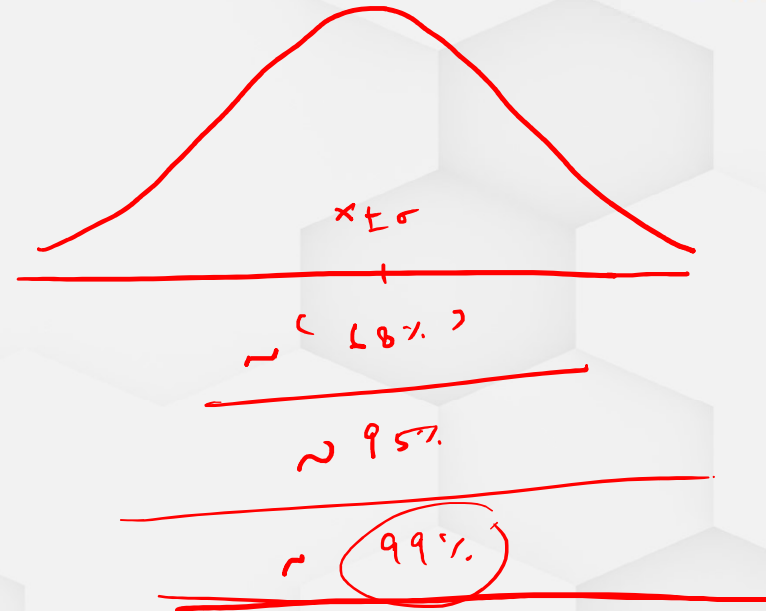
$P_c/P_w$  ✓

$P_w/P_c$  ✓



Q18. For a normal curve,  $X \pm 3sd$  lies within?

- 99.59%
- 99.43%
- 99.67%
- 99.73% (right answer) ✓



**Q19. Mean salary of total employees was given. Also, mean salary of male and female employees was given and you had to find percentage of female employees.**

$\bar{X}$   
 $\bar{X}_m$        $\bar{X}_f$   
 $n_m + n_f = n$   
 $n_m = \frac{n - n_f}{1}$

Use formula of combined mean to find  $N_f / (N_f + N_m)$ .

$$\bar{X} = \frac{n_1 \bar{X}_1 + n_2 \bar{X}_2}{n_1 + n_2}$$

$$\frac{n_2}{n_1 + n_2}$$

**Q20. A dice was rolled 3 times. What is the probability of getting 5 at least once?**

91/216

$$n = 3$$

$$P(X=1) + P(X=2) + P(X=3)$$

$${}^n C_x p^x q^{n-x}$$

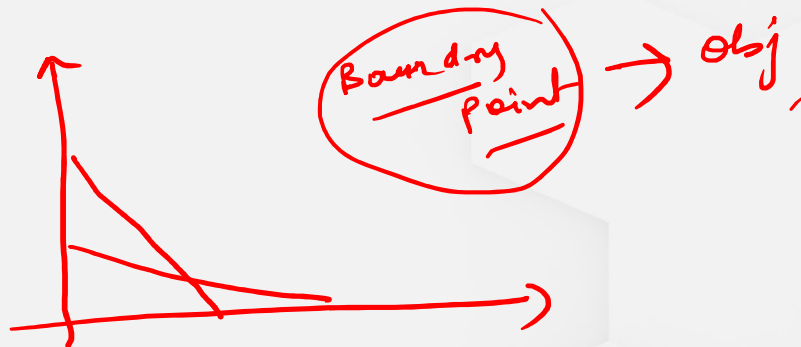
$$1 - P(X=0) \text{ (no 5)}$$

Q21. Objective function was given:  $Z = 4X + 5Y$ . Four extreme points were given and you had to find at which point function is maximized.

