8 THEORY OF PRODUCTION

INTRODUCTION: - PRODUCTION	
Meaning in common "PARLANCE"	In common parlance, the term 'production' is used to indicate an activity of making something material. The growing of wheat, rice or any other agricultural crop by farmers and manufacturing of cement, radio-sets, wool, machinery or any other industrial product is often referred to as production.
Meaning in "ECONOMICS"	Converts inputs into outputs which are capable of satisfying human wants. Whether it is making of material goods or providing a service. For Example: Inputs of cotton, capital and Labour result in the production of cloth Production refer not only physical things Wheat, Cloth, Furniture etc. but also to the production of services for example a doctor, a teacher's, a mason's services are also production. It is included in production provided it satisfies the wants of some people.
Definition	According to James Bates and J.R. Parkinson "Production is the organized activity of transforming resources into finished products in the form of goods and services; and the objective of production is to satisfy the demand of such transformed resources".
Production Function	Production function is a mathematical presentation of input- output relationship. Production function gives the relationship between physical input to physical output. In short the production function is a catalogue of output possibilities. A Real life production function. **Q = f[L, L, K, E, T, t]**
Types of Production Function	There are Two types of Production Function: - **(i)** Short term production function **(ii)** Long term production function
Short term Production Function	Short term production function:- Q = f [L, $\bar{C}$] $\bar{C}$ = Capital is Fixed Factor. L = Labour is variable factor.
Long term Production Function	This production function was constructed first by Paul H. Douglas (U.S.A.) in his book "The theory of wages" (1924). The function was developed further by C.W. Cobb (USA) and Paul H. Douglas in the joint paper "A Theory production". Since then this production function is known as Cobb - Douglas production function. Long term production function Q1 = f [L,C] Both are Variable Practical Application of long term production function is: Cobb – Douglas production function
Imp. Points related to Long term	**(i)** Originally Cobb Douglas production was applied not to the production process of an individual firm but to the whole industry. **(ii)** The roughly conclusion drawn from this famous statistical study is that

PHYSICS

Production Function

labour contributed about ¾ the (75%) and capital about ¼th (25%0 of the increase in the manufacturing production

(iii) $Q = L^a C^b$

A = .5 b = .5 $a = \frac{\Delta Q}{\Delta L} = .75$ ¾

L = 9 C = 4 $b = \frac{\Delta Q}{\Delta C} = .25$ ¼

K = 50 K = total factor productivity

$Q = 50.(9)5.(4)5 = 50.\sqrt{9}\sqrt{4}$

= 50×3×2 = 300 units

(iv) The sum of the exponents of factors in Cobb-Douglas production. That is a+b measures return to a scale:

A + b = 1 Constant return of scale

Or

Linear Homogenous function

$Q = k.L.^a C^b$ a + b = 1

$Q = k.L.^a C^{b-a}$ b = 1 –a

Average production of a labour

$= \frac{K.L^a.C^{1-a}}{L}$

$= K\frac{C^{1-a}}{L^1.L^{-a}}$

$= K\frac{C^{1-a}}{L^{1-a}}$

$= K\left(\frac{C}{L}\right)^{1-a}$

Marginal production of a labour

$K.L^a.C^{1-a}$

$\frac{dQ}{dL} = K.aL^{a-1}.C^{1-a}$

$= K\frac{KaC^{1-a}}{L^{-a}}$

$= Ka\left(\frac{C}{L}\right)^{1-a}$

a + b >1 Increase return to a scale

a + b<1 Decrease return to scale

Factors of PRODUCTION	
Meaning in common "PARLANCE"	Factors of production refer to inputs. An input is a good or service which a firm buy for use in its production process. A good has to pass through many stages and many hands until it reaches the consumers' hands in a finished form. Land, Labour, capital and entrepreneurial ability are the four factors or resources which make it possible to produce goods and services.

Types of Factors	**<u>There are Two types of factors exists: -</u>** (i) Fixed factors of production (ii) Variable factors of production
Fixed factors of production	These refer to those factors which cannot be changed during short period e.g. land machinery, plant, equipment, factory and building etc. These factors rather remain fixed during short period but can be changed in the long period.
Variable factors of production	These refer to those factors of production which can be varied or changed e.g. raw material, power labour, fuel etc.

Distinguish between Short and Long period Factors of Production	
Short Period	**Long Period**
Short period refers to that period of time in which some of the factors of production remain fixed and some are variable qty. of fixed factors of production cannot be increased in short period. Therefore, if the firm wants to increase its production in short period, it can do so by increasing the qty. of variable factors only, but this can be possible only to the extent of total production-capacity of the firm. Thus a firm cannot go beyond its production capacity in short period.	Long period refers to that period in which all the factors of production can be changed according to requirement if the demand of a product is more in market, producers can get new building construct can purchase new machines and can acquire all other factors of production as require. On the contrary, if the demand of a period is less in market, the producers can divert their resources engaged in the production of other products for which there is a demand in the market. Thus all the factors of production are variable in long-run and the qty. of production can go from zero to infinite during this period.

Concepts related to Production	
Total Production	Total production refers to total volume of goods and services produced by a firm with the given inputs during a specified period of time. In short period total production can be increased by variable factors and in the long period, this can be achieved by increase all the factors of production. AP = Average production, L = Labour **TP = AP x L**
Average Production	Average production may be defined as per unit production of a variable factor. It is calculated by dividing total production by the total number of units of variable factors. If the total production of 10 units of variable factor (labour) is 20 pens, then average TP production will be equal to 20/10=2 pen. **AP = TP/L**
Marginal Production	Marginal production is the change in total production due to use of one more or one less unit of a variable factor for example: If five labours with a given amount of capital make 20 pens and six labours with the same capital make 26 pens, then marginal production is equal to 6 pens. $MP = \frac{\Delta TP}{\Delta L} = \frac{6}{1} = 6$ $\Delta TP = TP_1 - TP$ $\Delta L = L_1 - L$ $6 = 26 - 20$ $= 6 - 5$ $MP = TP_n - TP_{n-1}$ $6 = 26 - 20$

Explain the Factors of Production	
Meaning of Factors of Production	The process of producing goods in a modern economy is very complex. A good has to pass through many stages and many hands until it reaches the consumer's hands in a finished form. Land, labour, capital and entrepreneurial ability are all the factors or resources which make it possible to produce goods and services. Even a small piece of bread cannot be produced without the active participation of these factors of production. While land is a free gift of nature and refers to natural resources, the human endeavor is classified functionally and quantitatively into three main components namely, labour, capital and entrepreneurial skills.
LAND	In Economics, Land does not mean soil or earth's surface alone, but refers to all free gifts of nature which would include besides land in common parlance, natural resources, fertility of soil, water, air, light, heat natural vegetation etc. It becomes difficult at times to state precisely as to what part of a given factor is due solely to gift of nature and what part belongs to human effort made on it in the past. **List the following characteristics which would qualify a given factor to be called land: -** **(i)** Supply of land is fixed **(ii)** Land is permanent and has indestructible powers **(iii)** Supply of land is fixed **(iv)** Land is a passive factor **(v)** Land is heterogeneous **(vi)** Land has multiple uses **(vii)** Land is immobile
Labour	All human efforts of body or of mind undergone partly or wholly with a view to secure an income apart from the pleasure derived directly from the work is termed as labour. It refers to human efforts which require the use of physical exertion, skill and intellect, However, the proportion of each might vary. Labour, to have an economic significance, must be one which is done with the motive of some economic reward. For Example: If a person sings just for the sake of pleasure, is not considered as labour unless such person sings against payment of some fee. **List the following characteristics which would qualify a given factor to be called labour: -** **(i)** Human Effort **(ii)** Labour is perishable **(iii)** Labour is an active factor **(iv)** Labour is inseparable from the labourer **(v)** Labour power differs from labourer to labourer **(vi)** All labour may not be productive **(vii)** Labour has poor bargaining power **(viii)** Labour is mobile **(ix)** There is no rapid adjustment of supply of labour to the demand for it **(x)** Choice between hours of labour and hours of leisure
Capital	It is necessary to understand the difference between capital and wealth. Wealth refers to all those goods and human qualities which are useful in production and which can be passed on for value, only a part of these goods and services can be characterised as capital because if these resources are lying idle they will constitute wealth but not capital.

