HALF YEARLY EXAMINATION- 2022

ECONOMICS

CLASS :12

TIME : 3.00 Hrs

MARKS : 90

PART-I

Note : (i) Answer all the questions. (ii) Choose the most appropriate answer from the given four alternatives and write the option code and the corresponding answer.

20 X 1 = 20

1. Who is regarded as Father of modern Macro Economics?
   a) Adam smith   b) J.M.Keynes   c) Ragnar Frisch   d) Karlmarx

2. Identify the necessary of Economic policies?
   a) To solve the basic problems   b) To overcome the obstacles
   c) To achieve growth   d) All the above

3. Tertiary sector is also called as .... sector
   a) Service   b) Income   c) Industrial   d) Production

4. GNP = ... + Net factor income from abroad
   a) NNP   b) NDP   c) GNP   d) Personal income

5. Structural un employment is a feature in a ....
   a) Static society   b) Socailistic society   c) Dynamic society   d) Mixed Economy

6. Classical theory advocates ....
   a) Balanced Budget   b) Unbalanced budget   c) Surplus budget   d) Deficit budget

7. The average propersity to consume is measured by
   a) c/y   b) c x y   c) y/c   d) c + y

8. The sum of the MPC and MPS is ....
   a) 1   b) 2   c) 0.1   d) 1.1

9. The paper currency system is managed by ....
   a) Central Monetary Authority   b) State Government   c) Central
   Government   d) Banks

10. Debit Card is an example of ....
    a) Currency   b) Paper currency   c) Plastic money   d) Money

11. Online Banking is also known as ....
    a) E - Banking   b) Internal Banking   c) RTGS   d) NEFT

12. Repo Rate means
    a) Rate at which the commercial banks are willing to lend to RBI.
    b) Rate at which the RBI is willing to land to commercial bank
    c) Exchanged Rate of the foreign bank   d) Growth rate of the economy

13. Trade between two countries is known as .... trade.
    a) External   b) Internal   c) Inter-regional   d) Home

14. BOP is includes
    a) Visible items only   b) Invisible items only
    c) Both visible and invisible items   d) Merchandise trade only

15. The term BRIC was coined in
    a) 2001   b) 2005   c) 2008   d) 2010

16. Finance commission determines ....
    a) The finances of Government of India   b) The resources transfer to the State.
    c) The resources transfer to the various department.   d) None of the above

17. Which one of the following causes of Global Warming?
    a) Earth gravitation force   b) Oxygen   c) Centripetal force   d) Increasing temperature

18. Expansion of NITI Aayog?
   a) National Institute to Transform India.   b) National Institute for Transforming India.
   c) National Institution to Transform India   d) National Institution for Transforming India
19. A digital currency in which encryption techniques are used to regulate the generation of
   units if currency and verify the transfer to funds, operating independently of a Central
   Bank is ....
   a) Gold standard   b) Crypto currency   c) Bit coin   d) Plastic money
20. The word 'Statistics' is used as ....
   a) Singular   b) Plural   c) Singular and plural   d) None of the above

PART - II
Note : Answer any seven questions. Question No.30 is compulsory.   7 X 2 = 14
21. Define Macro Economics.
22. Why is self consumption difficult in measuring national income?
23. What is effective demand?
24. Define Accelerator.
25. Define Money.
26. Distinguish between CRR and SLR.
27. Define international Trade.
28. Mention any two objectives of ASEAN.
29. What are the Kinds off data?
30. Write a note on "Net Barter Terms of Trade".

PART - III
Note : Answer any seven questions. Question No.40 is compulsory.   7 X 3 = 21
31. Describe the different types of Economic System.
32. Write briefly about national income and Welfare.
33. Explain Keyne's theory in the form of flow chart.
34. Explain any three subjective and objective factors influencing the consumption.
35. Write the mechanism of credit creation by commercial bank.
37. What are trade blocks?
38. Explain different types of air pollution.
39. Elucidate major causes of vicious circle of poverty with neat diagram.
40. Find the standard deviation of the following date. 14, 22, 9, 15, 20, 17, 12, 1.