LPP

A ( ) ✓  
B ( ) ✓  
C ( ) ✓  
D ( ) ✓

Find value of  $z$  at each extreme points to find maximum value



**Q22. Demand function for two commodities was given:**

$$Q_1 = A_1(P_{x1})^{-0.5}(P_{x2})^{0.2}$$
$$Q_2 = A_2(P_{x2})^{-0.5}(P_{x1})^{0.6}$$

$\frac{\partial Q_1}{\partial x_1} <$        $\frac{\partial Q_1}{\partial x_2} >$

**Competitive to each other**

*comple*  
*low & con*

Q23. A perfectly competitive firm was given,  $P = 60$  and  $TC = Q^2 + 8Q + 10$ .

Now price decreases to 54, what is the change in profit?

$P = MC$

$\Delta \pi$

$\pi_1$   
 $\pi_2$

Decreases by 147 (Use  $P = MC$  condition)

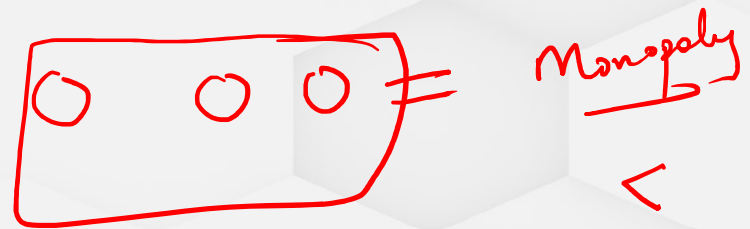


**Q24. There is a situation in which there is an extreme fall of demand for loans. What should be done by banks in such a situation?**

- Increase the liquidity ✓**
- Sell government securities ✓**
- Increase the prime rate ✓**
- Change their portfolio ✓**

Q25. When oligopolistic firms co-operate and work as cartel, then output produced is \_\_\_\_\_ than perfect competition and eg to Monopoly

Less, equal



Q26. For a monopolist demand for two commodities was given and cost function was given.

$Q_x$  = function of  $x$  and  $y$

$Q_y$  = function of  $x$  and  $y$

$TC$  = function of  $x$  and  $y$

Find equilibrium price and quantity and total profit?

$$MR = MC$$

$$\boxed{TR_1 + TR_2 - TC} = \pi$$

Profit = 500 (Use  $MR = MC$ )

**Q27. Production function of two companies producing floppy and discs was given. Which of the following is correct if both use same amount of capital and labour.**

$Q1 = 10L^{0.5} K^{0.5}$  ✓

$Q2 = 10L^{0.6} K^{0.4}$  ✓

- $Q1 = Q2$  ✓
- $Q1 > Q2$
- $Q1 < Q2$

Q28. Two variable linear regression model, value of F statistic had to be calculated. Four X and Y values were given and the corresponding regression equation was also given

(4 marker)

$$\frac{ESS}{TSS} = \frac{b^2 \sum x_i^2}{\sum y_i^2}$$

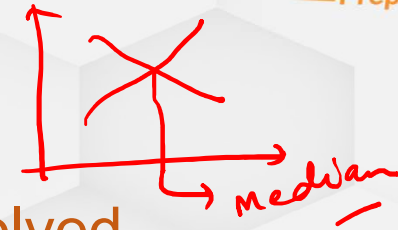
$$F = \frac{(R^2/df)}{(1-R^2)/df}$$

✓  $F = (ESS/df) / (RSS/df)$   
 Ans - 48

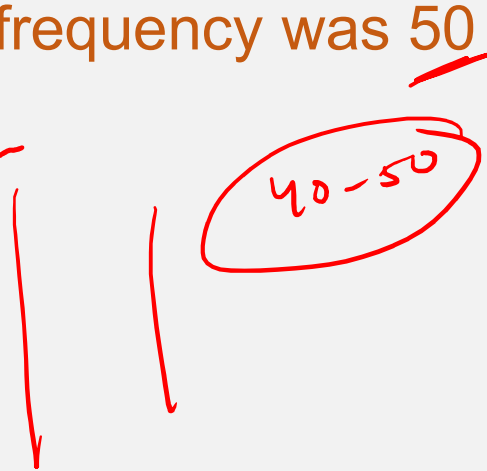
X	Y
12	7
13	9
16	11
19	13

**Q29. Class intervals with more than cf was given and it was asked how many students scored up to 40 marks**

Using the concept of more than ogive it could be solved.  
 Total frequency was 50