	Capital refers to all man made goods that are used for further production of wealth. This definition distinguishes capital from both land and labour because both land and labour are not produced factors. They are primary or original factors of production, but capital is not a primary or original factor; it is a produced factor of production. It has been produced by man by working with nature. Machine tools and instruments, factories, dams, canals, transport equipment etc., are some of the examples of capital. All of them are produced by man to help in the production of further goods. **Types of Capital: -** **(i)** **Fixed capital:** is that which exists in a durable shape and renders a series of services over a period of time. For example, tools, machines, etc. **(ii)** **Circulating capital:** is another form of capital which performs its function in production in a single use and is not available for further use. For example, seeds, fuel, raw materials, etc. **(iii)** **Real capital:** l refers to physical goods such as building, plant, machines, etc. **(iv)** **Human capital:** refers to human skill and ability. This is called human capital because a good deal of investment goes into creation of these abilities in humans. **(v)** **Tangible capital:** can be perceived by senses whereas intangible capital is in the form of certain rights and benefits which cannot be perceived by senses. For example, copyrights, goodwill, patent rights, etc. **(vi)** **Individual capital:** is personal property owned by an individual or a group of individuals. **(vii)** **Social Capital:** is what belongs to the society as a whole in the form of roads, bridges, etc.
Capital Formation	Capital formation means a sustained increase in the stock of real capital in a country i.e. "Investment". Capital formation involves production of more capital goods like, machines, tools, factories, transport equipment's, electricity etc. which are used for further production of goods. Capital formation or investment is realised not merely for replacement and renovation but for creating additional productive capacity. There are Three stages defined under "Capital Formation" which are: - **(i)** **Savings:** The basic factor on which formation of capital depends is the ability to save. The ability to save depends upon the income of an individual. Higher incomes are generally followed by higher savings. This is because, with an increase in income, the propensity to consume comes down and the propensity to save increases. This is true not only for an individual but also for the economy as a whole. It is not only the ability to save, but the willingness to save also counts a great deal. Willingness to save depends upon the individual's concern about his future as well as upon the social set-up in which he lives. If an individual is farsighted and wants to make his future secure, he will save more. **(ii)** **Mobilisation of savings:** It is not enough that people save money; the saved money should enter into circulation and facilitate the process of capital formation. Availability of appropriate financial products and institutions is a necessary precondition for mobilisation of savings. There should be a wide spread network of banking and other financial institutions to collect public savings and to take them to prospective investors. In this process, the state has a very important and positive role

	to play both ingenerating savings through various fiscal and monetary incentives and in channelising the savings towards priority needs of the community so that there is not only capital generation but also socially beneficial type of capital formation. **(iii) Investment:** The process of capital formation gets completed only when the real savings get converted into real capital assets. An economy should have an entrepreneurial class which is prepared to bear the risk of business and invest savings in productive avenues so as to create new capital assets.
Entrepreneur	There must be a factor which mobilises the above mentioned factors, combines them in the right proportion, initiates the process of production and bears the risks involved in it. This factor is known as the "Entrepreneur" or" Organiser" or "Manager "or "Risk Taker". In these days of specialisation and separation of ownership and management, the tasks performed by a manager or organiser have become different from that of the entrepreneur. Organisation and management involve decision making of routine and non-routine types, the task of the entrepreneur is to initiate production work and to bear the risks involved in it. **Functions of an entrepreneur: -** • Initiating business enterprise and resource co-ordination • Risk bearing or uncertainty bearing • Innovations
Objectives of an Enterprise	There is a standard assumption about an enterprise is that its objective of is earning profits. However, Enterprises do not make decisions based exclusively on profit maximisation objective alone. Since an enterprise functions in the economic, social, political and cultural environment, its objectives will have to be set up in relation to its survival and growth in such environments. **Following are the objectives of an Enterprise: -** **1. Organic objectives:** The basic minimum objective of all kinds of enterprises is to survive or to stay alive. An enterprise can survive only if it is able to produce and distribute products or services at a price which enables it to recover its costs. Once the enterprise is assured of its survival, it will aim at growth and expansion. R.L. Marris's theory of firm assumes that the goal that managers of a corporate firm set for themselves is to maximise the firm's balanced growth rate subject to managerial and financial constraints. While owners want to maximise their utility function which relate to profit, capital, market share and public reputation, the managers want to maximise their utility function which includes variables such as salary, power, and status and job security. **2. Economic objectives:** The profit maximising behavior of the firm has been the most basic assumption made by economists over the last more than two hundred years and is still at the heart often classical micro economic theory. The investors expect that their company will earn sufficient profits in order to ensure fair dividends to them and to improve the prices of their stocks. Not only investors but creditors and employees are also interested in a profitable enterprise.

	3. Social objectives: Since an enterprise lives in a society, it cannot grow unless it meets the needs of the society. There is some imp. objectives are point out: - **(i)** To maintain a continuous and sufficient supply of unadulterated goods and articles of standard quality. **(ii)** To avoid profiteering and anti-social practices. **(iii)** To create opportunities for gainful employment for the people in the society. **(iv)** To ensure that the enterprise's output does not cause any type of pollution - air, water or noise. **4. Human objectives:** Human beings are the most precious resources of an organisation. If they are ignored, it will be difficult for an enterprise to achieve any of its other objectives. Therefore, the comprehensive development of its human resource or employees' should be one of the major objectives of an organisation. Some of the important human objectives are: - **(i)** To provide fair deal to the employees at different levels **(ii)** To develop new skills and abilities and provide a work climate in which they will grow as mature and productive individuals **(iii)** To provide the employees an opportunity to participate in decision-making in matters affecting them **(iv)** To make the job contents interesting and challenging **5. National objectives:** An enterprise should Endeavour for fulfillment of national needs and aspirations and work towards implementation of national plans and policies. Some of the national objectives are: - **(i)** To remove inequality of opportunities and provide fair opportunity to all to work and to progress **(ii)** To produce according to national priorities **(iii)** To help the country become self-reliant and avoid dependence on other nations **(iv)** To train young men as apprentices and thus contribute in skill formation for economic growth and development
Enterprise's Problems/ Constraint	A business enterprise faces many problems from its stat, through its life time till it is closed down. Some are mentioned below: - **(i) Problems relating to objectives:** As mentioned earlier, an enterprise functions in the economic, social, political and cultural environment. Therefore, it has to set its objectives in relation to its environment. The problem is that these objectives are multifarious and very often conflict with one another. For example, the objective of maximising profits is in conflict with the objective of increasing the market share which generally involves improving the quality, slashing the prices etc. Thus the enterprise faces the problem of not only choosing its objectives but also striking a balance among them. **(ii) Problems relating to location and size of the plant:** An enterprise has to decide about the location of its plant. It has to decide whether the plant should be located near the source of raw material or near the market. It has to consider costs such as cost of labour, facilities and cost of transportation. The situation where it has to decide whether it is to be

a small scale unit or large-scale unit, create a problem. Due consideration will have to be given to technical, managerial, marketing and financial aspects of the proposed business before deciding on the scale of operations.

(iii) **Problems relating to selecting and organising physical facilities:** decision on the nature of production process to be employed and the type of equipments to be installed is a problem. The choice of the process and equipments will depend upon the design chosen and the required volume of production. Having determined the equipment to be used and the processes to be employed, the entrepreneur will prepare a layout illustrating the arrangement of equipments and buildings and the allocation for each activity.

(iv) **Problems relating to Finance:** An enterprise has to undertake not only physical planning but also expert financial planning. It involves: -

(a) Determination of the amount of funds required for the enterprise with reference to the physical plans already prepared

(b) Assessment of demand and cost of its products

(c) Estimation of profits on investment and comparison with the profits of comparable existing concerns to find out whether the proposed investment will be profitable enough

(d) Determining capital structure and the appropriate time for financing the enterprise etc.