PART - IV
Note : Answer all the questions.   7 X 5 = 35
41. a) Discuss the scope of Macro Economics.*(OR)*
   b) Discuss the economic determinants of economic development.
42. a) Compare the features among capitalism, secularism and Mixedism. *(OR)*
   b) Explain the concepts of externality and its - classification.
43. a) Discuss the various methods of estimating the national Income of a country.   *(OR)*
   b) Explain the principles of federal finance.
44. a) Narrate the equilibrium between ADF an ASF with diagram. *(OR)*
   b) Explain the objectives of IMF.
45. a) Explain Keyne's psychological law of consumption function with diagram. *(OR)*
   b) Discuss the differences between internal trade and International Trade.
46. a) Describe the phases of trade cycle.   *(OR)*
   b) Describe the functions of Reserve Bank of India.
47. a) Calculate the Karl Pearson correlation co.. -efficient for the following data.   *(OR)*

| Demand of product X: | 23 | 27 | 28 | 29 | 30 | 31 | 33 | 35 | 36 | 39 |
| Sale of Product y : | 18 | 22 | 23 | 24 | 25 | 26 | 28 | 29 | 30 | 32 |

   b) find the regression equation y on x and x on y for the following data.

| x | 45 | 48 | 50 | 55 | 65 | 70 | 75 | 72 | 80 | 85 |
| y | 25 | 30 | 35 | 30 | 40 | 50 | 45 | 55 | 60 | 65 |

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Time Allowed : 3 Hours

Maximum Marks : 90

I. Choose the most suitable from the given four alternatives and write the option code and the corresponding answer   **20 x 1 = 20**

1	B	J.M.Keynes	11	B	Internet Banking
2	D	All the above	12	B	Rate at which the RBI is willing to land to commercial Bank
3	A	Service	13	A	External
4	C	GDP	14	C	Both visible and invisible items
5	C	Dynamic Society	15	A	2001
6	A	Balanced Budget	16	B	The resources transfer to the State
7	A	C/Y	17	D	Increasing Temperature
8	A	1	18	D	National Institution for Transforming India
9	A	Central Monetary Authority	19	B	Crypto Currency
10	C	Plastic Money	20	C	Singular and Plural

II. Answer any seven questions. Question No.30 is compulsory.   **7 x 2 = 14**

21) <u>Macro Economics – Definition:</u>
- The word 'Macro' is derived from the Greek word 'Makros' meaning 'large'.
- Hence, Macro Economics is the study of the economy as a whole.

22) <u>Self consumption difficult in measuring national income because,</u>
- ♣ Farmers keep a large portion of food and other goods produced on the farm for self consumption.
- ♣ The problem is whether that part of the produce which is not sold in the market can be included in national income or not.

23) <u>Effective Demand</u>
- ✍ Effective demand denotes money actually spent by the people on products of industry.
- ✍ ED=Y=C+I = Output = Employment

24) <u>Accelerator – Definition:</u>
- ✍ Accelerator is the numerical value of the relation between an increase in consumption and the resulting increase in investment.
- ✍ Accelerator $(\beta) = \Delta I / \Delta C$

Where,   ΔI = Change in investment outlays (Say 100),
         ΔC=Change in consumption demand (Say 50).

25) Money – Definition:
- ✓ "Money is, what money does " – Walker.
- ✓ "Money can be anything that is generally acceptable as a means of exchange and at the same time acts as a measure and a store of value". – Crowther

26) <u>**Distinguish between CRR and SLR**</u>

BASIS FOR COMPARISON	CRR	SLR
1. Meaning	1. CRR is the percentage of money which the bank has to keep with the Central Bank of India in the form of cash.	1. The bank has to keep a certain percentage of their Net Time and Demand Liabilities in the form of liquid assets as specified by RBI.
2. Form	2. Cash.	2. Cash and other assets like gold and government securities viz.

27) International Trade:
- ✎ International trade refers to the trade or exchange of goods and services between two or more countries.
- ✎ In other words, it is a trade among different countries or trade across political boundaries.

28) **Objectives of ASEAN:**
- ➢ To accelerate the economic growth, social progress and cultural development in the region.
- ➢ To serve as a centre of information and as an ASEAN link with other international organizations.