More than



**Calculation of Median – Continuous Series**

- In case of continuous series, Median is the size of  $\frac{N}{2}$  th observation, where  $N = \sum f$  is the total frequency. The calculation of median takes the following steps:
  - Prepare the "Less than" Cumulative frequency (c.f.) distribution.
  - Find  $(\frac{N}{2})$
  - See the c.f. just greater than or equal to  $(\frac{N}{2})$
  - The Class corresponding to the c.f. obtained in Step 3 will be the required **Median class**.
  - Following interpolation formula for calculation of Median will be used:
 
$$\text{Median} = L + \frac{(\frac{n}{2} - c)}{f} * h, \text{ where:}$$
    - L = lower limit of the Median Class
    - f = frequency of the Median Class
    - C = cumulative frequency of the class preceding the Median Class
    - h = Size/width of the Median Class

# Q30. Utility function of two commodities, to find pure exchange competitive equilibrium and price ratio.

General eqn -  $P_1 = \text{numeraire}$

Back To Chapter ixamBee™  
Prepare 50% Faster

$\omega$   
 A:  $(0, 10)$   
 $u_A = x_1, x_2$   
 B:  $(20, 5)$   
 $u_B = \min\{x_1, x_2\}$

Relative prices:  $P_1 = 1$

→ Gross & net dd of both goods for both cons.

(1) numeraire  $P_2 = ?$  Good 2

$x_A^2 + x_B^2 = \omega_A^2 + \omega_B^2$   
 $x_A^2 = \frac{1}{2} \frac{M}{P_2} = \frac{1}{2} (P_1 \omega_A^1 + P_2 \omega_A^2)$   
 $= \frac{1}{2} \frac{10P_2}{P_2} = 5$

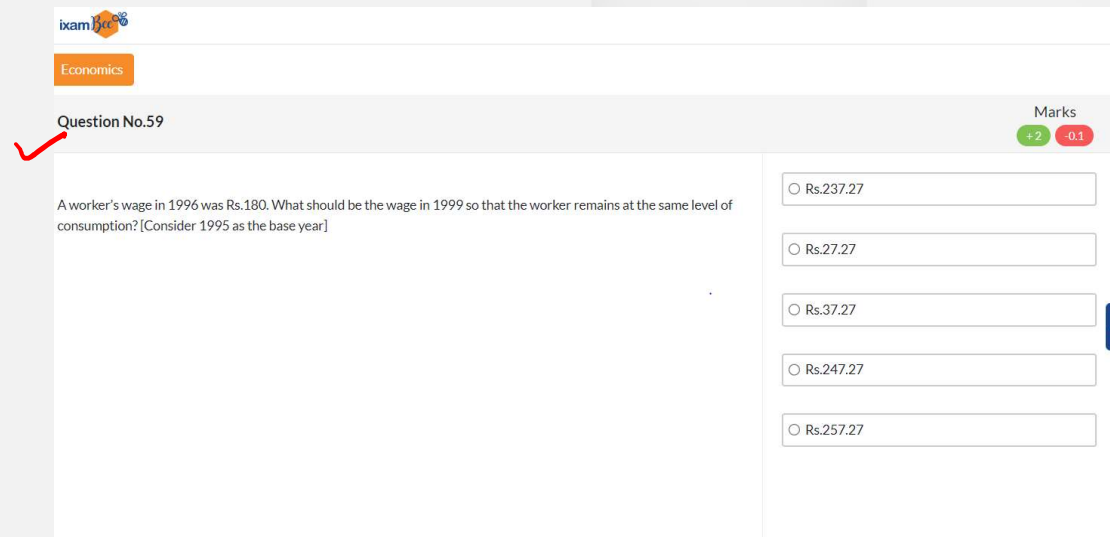
$x_1 = \frac{c}{c+d} \frac{M}{P_1}$

35:39

Q31. Numerical on consumer price index in calculating the real wages; nominal wages were given and index was also given