(v) **Problems relating to organisation structure:** An enterprise also faces problems relating to the organizational structure. It has to divide the total work of the enterprise into major specialised functions and then constitute proper departments for each of its specialized functions. Not only this, the functions of all the positions and levels would have to be clearly laid down and their inter-relationship (in terms of span of control, authority, responsibility, etc.) should be properly defined. In the absence of clearly defined roles and relationships, the enterprise may not be able to function efficiently. Problems relating to marketing: Proper marketing of its products and services is essential for the survival and growth of an enterprise. For this, the enterprise has to discover its target market by identifying its actual and potential. After identifying the market. The enterprise has to make decision regarding 4 P's namely: -

(a) Product: variety, quality, design, features, brand name, packaging, associated services, utility etc.

(b) Promotion: Methods of communicating with consumers through personal selling, social contacts, advertising, publicity etc.

(c) Price: Policies regarding pricing, discounts, allowance, credit terms, concessions, etc.

(d) Place: Policy regarding coverage, outlets for sales, channels of distribution, location and layout of stores, inventory, logistics etc.

(e) Problems relating to legal formalities: A number of legal formalities have to be carried out during the time of launching of the enterprise as well as during its life time and its closure. These formalities relate to assessing and paying different types of taxes (corporate tax, excise duty, sales tax,

	custom duty, etc.) **(vi)** **Problems relating to industrial relations:** With the emergence of the present day factory system of production, the management has to devise special measures to win the co-operation of a large number of workers employed in industry. Various problems which an enterprise faces with regard to industrial relations are - the problem of winning workers' cooperation, the problem of enforcing proper discipline among workers, the problem of dealing with organised labour and the problem of establishing a state of democracy in the industry by associating workers with the management of industry.

Explain the Law of Variable Proportions and it Causes with Diagram

Definition

According to left witch, "The law of variable proportions states that if the input of one resource is increased by equal increments per unit of time while the inputs of other resources are held constant, total output will increase, but beyond some point the resulting other increases will become smaller and smaller".

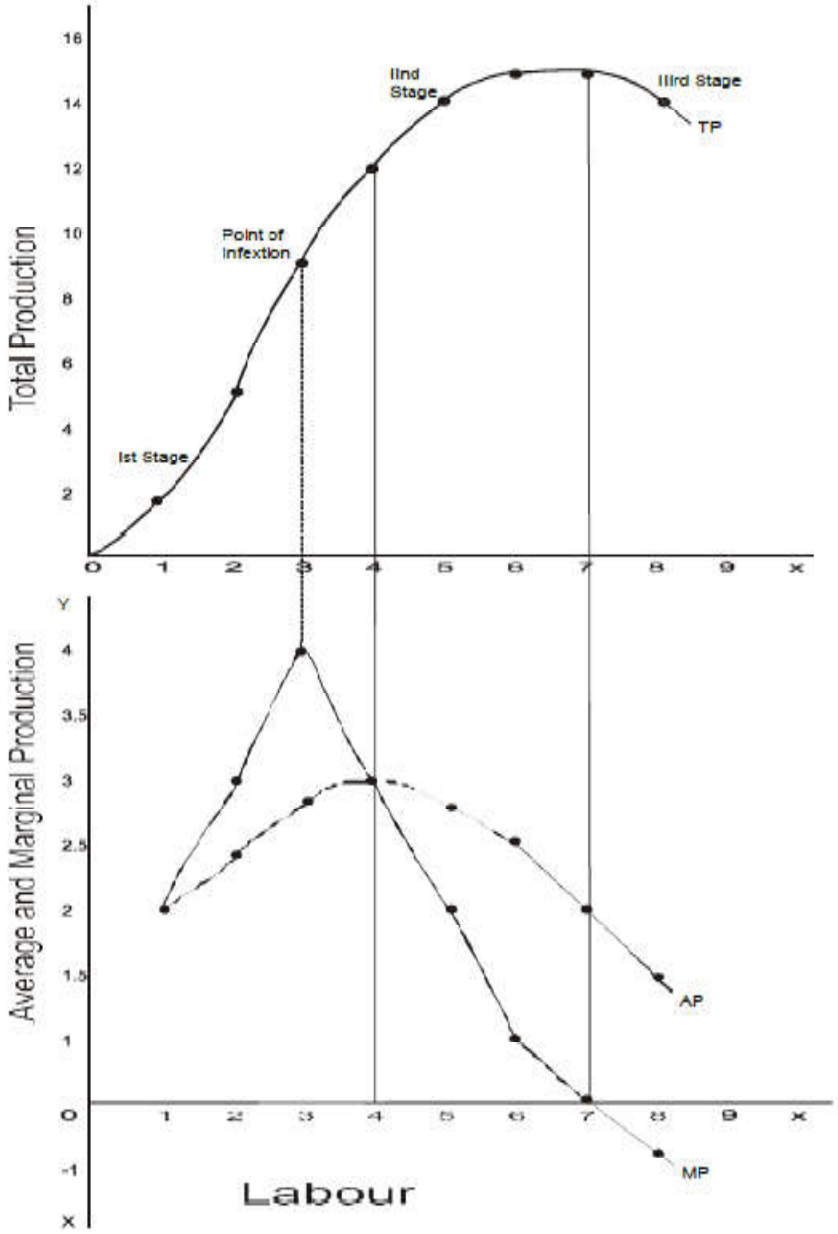
Meaning

This law is applicable in short period and in short period at least one factor is variable others are fixed. This law states that as the proportion of some factors is changed, keeping other factors as fixed, total production change at varying proportions. For instance, if 10 hectares of land is combined with 5 workers and 2 machine the output is 100 quintals. If the producer keeps the land area and number of machines as same but the number of workers is increased one by one, the output will change in variable proportions. At last the law of variable proportions states that as the proportion of factors is changed the total production at first increases more than proportionately and finally less then proportionately. This law is also called law of diminishing return to factor.

Assumptions of law

(i) All the units of variable input are homogeneous.
(ii) At least one factor is variable others are constant.
(iii) There is no change in the technique of production.
(iv) Use of variable factor is one by one.
(v) Short period.

Fixed factor land & capital	Variable factor labour	Total production	Average production	Marginal Production
1	0	-	-	-
1	1	2	2	2
1	2	5	2.5	3
1	3	9	3	4
1	4	12	3	3
1	5	14	2.8	2
1	6	15	2.5	1
1	7	15	2.1	0
1	8	14	1.75	-1

Stages of law	**Stage 1st:**In this stage T.P. AP and MP increase. TP increase at increasing rate. This stage comes to an end when AP maximum and AP equal to MP. It is the stage of increasing return. **Stage 2nd:**In this stage TP rises but at a diminishing rate. This stage begins when AP is maximum and ends when TP is maximum or MP is equal to zero. During this stage AP & MP fall. This stage is called the stage of diminishing returns. In this stage that a firm decides its level of production. **Stage 3rd:** In this stage MP is zero and TP is maximum in early situation. TP starts falling and slope of TP curve becomes negative MP becomes negative. This stage is called the stage of negative returns. 

Causes of the law	**(i)**	**Indivisibility of factors:** Because of application of more units of a variable factor to fixed indivisible factors (like machines) result in increasing returns.
	(ii)	**Use beyond optimum capacity:** After achieving optimum combination of variable and fixed factors, when more units of a variable factor are employed, marginal product starts falling.
	(iii)	**Lack of perfect substitution between factors:** Up to a certain limit factors of production can be substituted for one another e.g. more labour can be employed instead of machinery but beyond a certain stage, this is not possible. The factors become imperfect. Substitutes leading to diminishing returns.
Limitation of the law	**(i)**	The operation of the law may be postponed also when the factors of production are perfect substitute of each other.
	(ii)	The law of variable proportion failure when improved technology is introduced causing increase in productivity and fall in cost.

Long Period

Returns to a scale

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Long Period

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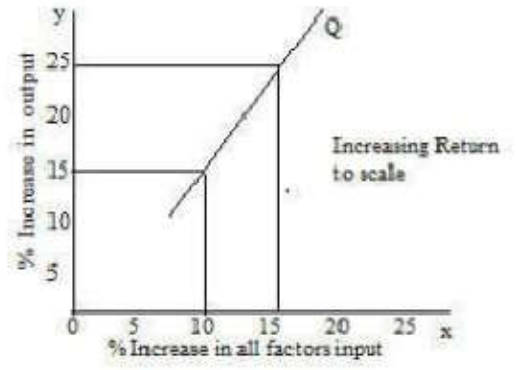
All factors are variable

Returns to scale applies in the long period. In the long period all the factors of production become variable. Return to scale explains the behavior of output when quantities of all inputs are changed in the same proportion. In other words, responsive of output to changes in the inputs at the same rate is called returns to scale.