29) **Kinds of Data**

→ **BASED ON CHARACTERISTICS**

  i)Quantitative data

     a) Primary data b) Secondary data

  ii)Qualitative data

     a) Primary data b) Secondary data

→ **BASED ON SOURCES**

  i)Primary data

  ii)Secondary data
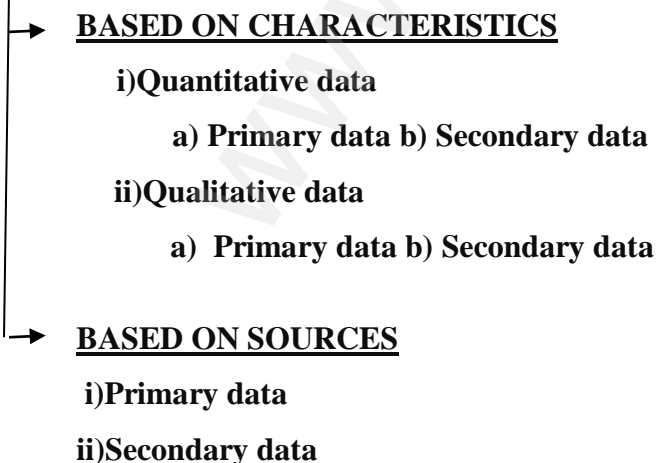
30) *Gross Barter Terms of Trade*

- **This was developed by Taussig in 1927 as an improvement over the netterms of trade.**

- **It is an index of relationship between total physical quantity of imports andthe total physical quantity of exports.**

$$Tg= (Qm/Qx) \times 100$$

Where,

Qm = Index of import quantitiesQx = Index of export quantities

PART - III

III. Answer any seven questions. Question No.40 is compulsory. **7 x 3 = 21**

31) The different types of economic systems are

    A. *Capitalstic Economy:*

        ♣ It is the system where the means of production are privately owned and market determines the economic activities

        ♣ **Ex**. USA, West Germany, Australia etc.

    B. *Socialistic Economy :*

        ♣ It is the system where the major economic activities are owned and controlled by the government, Social welfare is a main motive of it.

        ♣ **Ex**. Russia, China, Poland etc.

    C. *Mixed Economy:*

        ♣ In a mixed economic system, both private and public sectors coexist andwork together towards economic development.

        ♣ **Ex.:** India, England, France, etc.

32) **National Income and Welfare – Explanation:**

    ✍ **National Income is considered as an indicator of the economic wellbeing of a country.**

    ✍ **The economic progress of countries is measured in terms of their GDP per capita and their annual growth rate.**

    ✍ **A country with a higher per capita income is supposed to enjoy greater economic welfare with a higher standard of living.**

33) *Keynes' theory in the form of flow chart.*
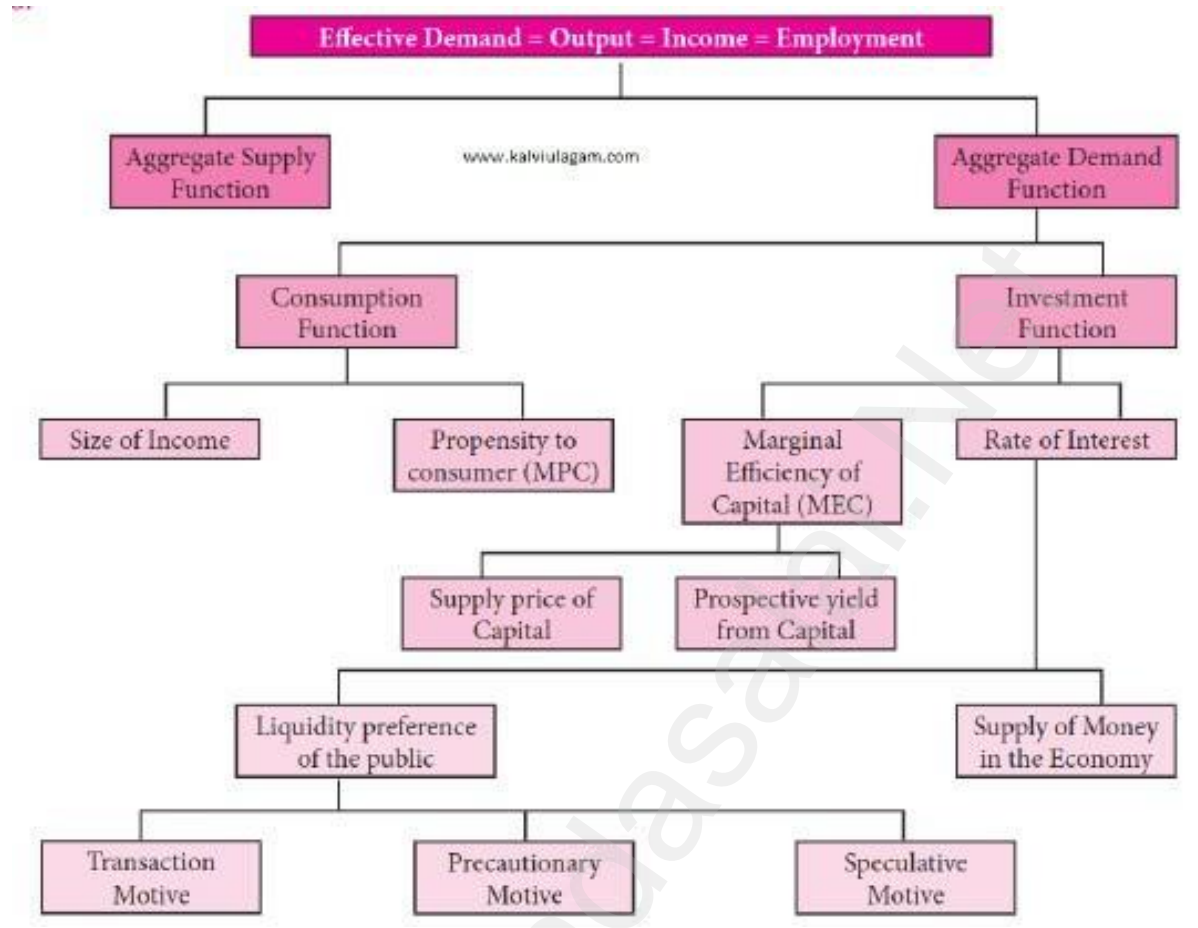
34) Subjective and objective factors influencing the consumption function