CPI

$$\text{Real Wage} = \text{Nominal Wages} / \text{Price Index}$$



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Question No.59 Marks  
+2 -0.1

A worker's wage in 1996 was Rs.180. What should be the wage in 1999 so that the worker remains at the same level of consumption? [Consider 1995 as the base year]

- Rs.237.27
- Rs.27.27
- Rs.37.27
- Rs.247.27
- Rs.257.27



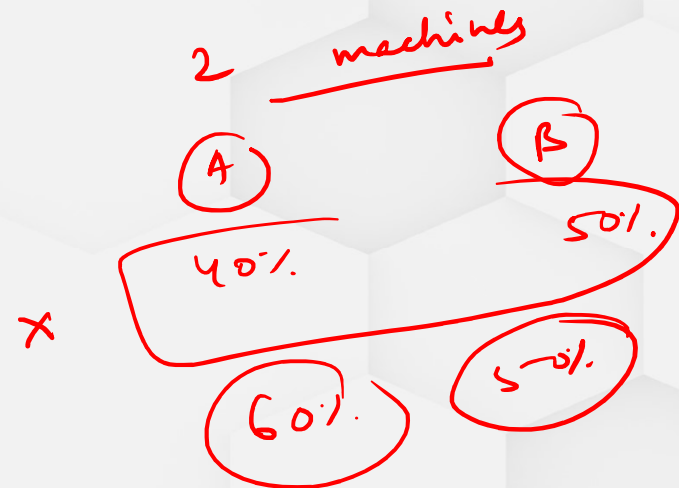
## Q32. Calculation of final profit from given fixed cost and break even point

$\pi$

$\{ C = \text{---} \}$

**Q33. Probability a machine A fails = 40% and machine B fails = 50%.  
What is the probability plant will work when both machines work well ?**

0.3 ✓



Q34. If equation is over-identified which method is used to estimate? (

2SLS ✓

Indirect Method ✓

MLE Method ✓

Q35. If investment is not responding to change in interest rate what happens?

IS is vertical and monetary policy is ineffective

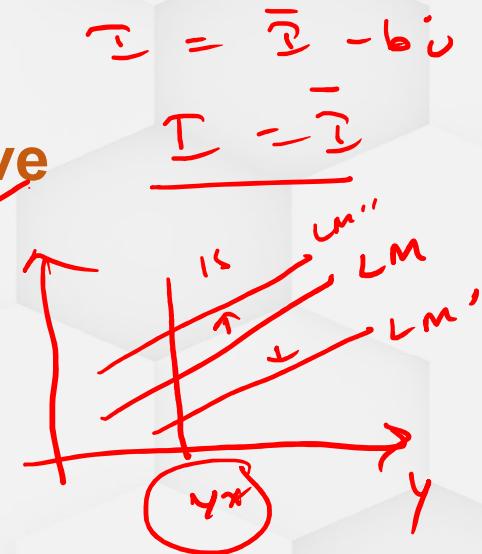
horizontal

IS-LM

→

eff

i



Q36.  
 $3x - 2y + 297 = 0$ . ✓  
 $SD(X) / SD(Y) = 4/3$  ✓  
Find r?

$$b_{yx} = r \frac{\sigma_y}{\sigma_x}$$

Question No.55

Marks

+2 -1

Direction

This question obtained (2) Marks:

For  $n=100$ , given that the regression of X on Y is  $4Y - 6X + 240 = 0$  The mean of  $Y=100$  and variance of X is  $4/9$  times the variance of Y. Calculate the coefficient of correlation between the two

0.80

0.90

1.00

0.50

Q37. COR = 5:1, Savings rate = 12.5%,  
Population growth rate = 2.5%. Find  
growth rate of output.