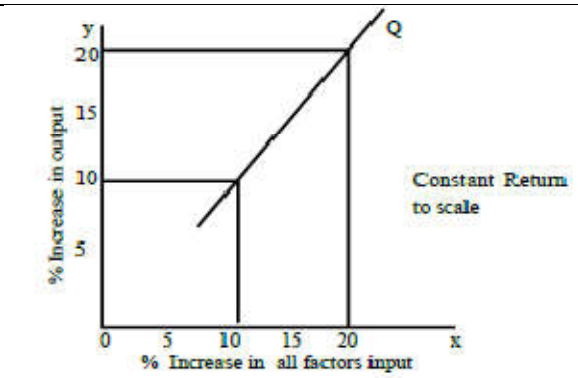
Explain the Increasing Return to a Scale and its Causes also.

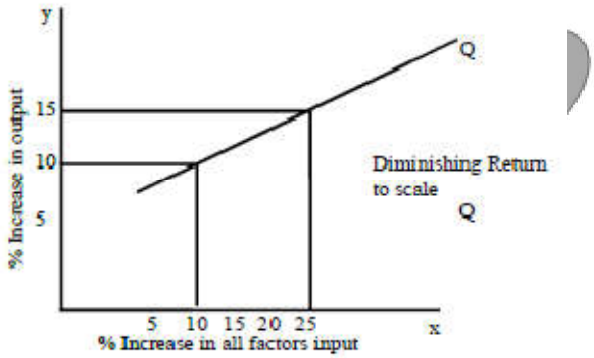
Meaning	When proportionate increase in the total output is more than the proportionate increase in all the inputs. Suppose if 10% increase in proportion of all the factor inputs causes 20% increase in the output and 20% increase in factor proportion causes 40% increase in output. It will be increasing returns to scale. 
Internal economies	Are those benefits which accrue to a firm when it expands the scale of production. • Internal economies are the result of the firm's own efforts independent of the actions of other firms. • These economies are particular to the individual firms and are different firms depending upon the size of the firm.

	The main types of internal economies are as follows: - **1. Technical Economies:** The large scale production is associated with technical economies. As the firm increases its scale of production, it becomes possible to use better plant, machinery, equipment and techniques of production. Following are the main forms (causes/reasons) of technical economies. **(i) Economies of superior techniques:** A large sized firm can use sophisticated and costly machines and equipments. Use of superior techniques reduces the cost of production per unit and increases aggregate output. **(ii) Economies of increased dimensions:** A large firm can get the mechanical advantage in using large machines and other mechanical units to produce more output. E.g. a Large boiler, large furnace, etc. can be operated by same team as required by smaller boiler, furnace, etc. **(iii) Economies of linked processes:** A large sized firm can develop its own sources of raw mate rail, means of transportation, means of transportation, distribution system, etc. **(iv) Economies of the use of By-products:** A large size firm can avoid all kinds of wastage of materials. The firm can use its by-products and waste material to produce another material. E.g.- Sugar industry can make alcohol out of the molasses. **(v) Economies of specialization:** Large sized firm can introduce greater degree of division of labour and specialisation. **2. Managerial Economies:** Large size firms can introduce division of labour in managerial tasks. They can employ business executive of high skill and qualification to look after the functioning of various departments like production, finance, sales, advertising, personnel, etc. This helps to increase the efficiency and productivity of managers resulting in reduction in managerial costs. **3. Commercial Economies:** A large sized with firm is able to reap economies of bulk purchases. It can get discounts from supplies, railways, transport companies, etc. It enjoys prompt and regular supply of raw materials. A large sized firm can also afford to spend large amount of money on advertising, publicity etc. It can also give various concessions to wholesale and retail dealers and customers and thus capture markets for its product. **4. Financial Economies:** A big firm enjoys goodwill among lenders or investors. For raising finance, it can either borrow from bank as it can offer better security or it can raise finance by issuing shares, debentures and by inviting public deposits. Such opportunities are not available to small firms. **5. Risk Bearing Economies:** A large firm is better placed to face the uncertainties and risks of business. A big firm producing many variety of goods is in a better position to withstand economic ups and downs. Therefore, it enjoys economies of risk bearing.
External Economies	**1. Technological Economies:** When the whole industry expands, it may result in the discovery of new technical knowledge, firms pool manpower and finance for research and development resulting in new and improved methods of productions and new inventions. Use of improved and better machinery improves production function and cost of production per unit

	falls. 2. **Economies of localization:** When in an, area, many firms producing the same commodity are set up, it is called localization of an industry. Due, to localization there is expansion of railways, post & telegraph, banking services, insurance, setting up of booking offices by transport, companies, setting up of powerful transformer by electricity department, etc. All the firms get these facilities at low prices. 3. **Economies of Information:** As pointed earlier, firms pool their resources for research and development. All firms get the benefit of the research in terms of market information, technical information, information about government's economic policies, information about availability of new source of raw material, etc. Also, specialized journals give information about latest developments. 4. **Cheaper Inputs:** When an industry expands its needs for raw materials, machines, etc. also expand. This may, result in exploration of new and cheaper sources of raw materials, machinery, etc. Also, the industries producing such inputs also expand in scale. Therefore, they can supply these inputs at lower prices. As a result, the cost of production per units of the firm using these inputs falls. 5. **Growth of Ancillary Industries:** With the growth of an industry, many firms specialized in the production of inputs like raw material, tools machinery, etc. come up. Such firms are called ancillary units which provides inputs at lower cost to the main industry. Likewise, some firms may get developed by processing the waste products of the industry. Thus, wastes are converted into by-products. This reduces the cost of production in general. 6. **Development of Skilled Labour:** When an industry expands specialised institutions like colleges, training centers, management institutes, etc. develop. This result in continuous availability of skilled labour likes technicians, engineers, management experts, etc. 7. **Better transportation & Marketing Facilities:** When an industry expands many specialized transporters also develop. The firm in need of specialized transport service can get them easily at cheaper rates. Also many new marketing outlets and specialized marketing institutions develop. The firm need not spend on developing its own marketing outlets. This reduces the cost.

Explain the constant returns to a Scale	
Meaning	When proportionate increase in total output in the same as the over increasing all the inputs.

Explain the Diminishing Return to a Scale and its Causes	
Meaning	Diminishing returns to scale is applicable in long period in long period all factors are variable when proportionate increase in total output is less than the proportionate increase in all inputs. 
Internal Diseconomies	It means all those factors which raise the cost of production per unit of a particulars firm when the scale of production is expanded beyond the point of optimal capacity. **Such diseconomies of scale are as follows: -** **1. Production Diseconomies:** Production diseconomies sets in when expansion of firm's production beyond optimum size leads to rise in the cost per unit of output. E.g. Use of inferior or less efficient factors due to non-availability of efficient factors raises the per unit cost of output. **2. Managerial Diseconomies:** As the scale of production increases burden on management also increases. Co-ordination of work among different departments becomes difficult. Supervision and control over the activities of subordinates becomes difficult, decision taking is delayed, etc. As a result, wastage increase and the efficiency and productivity decrease. Per unit cost starts rising. **3. Technical Diseconomies:** Every equipment has an optimum point at which it works more efficiently and economically. Beyond optimum point they are overworked and may result in breakdowns, heavy cost of maintenance, etc. **4. Financial Diseconomies:** Expansion of production beyond the optimum scale result in increase in the cost of capital. It may be due to increased dependence on external finances. **5. Marketing Diseconomies:** Selling diseconomies set in if the scale of production is expanded beyond optimum level. The advertisement

	expenditure and marketing overheads increase more proportionately with the scale.
External Diseconomies	1. **Diseconomies of Scarcity of Inputs:** When and industry expands its need for raw materials, machines, tools and equipments, etc. also expands. Some inputs are such which cannot be totally substituted. The firms supplying these inputs come under pressure and may supply inputs at a higher price. This raises the costs of production per unit of the firm who uses these inputs. 2. **Diseconomies of Strains on infrastructure:** Due to concentration of firms in an area infrastructural facilities becomes inadequate over a time. E.g. Excessive pressure on transport system result in delayed transportation of raw materials and finished goods. Other facilities like electric power supply, communication system, water supply, etc. are also over taxed. This puts strain on infrastructural facilities resulting in increased cost of production. 3. **Diseconomies of High Factor Prices:** With the concentration of an industry in a particular area, the demand for factors of production rises. Thus, the prices of the factors of production go up resulting in increased cost of production. 4. **Diseconomies of Expenditure on Advertising:** Expansion of an industry also means increase in the number of firms. This means increases in competition among the firms. This forces a firm to spend more and more on advertising. This raises per unit cost.