A) Subjective Factors

1. The motive of precaution: To build up a reserve against unforeseen contingencies.

2. The motive of foresight: The desire to provide for anticipated future needs. Eg. Old age

3. The motive of calculation: The desire to enjoy interest and appreciation.

B) Objective Factors

1) Income Distribution: There is large disparity between rich and poor.

2) Price level: When the price falls, real income goes up;

3) Wage level: Wage level plays an important role in determining the consumption function.

35) **Mechanism of credit creation by commercial banks:**

➢ **Credit Creation means the multiplication of loans and advances.**

➢ **Banks have the power to expand or contract demand deposits and they exercise this power through granting more or less loans and advances and acquiring other assets.**

➢ **This power of commercial bank to create deposits through expanding their loans and advances is known as credit creation.**

36) **Trade blocks – Meaning:**

✎ **Trade blocks are a set of countries which engage in international trade together and are usually related through a free trade agreement or other associations.**

✎ **Trade blocks cover different kinds of arrangements between or among countries for mutual benefit.**

✎ **Some countries create business opportunities for themselves by integrating their economies in order to avoid unnecessary competition among them.**

37) **Types of air pollution**

• **Indoor Air pollution:**
It refer to the toxic contaminates we face in ourdaily lives at our homes, schools and work places.

e.g. Cooking and heating with solid fuels on open fires, etc.

• **Outdoor Air pollution:**
It refers to ambient air caused by combustion processes from motor vehicles, solid fuel burning and industry.

38) **Major causes of vicious circle of poverty with diagram**

❈ There are circular relationships known as the '*Vicious Circles of Poverty*'that tend to perpetuate the low level of development in less developed countries (LDCs).

❈ A country is poor because of low capital income.

❈ The vicious circle of poverty operates both on the demand side and thesupply side.

❈ It is associated with low rate of saving and investment on the supply sideand low level of income leads to low level of demand on the demand side.

- **For example** A poor man may not have enough to eat, being underfed etc

.

The Vicious Circle of Poverty
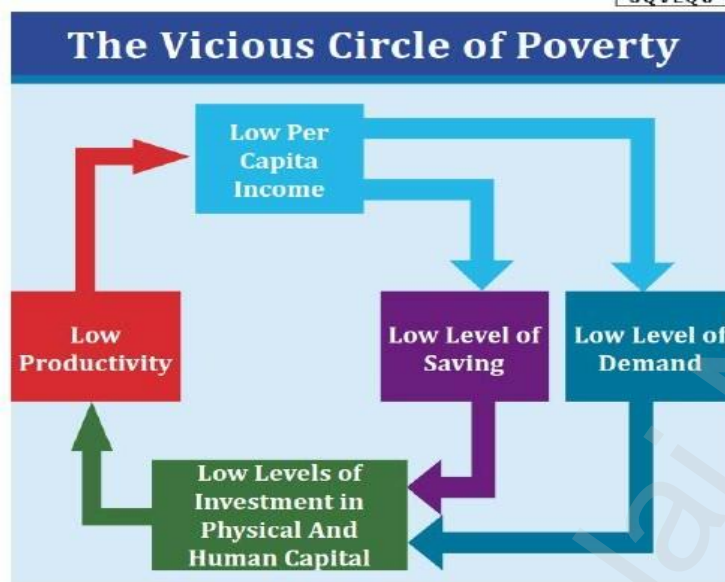
40. Calculation of Standard Deviation: 14, 22, 9, 15, 20, 17, 12, 11