2.5%

g

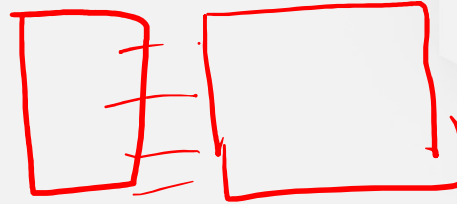
Harrod  
Domar

**Q38. PURA(Providing Urban amenities in rural areas) features given:**

- ✓ Adequate marketing mechanisms will be provided
- ✓ such that each village can use its output to the nearby villages itself
- ✓ There will be a school and hospital within 5-7 km of every village
- ✓ Network Connectivity
- ✓ Economic Connectivity

*Options :-*

Q39. Match the column on - pegging operations, dumping, free on board, cost Insurance and freight



✓ Pegging Operations: Purchase and sell of domestic currencies by countries in international market ✓

✓ Dumping: Price discrimination strategy by a monopolist, selling the same product at different prices in different geographies ✓

Option



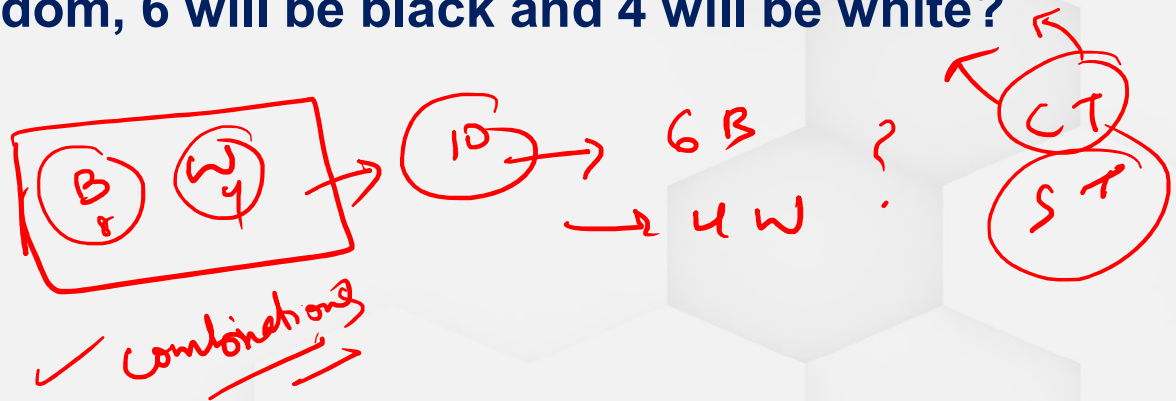
Q40. A spot purchase of a currency coupled with simultaneous forward sale of the same currency is called:

?

- Forward
- Futures
- Swap ✓
- Option

**Q41. A bag contains 8 Black and 4 White balls. 10 balls were randomly selected from the Bag. What is the probability that out of the 10 balls selected at random, 6 will be black and 4 will be white?**

**14/33**



Q42. A student performed an experiment in which he collected data on X and Y for years 2015-2021. He obtained:  $Y = a + bX$ . It was asked to find the value of Y for 2023?

✓

[

-X

]

2015 - 2021  
→

**Q43. If two countries trade with each other which is mutually beneficial, then their consumption point after the trade will be**