MULTIPLE CHOICE QUESTIONS

Q.1. _____ shows the overall output generated at a given level of input:(N,06)

(a) Cost function (b) production function
(c) ISO cost (d) Marginal rate of technical substitution

Q.2. Consider the following table:(SM-14)

Labour	Total output	Marginal Product
0	-	-
1	100	100
2	-	80
3	240	-

What is the total output, when 2 labour are employed?(J,08)

(a) 80 (b) 100 (c) 180 (d) 200

Q.3. The production function: [SM-55]

(a) Is the relationship between the quantity of inputs used and the resulting quantity of product.
(b) Tells us the maximum attainable output from a given combination of inputs.
(c) Expresses the technological relationship between inputs and output of a product.
(d) All the above.

Q.4. What is production in economics:-(D,08)

(a) Creation / Addition of Utility (b) Production of food grains

(c) Creation of services (d) Manufacturing of goods

Q.5. What will be the total product when two laborers are hired according to the table given Below(D,10)

No. of labours	Total Product	Marginal Product
0	-	-
1	350	350
2	-	230

(a) 680 (b) 580 (c) 350 (d) 230

Q.6. Which function shows relationship between input and output?(D,10)

(a) Consumption function (b) Investment function
(c) Production function (d) Cost function

Q.7. The function of an entrepreneur is:(J,12)

(a) Initiating an enterprise and resource coordination (b) Risk bearing
(c) Introducing innovations (d) All of the above.

Q.8. Which of the following is not a feature of land (J,12)

(a) Free gift of nature (b) Mobile factor of production
(c) It is limited in quantity (d) not destructible

Q.9. Production function shows the relation between(D,12)

(a) Physical inputs and physical output (b) Technical input and technical output
(c) Market price and quantity supplied (d) None of these

Q.10. Production function is :(D,13)

(a) Purely a technical relationship between input & output
(b) Purely an economic relationship between input & output
(c) Both the technical & economical relationship between input & output
(d) None of the above.

Q.11. Additional made to TP when one more unit of labour is employed is called :

(a) Average product (b) Marginal revenue product
(c) Labour product (d) Marginal product.

Q.12. MP is calculated by the formula :

(a) $\frac{\Delta TP}{\Delta L}$ **(b)** $\frac{\Delta AP}{\Delta X}$ **(c)** $\frac{\Delta TP}{\Delta X}$ **(d)** $\frac{\Delta AP}{\Delta L}$

Q.13. In case of short period ..... is variable.

(a) Land (b) Labour (c) Capital (d) Enterprise.

Q.14. A firm's fixed inputs include

(a) Its cash deposit at the bank (b) Its plant and machinery

(c) Its work force (d) Raw material purchased from other firms

Q.15. "Production" may be defined as an act of

(a) Creating utility (b) Earning profit
(c) Destroying utility (d) Providing services.

Q.16. Marginal product is

(a) What is produced when all factors of production are employed at optimum efficiency
(b) The extra output obtained from employing an additional unit of a factor
(c) What is left to the entrepreneur after he has paid all his expenses
(d) Annual output of the most efficient in the industry.

Q.17. In case of long run ..... is variable.

(a) Labour (b) Land (c) Enterprise (d) All the above.

Q.18. When inputs are transformed into output, it is called :

(a) Consumption (b) Intermediate good
(c) Production (d) Capital formation.

Q.19. Suppose the first four units of a variable input generate corresponding total output of 150, 200, 350, and 550. What will be the marginal product of the third unit of input ?(D,16) [SM-64]

(a) 50 (b) 100 (c) 150 (d) 200

Q.20. To economists, the main difference between the short run and the long run is that: [SM-10]

(a) In the short run all inputs are fixed, while in the long run all inputs are variable.
(b) In the short run the firm varies all of its inputs to find the least-cost combination of inputs.
(c) In the short run, at least one of the firm's input levels is fixed.
(d) In the long run, the firm is making a constrained decision about how to use existing plant and equipment efficiently.

Q.21. Which of the following statements is true? [SM-4]

(a) The services of a doctor are considered production.
(b) Man can create matter.
(c) The services of a housewife are considered production.
(d) When a man creates a table, he creates matter.

Q.22. A fixed input is defined as [SM-60]

(a) That input whose quantity can be quickly changed in the short run, in responses to the desire of the company to change its production.
(b) That input whose quantity cannot be quickly changed in the short run, in response to the desire of the company to change its production.
(c) That input whose quantities can be easily changed in response to the desire to increase or reduce the level of production.
(d) That input whose demand can be easily changed in response to the desire to increase or reduce the level of production.

Q.23. Average product is defined as [SM-61]

(a) Total product divided by the total cost.
(b) Total product divided by marginal product.
(c) Total product divided by the number of units of variable input.
(d) Marginal product divided by the number of units of variable input.

Q.24. Marginal product, mathematically, is the slope of the [SM-63]

(a) Total product curve. (b) Average product curve.
(c) Marginal product curve. (d) Implicit product curve.

Q.25. Suppose the first four units of a variable input generate corresponding total outputs of 200, 350, 450, and 500. The marginal product of the third unit of input is:[SM-64]

(a) 50 (b) 100 (c) 150 (d) 200

Q.26. In describing a given production technology, the short run is best described as lasting [SM-45]

(a) up to six months from now
(b) up to five years from now
(c) as long as all inputs are fixed
(d) as long as at least one input is fixed

Q.27. If labour is an active factor, land is :

(a) Secondary factor (b) Also active factor (c) Passive factor (d) None of the above.

Q.28. Who has given the concept of innovative Entrepreneurship?(J,08)

(a) Robbins (b) Adam Smith (c) Schumpeter (d) Sweezy

Q.29. Functions of the entrepreneur are:(N,09)

(a) Risk bearing
(b) Initiating a business enterprise and resource co-coordinating
(c) Introducing new innovations
(d) All of the above

Q.30. Labour force wants more _____ .(D,09)

(a) Facility (b) Leisure (c) Benefit (d) All of the above

Q.31. The function of an entrepreneur is:(J,12)

(a) Initiating an enterprise and resource coordination (b) Risk bearing
(c) Introducing innovations (d) All of the above.

Q.32. Which of the following is not a feature of land (J,12)

(a) Free gift of nature (b) Mobile factor of production
(c) It is limited in quantity (d) not destructible

Q.33. Which one of the following is not a characteristic of land?(J,14)

(a) A free gift of nature (b) Its supply is fixed
(c) An active factor of production (d) It has different uses.

Q.34. An Entrepreneur undertakes which one of the following functions?(J,14)
(a) Initiating a business and resource co-ordination
(b) Risk or uncertainly bearing
(c) Innovations
(d) All of the above

Q.35. Individual supply curve of labour is (Income effect) :
(a) Upward sloping (b) Backward bending (c) Horizontal (d) Vertical.

Q.36. Income effect when wage rises means
(a) Work hours rise (b) Work hours fall
(c) Work hours first rise and then fall (d) Work hours remain the same.

Q.37. Which capital includes education, training and skill of the worker?
(a) Physical capital (b) Human capital (c) External capital (d) Floating capital

Q.38. Which capital includes durable consumer goods, inventories and intermediate goods?
(a) Human capital (b) Physical capital (c) External capital (d) Floating capital

Q.39. The other name for capital formation is :
(a) Saving (b) Capital output ratio (c) Wealth formation (d) Investment

Q.40. The second stage of capital formation is :
(a) Creation of savings (b) Mobilisation of savings
(c) Investment of savings (d) Distribution of savings.