S. No	X	$(x-\bar{x})$	$(x-\bar{x})2$
1	14	-1	1
2	22	7	49
3	9	-6	36
4	15	0	0
5	20	5	25
6	17	2	4
7	12	-3	9
8	11	-4	16
N = 8			
(No. of. Frequency occurred)	$\Sigma X = 120$	0	$\Sigma(x-\bar{x})2 = 140$

$$N = 8$$

$$\bar{x} = \frac{120}{8} = 15$$

$$\sigma = \sqrt{\frac{\Sigma(x-\overline{X})^2}{N}}$$

$$= \sqrt{\frac{140}{8}}$$

$$= \sqrt{17.5}$$

$$\sigma = 4.18$$

PART - IV

IV. Answer any seven questions. Question No.30 is compulsory.   **7 x 5 = 35**

41.a. Scope of Micro Economics:

i. National Income:

- **Measurement of national income and its composition by sectors are the basic aspects of macro economic analysis.**

ii. Business Cycle:

- **Almost all economies face the problem of business fluctuations and business cycle.**
- **The cyclical movements in the economy need to be carefully studied based on aggregate economic variables.**

iii. Poverty and Unemployment:

- **The major problems of most resource - rich nations are poverty and unemployment.**
- **This is one of the economic paradoxes.**

iv. Economic Growth:

- **The growth and development of an economy and the factors determining them could be understood only through macro analysis.**

v. Economic Policies:

- **Economic policies are necessary to solve the basic problems, to overcome the obstacles and to achieve growth.**

<div align="center">**[OR]**</div>

41.b. **Discussion the economic determinants of economic Development.**

1. Natural Resource:

- **The principal factor affecting the development of an economy is the availability of natural resources.**
- **The existence of natural resources in abundance is essential for development.**

2. Capital Formation:

- **Capital formation is the main key to economic growth.**
- **It facilitates adoption of advanced techniques of production. It leads to better utilization of natural resources,**

3. Size of the Market:

- **Large size of the market would stimulate production, increase employment and raise the National per capita income.**

4. Structural Change:

- **Structural change refers to change in the occupational structure of the economy.**
- **Any economy of the country is generally divided into three basic sectors: Primary sector, Secondary sector, Tertiary sector.**

5. Foreign Trade:

- **The country which enjoys favorable balance of trade and terms of trade is always developed.**
- **It has huge forex reserves and stable exchange rate.**

42.a.   Comparition of the feature among Capitalism, Secularism and Mixedism

S. No.	Features	Capitalism	Socialism	Mixedism
1	Ownership of Means of Production	Private Ownership	Public Ownership	Private Ownership and Public Ownership
2	Economic Motive	Profit	Social Welfare	Social Welfare and Profit Motive
3	Government Role	Internal Regulation only	Complete Involvement	Limited Role
4	Income Distribution	Unequal	Equal	Less unequal
5	Nature of Enterprise	Private Enterprise	Government Enterprise	Both Private and State Enterprises

[OR]

42.b. Concepts of externality and its classification

1) <u>Positive Consumption Externality</u>

- When some residents of a locality hire a private security agency to patrol their area, the other residents of the area also benefit from better security without bearing cost.

2) <u>Negative Consumption Externality</u>

- A person smoking cigarette gets maygives satisfaction to that person, but this act causes hardship (dissatisfaction) to the non-smokers who are driven to passive smoking.

3) <u>Positive Production Externality</u>

- The ideal location for beehives is orchards (first growing fields). While bees make honey, they also help in the pollination of apple blossoms.
- The benefits accrue to both producers (honey as well as apple).

4) <u>Negative Production Externality</u>

- Negative production externalities include pollution generated by a factory that imposes costs on others.
- The emissions and effluents of a factory cause air and water pollution.