On PPF  
Inside PPF  
Outside PPF ✓

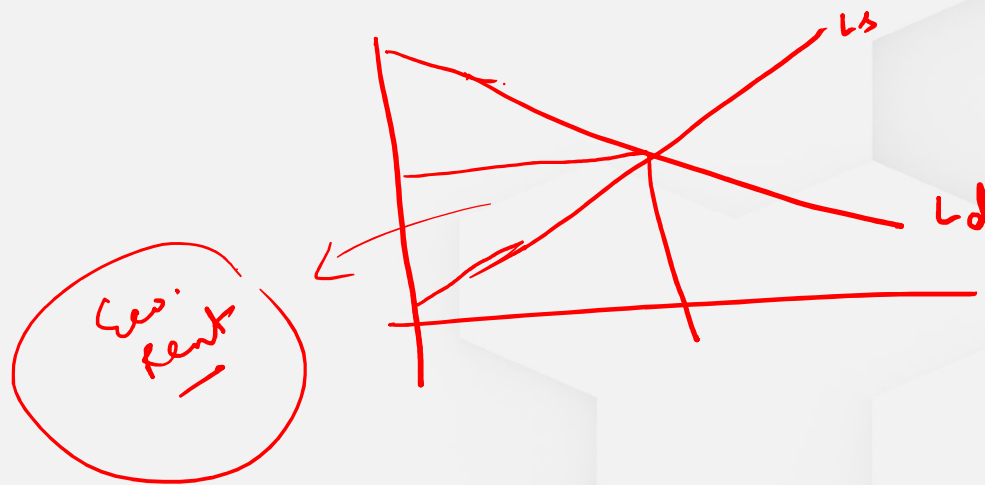
**Q44. In a flexible exchange rate system, If domestic interest rate increases, then which of the following is true:**

**Current account worsens, capital account improves** ✓

MT  
X ↓

$i_T > i^*$   
↳ inflow

**Q45. Given labour demand and labour supply equations, you had to find economic rent.**



Q46 New loans made = 1000. Fractional reserve ratio is 1/3, by how much deposits will grow?

3000

$$\frac{1000}{1/3} = 3000$$

Q47. If  $VMPI > MRPI > Pa$

Both monopolistic and monopsonist exploitation ✓



**Q48. Given a cost function (in cubic terms), you had to find the minimum price a firm should charge to produce a positive output.**

$C = \dots$

**Q49. RBI currency swap agreement with SAARC countries. Find the incorrect statement:  
Help the capital account position of India  
It is bi nation and multi-nation**

**Q50. What happens in long run in monopolistic competition?**

- ✓ Demand curve becomes tangent to AC
- $P = MC$
- $P < AC$

Q51. From CES production function, the terms mentioned in the equation; match the following type

Match!

~

-

-

—

—

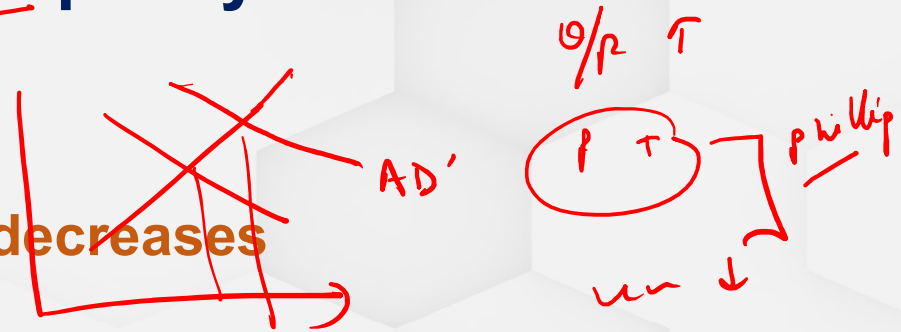
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P

✓

## Q52. Effect of expansionary fiscal policy on output and unemployment?

Output increases and unemployment decreases



**Q53. Given a utility function and initial endowments, you had to find pure exchange equilibrium.**

*Gen. Equ*

MRS

## Some additional topics:

- ✓ Calculate the cost of capital for year of a car rental company
- ✓ System of equation using standard notation, over identified, under identified, exactly identified etc
- ✓ Triangular of a recursive system
- ✓ To estimate over identified model of simultaneous equation
- ✓ Least square Trend open example given in the question
- ✓ Midterm review of FTP 2015-20 (factual question)

## Some additional topics:

- ✓ Question from simultaneous equation system
- ✓ Price elasticity on demand curve
- ✓ Equilibrium price and quantity for supply and demand functions
- ✓ Expansionary fiscal policy and its consequences
- ✓ Statement of monopolistic competitive market in the long run equilibrium