Q.41. Individual's saving level depends upon
(a) Income (b) Inflation
(c) Ability and willingness to save (d) Government policy

Q.42. Corporate savings depend upon
(a) Profit level (b) Income level (c) Production level (d) Loans level.

Q.43. For mobilising savings, we require :
(a) Capital transitions (b) Investment institutions
(c) Banks and financial institutions (d) None of the above.

Q.44. Name the factor of production which hires and organises the production activity.
(a) Labour (b) Manager (c) Entrepreneur (d) Owner.

Q.45. Which one of the following statements is not correct?(J,16)
(a) Land has indestructible powers (b) Labour is mobile
(c) Capital is nature's gift (d) Land is a passive factor.

Q.46. Which of the following is not a characteristic of labour ?(D,16)

(a) It is perishable (b) It has weak bargaining power
(c) Labour and Labour power cannot be separated (d) Labour is not mobile

Q.47. Which among the following is not a characteristic of Land ?(D,16)

(a) It is an active factor (b) It has variety of uses
(c) Its production powers are unlimited (d) Its supply is limited

Q.48. Which of the following is considered production in Economics? [SM-1]

(a) Tilling of soil.
(b) Singing a song before friends.
(c) Preventing a child from falling into a manhole on the road.
(d) Painting a picture for pleasure.

Q.49. Which of the following is not a characteristic of land? [SM-3]

(a) Its supply for the economy is limited.
(b) It is immobile.
(c) Its usefulness depends on human efforts.
(d) It is produced by our forefathers.

Q.50. Which of the following statements is true? [SM-4]

(a) Accumulation of capital depends solely on income of individuals.
(b) Savings can be influenced by government policies.
(c) External economies go with size and internal economies with location.
(d) The supply curve of labour is an up word slopping curve.

Q.51. The most important function of an entrepreneur is to [SM-76]

(a) Innovate (b) Bear the sense of responsibility
(c) Finance (d) Earn profit

Q.52. The marginal product curve is above the average product curve when the average product is:(F,07)

(a) Increasing (b) Decreasing (c) Constant (d) None

Q.53. At the point of inflexion, the marginal product is:(M,07)

(a) Increasing (b) Decreasing (c) Maximum (d) Negative

Q.54. If the marginal product of labour is below the average product of labour. It must be true that:(A,07)[SM-48]

(a) Marginal product of labour is negative (b) Marginal product of labour is zero
(c) Average product of labour is falling (d) Average product of labour is negative

Q.55. Law of variable proportion is valid when:(N,07)

(a) Only one input is fixed and all other inputs are kept variable

(b) All factors are kept constant
(c) All inputs are varied in the same proportion
(d) None of these

Q.56. During IInd stage of law of Diminishing returns:(J,08)

(a) MP and TP is maximum
(b) MP and AP are decreasing
(c) AP is negative
(d) TP is negative

Q.57. In the first stage of law of variable proportions, total product increases at the _____(D,10)

(a) Decreasing rate (b) Increasing rate (c) Constant rate (d) Both A and B

Q.58. Production Activity in short period is analyzed with the help of _____(D,12)

(a) Law of variable proportions
(b) Law of returns to scale
(c) Both (a) & (b)
(d) None of these

Q.59. The third stage of law of variable proportion is called :

(a) Increasing return
(b) Negative return
(c) Diminishing return
(d) Decreasing returns.

Q.60. When the average product is at its maximum the equality can be reached between

(a) The marginal product and total product
(b) The marginal product and average product
(c) The marginal product and primary product
(d) The marginal product and final product.

Q.61. In short run the law of variable proportions is also known as the

(a) Law of increasing returns
(b) Law of diminishing returns
(c) Law of constant returns
(d) Law of return to scale.

Q.62. The law of variable proportions comes into being when

(a) There are only two variable factors
(b) There is a fixed factor and a variable factor
(c) All factors are variable
(d) Variable factors yield less.

Q.63. In this law of variable proportion in stage III the MP curve becomes negative because of

(a) Fixed factor quantity exceed variable factor
(b) Variable factor quantity exceed fixed factor
(c) Both the factors are used at the highest proportion
(d) None of the above.

Q.64. Increasing returns imply

(a) Constant average cost
(b) Diminishing cost per unit of output
(c) Optimum use of capital and factor
(d) External economies

Q.65. In the short run Analysis, MP = 0 at the level in which

(a) Marginal product is maximum (b) Average product is maximum

(c) Total product is maximum (d) Total profit is maximum.

Q.66. The law of diminishing returns or increasing cost will operate at an earlier level in agriculture than in industry because

(a) Agriculture is an industry where land is used extensively
(b) More labour is used in agriculture
(c) Less mechanisation is applicable to agriculture.
(d) All of the above

Q.67. Which of following is not an assumption of law of variable proportions?

(a) Increasing marginal costs
(b) Technique of production remain constant
(c) Decreasing average variable costs
(d) Proportion of factor of production remain same.
(e)

Q.68. Diminishing marginal returns implies: [SM-7]

(a) Decreasing average variable costs“ (b) Decreasing marginal costs
(c) Increasing marginal costs (d) Decreasing average fixed costs

Q.69. The Law of Variable Proportions is associated with.(J,16)

(a) Short period (b) Long period
(c) Both short and long periods (d) Neither short nor long periods.

Q.70. When average product rises as a result of an increase in the quantity of variable factor, marginal product is :(D,16)

(a) Equal to average product (b) More than average product
(c) Less than average product (d) Becomes negative

Q.71. A rational producer will produce in the stage in which marginal product is positive and:(J,16)

(a) MP > AP (b) MP = AP (c) MP < AP (d) MP is zero.

Q.72. The “law of diminishing returns” applies to: [SM-12]

(a) The short run, but not the long run. (b) The long run, but not the short run.
(c) Both the short run and the long run. (d) neither the short run nor the long run

Q.73. Laws of production does not include ..... [SM-52]

(a) Returns to scale. (b) Law of diminishing returns to a factor.
(c) Law of variable proportions. (d) Least cost combination of factors.

Q.74. The production process described below exhibits. [SM-56]

Number of Workers	Output
0	0
1	23
2	40

(a) Constant marginal product of labour.

(b) Diminishing marginal product of labour.
(c) Increasing return to scale.
(d) increasing marginal product of labour

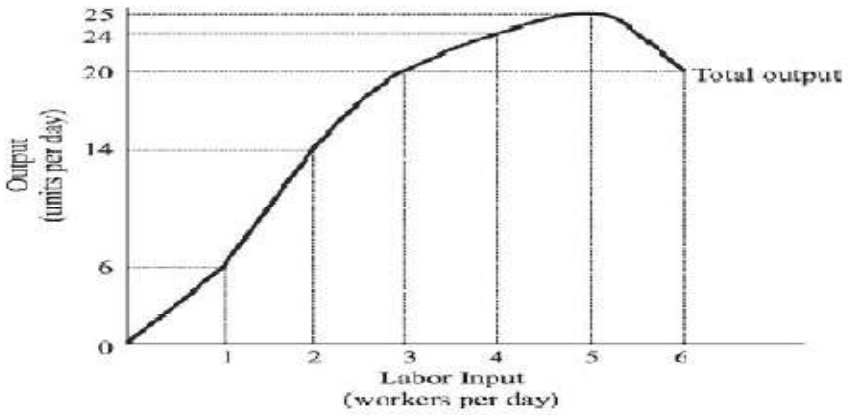
Q.75. In the short run, the firm's product curves show that [SM-59]

(a) Total product begins to decrease when average product begins to decrease but continues to increase at a decreasing rate.
(b) When marginal product is equal to average product, average product is decreasing but at its highest.
(c) When the marginal product curve cuts the average product curve from below, the average product is equal to marginal product.
(d) In stage two, total product increases at a diminishing rate and reaches maximum at the end of this stage.

Q.76. Which of the following statements is true? [SM-62]

(a) After the inflexion point of the production function, a greater use of the variable input induces a reduction in the marginal product.
(b) Before reaching the inevitable point of decreasing marginal returns, the quantity of output obtained can increase at an increasing rate.
(c) The first stage corresponds to the range in which the AP is increasing as a result of utilizing increasing quantities of variable inputs.
(d) All the above.