43.a. <u>Various method of estimating the national income of a country:</u>

<u>Introduction</u>
*   **National Income can be computed at any of three levels, viz., production, income and expenditure.**

1. Production or value added method
2. Income method or factor earning method
3. Expenditure method

Output = Income = Expenditure

<u>1. Product Method</u>
*   **Product method measures the output of the country.**
*   **It is also called inventory method.**
*   **The value of the final product is derived by the summation of all the values added in the productive process.**
*   **To avoid double counting, either the value of the final output.**

<u>2. Income Method (Factor Earning Method)</u>
*   **This method approaches national income from the distribution side.**
*   **Under this method, national income is calculated by adding up all the incomes generated in the course of producing national product.**
*   **National Income is calculated as domestic factors income plus net factor incomes from abroad.**

$$Y = w + r + I + \overline{II} + (R\text{-}P)$$

w = wages,   r= rent,   i = interest, $\overline{II}$ = profit, R = Exports and P = Imports

<u>3. The Expenditure Method (Outlay Method)</u>
*   **To calculate the expenditure of a society it includes personal consumption expenditure, net domestic investment, government expenditure on consumption as well as capital goods and net exports.**
*   **GNP = C + I + G + (X-M)**

C= Private consumption expenditure, I=Private Investment Expenditure,
G= Government Expenditure; X-M= Net Exports.

[OR]

43.b. **Principles of federal finance**

1. Principle of Independence

- **Under the system of federal finance, a Government should be autonomous and free about the internal financial matters concerned.**
- **It means each Government should have separate sources of revenue, authority to levy taxes, to borrow money and to meet the expenditure.**

2. Principle of Equity

- **From the point of view of equity, the resources should be distributed among the different states so that each state receives a fair share of revenue.**

3. Principle of Uniformity

- **In a federal system, each state should contribute equal tax payments for federal finance.**
- **But this principle cannot be followed in practice because the taxable capacity of each unit is not of the same.**

4. Principle of Adequacy of Resources

- **The principle of adequacy means that the resources of each Government i.e.**
- **Central and State should be adequate to carry out its functions effectively.**

5. Principle of Fiscal Access

- **In a federal system, there should be possibility for the Central and State Governments to develop new source of revenue within their prescribed fields to meet the growing financial needs.**

44.a. Equilibrium between ADF and ASF

- **Under the Keynes theory of employment, a simple two sector economy consisting of the households sector and the business sector is taken to understand the equilibrium between ADF and ASF.**
- **All the decisions concerning consumption expenditure are taken by the individual households, while the business firms take decisions concerning investment.**
- **It is also assumed that consumption function is linear and planned investment is autonomous.**

There are two approaches

1. Aggregate demand - Aggregate supply approach

2. Saving - Investment approach
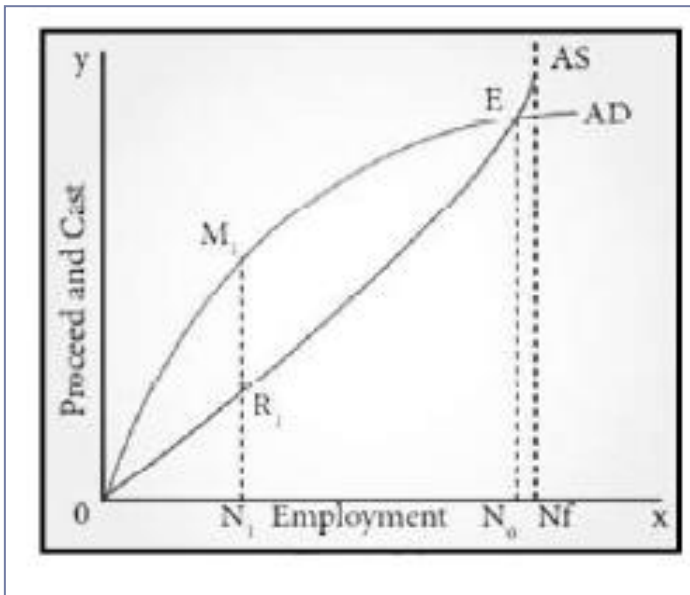
Diagram explanation :

- **In the figure, the aggregate demand and aggregate supply reach equilibrium at point - E.**
- **The employment level is N0 at that point.**
- **At ON1 employment, the aggregate supply is N1 R1**
- **They are able to produce M1 N1**
- **The expected level of profit is M1 R1**
- **To attain this level of profit, entrepreneurs will employ more labourers.**

[OR]

44.b. **Objectives of IMF:**

- **To promote international monetary cooperation among the member nations.**
- **To facilitate faster and balanced growth of international trade.**
- **To ensure exchange rate stability by curbing competitive exchange depreciations.**
- **To eliminate or reduce exchange controls imposed by member nations.**
- **To establish multilateral trade and payment system in respect of current transactions instead of bilateral trade agreements.**
- **To promote the flow of capital from developed to developing nations.**
- **To solve the problem of international liquidity.**

45.a. Meaning of Psychological law of consumption

The law implies that there is a tendency on the part of the people to spend on consumption less than the full increment of income.