Q.77. Use the following diagram to answer the question given below it



The marginal physical product of the third unit of labour is _____, the MP of the _____ labour is Negative. [SM-67]

(a) Six; fourth (b) Six; third (c) Six; fifth (d) Six; sixth

Q.78. In the third of the three stages of production: [SM-68]

(a) The marginal product curve has a positive slope.

(b) The marginal product curve lies completely below the average product curve.

(c) Total product increases.

(d) Marginal product is positive.

Q.79. Increasing returns to scale can be explained in terms of :(F,07)

(a) External and internal economics
(b) External and internal diseconomies
(c) External economics and internal dis economics
(d) All of these

Q.80. External Economies of scale are obtained by (D,08)

(a) a firm (b) a group of firm (c) Small production (d) Society

Q.81. Increase in all input leading to less than proportional increase in output is called _____:(F,08)

(a) Increasing return to scale (b) Decreasing returns to scale
(c) Constant returns to scale (d) Both increasing and decreasing returns to scale

Q.82. Consider the following combinations of inputs and outputs:(F,08)
This production technology satisfies

Labour	Capital	Output
5	10	1
6	12	2
7	14	3
8	16	4
9	18	5
10	20	6

(a) Increasing returns to scale
(b) Diminishing returns to scale
(c) Constant returns to scale
(d) Increasing returns initially, following by decreasing returns to scale.

Q.83. Increasing returns to scale occurs due to:(D,09)

(a) Economies of scale (b) Specialization (c) Indivisibility of factors (d) All of these

Q.84. When output decreases by 20% due to increase in inputs by 20% this stage is called the law of _____(J,10)

(a) Increasing returns to scale (b) Decreasing returns to scale
(c) Constant returns to scale (d) None of the above

Q.85. External economics are enjoyed:(J,11)

(a) By large producers only (b) As firm expands
(c) Both (a) and (b) (d) None of above.

Q.86. External economies can be achieved through :(J,13)

(a) Division of labour (b) Superior managerial skill

(c) Extension of transport and credit facilities (d) External assistance

Q.87. External economies arise due to :(J,13)

(a) Growth of ancillary industries (b) High cost of technologies
(c) Increase in the price of factors of production (d) None of the above

Q.88. In Cobb-Douglas production function , two input are(D,13)

(a) Land and labour (b) Labour and Capital
(c) Capital and Entrepreneur (d) Entrepreneur and land

Q.89. With a view to increase his production, Hariharan a manufacturer of shoes, increases all the factors of production in his unit by 100%. But at the end of the year, he finds that instead of an increase of 100%, his production has increased by only 80%. Which law of returns to scale is operating in this case?(J,14)

(a) Increasing returns to scale (b) Decreasing returns to scale
(c) Constant returns to scale (d) None of the above.

Q.90. Linear homogeneous production function is based on:(D,14)

(a) Increasing returns to scale (b) Decreasing returns to scale
(c) Constant returns to scale (d) None of the above

Q.91. Increasing returns to a scale is not caused by

(a) Technological advance (b) Specialisation of labour
(c) Marketing economies (d) Varying factor proportions.

Q.92. When labour and capital are increased by 10% and production also increases by 10%, then we have

(a) Increasing returns to scale (b) Decreasing returns to scale
(c) Constant returns to scale (d) Negative returns to scale.

Q.93. When a large firm takes up advertising and grants margin to distribution, it is called.

(a) Technical economics (b) Managerial economics
(c) Marketing economics (d) Financial economics.

Q.94. When a large firm diversifies output, market, etc. it is called :

(a) Technical economies (b) Risk bearing economies
(c) Marketing economies (d) Managerial economies.

Q.95. When a large number of firms at one place get advantages for which they made no efforts, it is called :

(a) Internal economies (b) External economies
(c) Technical economies (d) Marketing economies.

Q.96. When a firm grows so large that it becomes very difficult to manage, it is called :

(a) Diseconomies of scale (b) Economies of scale
(c) External economies (d) Internal economies.

Q.97. When a firm faces the loses of earth quake and flood, it is an example of

(a) Internal diseconomy (b) External diseconomy
(c) External economy (d) Internal economy.

Q.98. If a firm takes up too much money on loan and finds it difficult to repay, it is a case of :

(a) Technical diseconomy (b) Managerial diseconomy
(c) Financial diseconomy (d) Financial economy.

Q.99. When a manager is overburdened and faces the problems of control and coordination, it is a case of

(a) Technical diseconomy (b) Technical economy
(c) Managerial diseconomy (d) External diseconomy.

Q.100. When there is de-centralisation of decision making, it is a case of

(a) Technical economy (b) Marketing economy
(c) Managerial economy (d)Managerial diseconomy.

Q.101. When bigger and updated machines are installed then cost falls. What kind of return to scales takes place?

(a) Decreasing (b) Diminishing
(c) Increasing (d) Constant

Q.102. Returns to scale will be said to be in operation when quantity of

(a) All inputs are changed
(b) All inputs are changed in already established proportion
(c) All inputs are not changed
(d) One input is changed while quantity of all other inputs remains the same.

Q.103. Returns to scale have been classified as constant, increasing and decreasing depending upon the

(a) Inputs required to produce a given level of Output
(b) Amount of output produced out of a given amount of inputs
(c) Response of output to change in scale
(d) All of the above.

Q.104. When increase in the plant capacity of a firm, this is known as

(a) A short run adjustment (b) A long run adjustment
(c) A temporary adjustment (d) None of the above.

Q.105. If as a result of 40% increase in all inputs, the output increases by 25%, this is a case of

(a) Increasing returns to scale (b)Constant returns to scale
(c) Increasing returns to factor (d) Decreasing returns to scale.

Q.106. Under Cobb-Douglas production contribution of capital and labour respectively - (D,15)
(a) 3/4th, 1/4th (b) 1/4th , 3/4th (c) 1/2th , 1/2th (d) none of the above

Q.107. Economies of scale exist because as a firm increases its size in the long run: [SM-54]
(a) Labour and management can specialize in their activities more.
(b) As a larger input buyer, the firm can get finance at lower cost and purchase inputs at a lower per unit cost.
(c) The firm can afford to employ more sophisticated technology in production.
(d) All of these.

Q.108. In the long run, if a very small factory were to expand its scale of operations, it is likely that it would initially experience [SM-71]
(a) An increase in pollution level. (b) Diseconomies of scale.
(c) Economies of scale. (d) Constant returns to scale.

Q.109. Which of the following statements describes increasing returns to scale? [SM-73]
(a) Doubling of all inputs used leads to doubling of the output.
(b) Increasing the inputs by 50% leads to a 25% increase in output.
(c) Increasing inputs by 1/4 leads to an increase in output of 1/3.
(d) None of the above.

Q.110. Identify the correct statement: [SM-2]
(a) The average product is at its maximum when marginal product is equal to average product.
(b) The law of increasing returns to scale relates to the effect of changes in factor proportions.
(c) Economies of scale arise only because of indivisibilities of factor proportions.
(d) Internal economies of scale can accrue when industry expands beyond optimum.

Q.111. In the production of wheat, all of the following are variable factors that are used by the farmer except: [SM-5]
(a) The seed and fertilizer used when the crop is planted.
(b) The field that has been cleared of trees and in which the crop is planted.
(c) The tractor used by the farmer in planting and cultivating not only wheat but also corn and barley.
(d) The number of hours that the farmer spends in cultivating the wheat fields.

Q.112. The marginal product of a variable input is best described as: [SM-6]
(a) Total product divided by the number of units of variable input.
(b) The additional output resulting from a one unit increase in the variable input.
(c) The additional output resulting from a one unit increase in both the variable and fixed inputs.
(d) The ratio of the amount of the variable input that is being used to the amount of the fixed input that is being used.

Q.113. The short run, as economists use the phrase, is characterized by: [SM-8]

(a) At least one fixed factor of production and firms neither leaving nor entering the industry.
(b) Generally a period which is shorter than one year.
(c) All factors of production are fixed and no variable inputs.
(d) All inputs are variable and production is done in less than one year.

Q.114. The marginal, average, and total product curves encountered by the firm producing in the short run exhibit all of the following relationships except: [SM-9]
(a) When total product is rising, average and marginal product may be either rising or falling.
(b) When marginal product is negative, total product and average product are falling.
(c) When average product is at a maximum, marginal product equals average product, and total product is rising.
(d) When marginal product is at a maximum, average product equals marginal product, and total product is rising.

Q.115. Which of the following is the best definition of "production function"? [SM-11]
(a) The relationship between market price and quantity supplied.
(b) The relationship between the firm's total revenue and the cost of production.
(c) The relationship between the quantities of inputs needed to produce a given level of output.
(d) The relationship between the quantity of inputs and the firm's marginal cost of production.

Q.116. Diminishing returns occur: [SM-13]
(a) When units of a variable input are added to a fixed input and total product falls.
(b) When units of a variable input are added to a fixed input and marginal product falls.
(c) When the size of the plant is increased in the long run.
(d) When the quantity of the fixed input is increased and returns to the variable input falls.

Q.117. Which of the following statements is true? [SM-43]
(a) The services of a doctor are considered production.
(b) Man can create matter.
(c) The services of a housewife are considered production.
(d) When a man creates a table, he creates matter.

Q.118. Which of the following is a function of an entrepreneur? [SM-44]
(a) Initiating a business enterprise. (b) Risk bearing.
(c) Innovating. (d) All of the above.

Q.119. If decreasing returns to scale are present, then if all inputs are increased by 10% then: [SM-46]

(a) Output will also decrease by 10%. (b) Output will increase by 10%.
(c) Output will increase by less than 10%. (d) Output will increase by more than 10%.

Q.120. The production function is a relationship between a given combination of inputs and: [SM-47]
(a) Another combination that yields the same output.
(b) The highest resulting output.
(c) The increase in output generated by one-unit increase in one output.
(d) All levels of output that can be generated by those inputs.

Q.121. The average product of labour is maximized when marginal product of labour: [SM-49]
(a) Equals the average product of labour. (B) equals zero.
(c) Is maximized. (d) None of the above.

Q.122. The law of variable proportions is drawn under all of the assumptions mentioned below except the assumption that: [SM-50]
(a) The technology is changing.
(b) There must be some inputs whose quantity is kept fixed.
(c) We consider only physical inputs and not economically profitability in monetary terms.
(d) The technology is given and stable.

Q.123. What is a production function? [SM-51]
(a) Technical relationship between physical inputs and physical output.
(b) Relationship between fixed factors of production and variable factors of production.
(c) Relationship between a factor of production and the utility created by it.
(d) Relationship between quantity of output produced and time taken to produce the output.

Q.124. Economies of scale exist because as a firm increases its size in the long run: [SM-54]
(a) Labour and management can specialize in their activities more.
(b) As a larger input buyer, the firm can get finance at lower cost and purchase inputs at a lower per unit cost.
(c) The firm can afford to employ more sophisticated technology in production.
(d) All of these.

Q.125. The production process described below exhibits[SM-56]

Number of Workers	Output
0	0
1	23
2	40
3	50

(a) Constant marginal product of labour.
(b) Diminishing marginal product of labour.
(c) Increasing return to scale.
(d) Increasing marginal product of labour.

Q.126. Suppose the first four units of a variable input generate corresponding total outputs of 200, 350, 450, and 500. The marginal product of the third unit of input is: [SM-64]
(a) 50 (b) 100 (c) 150 (d) 200

Q.127. Diminishing marginal returns for the first four units of a variable input is exhibited by the total product sequence: [SM-66]

(a) 50, 50, 50, 50
(b) 50, 110, 180, 260
(c) 50, 100, 150, 200
(d) 50, 90, 120, 140

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ANSWER																			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
b	c	d	a	b	c	d	b	a	a	d	a	b	b	a	b	d	c	b	c
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
a	b	c	a	b	d	c	c	d	d	d	b	c	d	b	b	b	b	d	b
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
c	a	c	c	c	d	a	a	d	b	a	a	c	c	a	b	b	a	b	b
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
b	b	b	b	c	d	d	c	a	b	d	a	d	b	d	d	d	b	a	b
81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
b	a	a	d	c	c	a	b	b	c	d	c	c	b	b	a	b	c	c	c
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
c	b	b	b	d	b	d	c	c	a	b	b	a	d	c	b	a	d	c	b
121	122	123	124	125	126	127													
a	a	a	d	b	b	d													

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TOTAL MARKS : ———

1	A	B	C	D		41	A	B	C	D		81	A	B	C	D		116	A	B	C	D	
2	A	B	C	D		42	A	B	C	D		82	A	B	C	D		117	A	B	C	D	
3	A	B	C	D		43	A	B	C	D		83	A	B	C	D		118	A	B	C	D	
4	A	B	C	D		44	A	B	C	D		84	A	B	C	D		119	A	B	C	D	
5	A	B	C	D		45	A	B	C	D		85	A	B	C	D		120	A	B	C	D	
6	A	B	C	D		46	A	B	C	D		86	A	B	C	D		121	A	B	C	D	
7	A	B	C	D		47	A	B	C	D		87	A	B	C	D		122	A	B	C	D	
8	A	B	C	D		48	A	B	C	D		88	A	B	C	D		123	A	B	C	D	
9	A	B	C	D		49	A	B	C	D		89	A	B	C	D		124	A	B	C	D	
10	A	B	C	D		50	A	B	C	D		90	A	B	C	D		125	A	B	C	D	
11	A	B	C	D		51	A	B	C	D		91	A	B	C	D		126	A	B	C	D	
12	A	B	C	D		52	A	B	C	D		92	A	B	C	D		127	A	B	C	D	
13	A	B	C	D		53	A	B	C	D		93	A	B	C	D		128	A	B	C	D	
14	A	B	C	D		54	A	B	C	D		94	A	B	C	D		129	A	B	C	D	
15	A	B	C	D		55	A	B	C	D		95	A	B	C	D		130	A	B	C	D	
16	A	B	C	D		56	A	B	C	D		96	A	B	C	D		131	A	B	C	D	
17	A	B	C	D		57	A	B	C	D		97	A	B	C	D		132	A	B	C	D	
18	A	B	C	D		58	A	B	C	D		98	A	B	C	D		133	A	B	C	D	
19	A	B	C	D		59	A	B	C	D		99	A	B	C	D		134	A	B	C	D	
20	A	B	C	D		60	A	B	C	D		100	A	B	C	D		135	A	B	C	D	
21	A	B	C	D		61	A	B	C	D		101	A	B	C	D		136	A	B	C	D	
22	A	B	C	D		62	A	B	C	D		102	A	B	C	D		137	A	B	C	D	
23	A	B	C	D		63	A	B	C	D		103	A	B	C	D		138	A	B	C	D	
24	A	B	C	D		64	A	B	C	D		104	A	B	C	D		139	A	B	C	D	
25	A	B	C	D		65	A	B	C	D		105	A	B	C	D		140	A	B	C	D	
26	A	B	C	D		66	A	B	C	D		106	A	B	C	D		141	A	B	C	D	
27	A	B	C	D		67	A	B	C	D		107	A	B	C	D		142	A	B	C	D	
28	A	B	C	D		68	A	B	C	D		108	A	B	C	D		143	A	B	C	D	
29	A	B	C	D		69	A	B	C	D		109	A	B	C	D		144	A	B	C	D	
30	A	B	C	D		70	A	B	C	D		110	A	B	C	D		145	A	B	C	D	
31	A	B	C	D		71	A	B	C	D		111	A	B	C	D		146	A	B	C	D	
32	A	B	C	D		72	A	B	C	D		112	A	B	C	D		147	A	B	C	D	
33	A	B	C	D		73	A	B	C	D		113	A	B	C	D		148	A	B	C	D	
34	A	B	C	D		74	A	B	C	D		114	A	B	C	D		149	A	B	C	D	
35	A	B	C	D		75	A	B	C	D		115	A	B	C	D		150	A	B	C	D	
36	A	B	C	D		76	A	B	C	D													
37	A	B	C	D		77	A	B	C	D													
38	A	B	C	D		78	A	B	C	D													
39	A	B	C	D		79	A	B	C	D													
40	A	B	C	D		80	A	B	C	D													

Max. Marks	Min. Marks	Right Ans.	Wrong Ans.	Blank Que.	Neg. Marks	Obt. Marks	Sub. Wise P/F