Assumptions:

1. **1.The other variables such as income distribution, tastes, habits, social customs, price movements, population growth, etc. do not.**

2. **Existence of Normal Conditions: The law holds good under normal conditions. People may spend the whole of increased income on consumption.**

3. **Existence of a Laissez-faire Capitalist Economy: The law operates in a rich capitalist economy where there is no government intervention.**

The three propositions of the law Diagrammatically, the three propositions Explanations

Proposition (1): When income increases from 120 to 180 consumption also increases from 120 to 170 but the increase in consumption is less than the increase in income, 10 is saved.

Proposition (2): When income increases to 180 and 240, it is divided in some proportion between consumption by 170 and 220 and saving by 10 and 20 respectively.

Proposition (3): Increases in income to 180 and 240 lead to increased consumption 170 and 220 and increased saving 20 and 10 than before.

[OR]

45.b.   Differences between Internal Trade and International Trade.

S.No	Internal Trade	International Trade
1	Trade takes place between different individuals and firm within the same	Trade takes place between different individuals and firms in different countries.
2	Labour and capital move freely from one region to another.	Labour and capital do no move easily from one nation to another.
3	There will be free flow of goods and services.	Goods and services do not easily move from one country to another.
4	There is only one common currency.	There are different currencies.
5	Trade and financial regulations are more or less the same	Trade and financial regulations such interest rate laws differ between countries.

46.a. <u>Phases of Trade cycle</u>

  ✓ **A Trade cycle refers to oscillations in aggregate economic activity particularlyin employment, output, income, etc.**
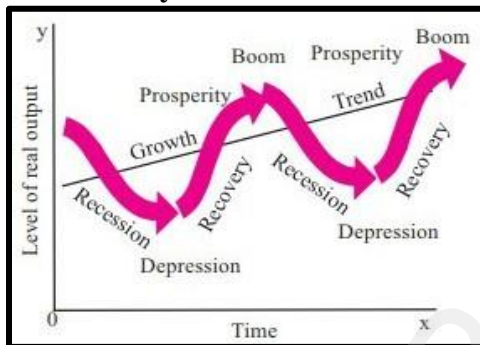
<u>Definition:</u>
  ✓ **"A trade cycle is composed of periods of good trade characterised by rising prices and low unemployment percentages altering with periods of bad trade characterised by falling prices and high unemployment percentages':**

<u>Phases of Trade Cycle:</u>
The four different phases of trade cycle is referred to as

  1. **Boom**
  2. **Recession**
  3. **Depression**
  4. **Recovery**

(1) *<u>Boom (or) Prosperity Phase:</u>*
  1. **The full employment and the movement of the economy beyond3full em-ployment.**
  2. **Money wages rise, profits increase and interest rates go up.**
  3. **It is characterized as boom period.**

(2) *<u>Recession:</u>*
  1. **The turning point from boom condition is called recession.**
  2. **This happens at higher rate, than what was earlier.**
  3. **Liquidity preference of the people rises and money market becomes tight.**

(3) *<u>Depression:</u>*
  1. **During depression the level of economic activities becomes extremely low.**
  2. **Firms incur losses and closure of business becomes a common feature and the ultimate result is unemployment.**
  3. **Interest prices, profits and wages are low.**
  4. **Depression is the worst phase of the business cycle.**
  5. **Extreme point of depression is called as 'trough'**

(4) _Recovery:_

1. After a period of depression, recovery sets in.
2. It begins with the revival of demand for capital goods.
3. Recovery may be initiated by innovation (or) investment (or) by govern-ment expenditure.

[OR]

46. b. Functions of Reserve Bank of India

1. **Monetary Authority:** It controls the supply of money in the economy to stabilize exchange rate, maintain healthy balance of payment, attain financial stability, control inflation.

2. **The issuer of currency:** The objective is to maintain the currency and credit system of the country. It is the sole authority to issue currency. It also takes action to control the circulation of fake currency.

3. **The issuer of Banking License:** As per Sec 22 of Banking Regulation Act, every bank has to obtain a banking license from RBI to conduct banking business in India.

4. **Banker to the Government:** It acts as banker both to the central and the state governments. It provides short-term credit.

5. **Banker's Bank:** RBI is the bank of all banks in India as it provides loan to banks, accept the deposit of banks, and rediscount the bills of banks.

6. **Lender of last resort:** The banks can borrow from the RBI by keeping eligible securities as collateral at the time of need or crisis, when there is no other source.

7. **Act as clearing house:** For settlement of banking transactions, RBI manages 14 clearing houses. It facilitates the exchange of instruments and processing of payment instructions.

8. **Regulator of Economy:** It controls the money supply in the system, monitors different key indicators like GDP, Inflation, etc.

9. **Managing Government Securities:** RBI administers in institutions when they invest specified minimum proportions of their total assets/liabilities in government securities.

10. **Exchange Manager and Controller:** RBI represents India as a member of the International Monetary Fund (IMF). Most of the commercial banks are authorized dealers of RBI.

47.a) Karl Pearson correlation co-efficient

DEMAND OF PRODUCT X	23	27	28	29	30	31	33	35	36	39
SALE OF PRODUCT Y	18	22	23	24	25	26	28	29	30	32

LET A=30 AND B=26 THEN dx =X –A dy =Y-B²

X	Y	d_x	d_y	D^2_x	D^2_y	$d_x d_y$
23	18	-7	-8	49	64	56
27	22	-3	-4	9	16	12
28	23	-2	-3	4	9	6
29	24	-1	-2	1	4	2
30	25	0	-1	0	1	0
31	26	1	0	1	0	0
33	28	3	2	9	4	6
35	29	5	3	25	9	15
36	30	6	4	36	16	24
39	32	9	6	81	36	54
		11	-3	275	159	175

$$r(x,y) = \frac{N\Sigma dxdy - \Sigma dy}{\sqrt{N\Sigma d_x^2 - (\Sigma dx)^2}\ \sqrt{n\Sigma d_y^2 - (\Sigma dy)^2}}$$

$$= \frac{10\,(175) - (11)\,(-3)}{\sqrt{2150 - 121-(11^2)}\ \sqrt{1590 - 9}}$$

$$= \frac{1783}{\sqrt{(45.044)}\ \sqrt{39.761}}$$

$$= \frac{1783}{1790.94}$$

Ans: $r(x_1 y_1) = 0.9955$

[OR]

47.b)

X:	45	48	50	55	65	70	75	72	80	85
Y:	25	30	35	30	40	50	45	55	60	65

X	Y	U=X-65	U=Y-45	U²	UV	V²
45	25	-20	-20	400	400	400
48	30	-17	-15	289	255	225
50	35	-15	-10	225	150	100
55	30	-10	-15	100	150	225
65	40	0	-5	0	0	25
70	50	5	5	25	25	25
75	45	10	0	100	0	0
72	55	7	5	49	35	25
80	60	15	15	225	225	225
85	65	20	20	400	400	400
ΣX = 645	ΣY= 435	ΣU = 5	ΣV = 20	ΣU² = 1813	ΣV² = 1415	ΣUV = 1675

We have,

$$\bar{x} = \frac{\Sigma X}{N} = \frac{645}{10}\ 64.5 \quad \text{and} \quad \bar{y} = \frac{\Sigma Y}{N} = \frac{435}{10}\ 43.5$$

$$b_{yx} = \frac{N\Sigma\, UV - (\Sigma U\Sigma V)}{N\Sigma\, U^2 - (\Sigma U)^2}$$

$$= \frac{(10)\times 1415 - (5)\times(-20)}{(10)\times 1813 - (5)^2}$$

$$= \frac{14150 + 100}{18130 - 25} = \frac{14250}{18105} = 0.787$$

Regression equation of Y on X is

$y - \bar{y}$ = $b_{yx}(x - \bar{x})$

$y - 43.5$ = $0.787(X - 64.5)$

or Y = $0.787X + 7.26$

Similarly b_{xy} can be calculated as

$$b_{yx} = \frac{N\Sigma\, UV - (\Sigma U\Sigma V)}{N\Sigma\, U^2 - (\Sigma U)^2}$$

$$\frac{(10)\times 1415 - (5)\times(-20)}{(10)\times 1675 - (-20)^2}$$

$$= \frac{14150 + 100}{16750 - 400} = \frac{14250}{16350} = 0.87$$

Regression equation of X on Y will be

$x - \bar{x}$ = $b_{xy}(y - \bar{y})$

$y - 64.5$ = $0.87(Y - 43.5)$

or X = $0.87Y + 26.65$

********* **All the best Children** ************