1. (a) Suggest measures for global population control

10

According to UNDP report on world population, the global population reached 7.1 bn in 2015 & is expected to reach about 9 bn in 2050.

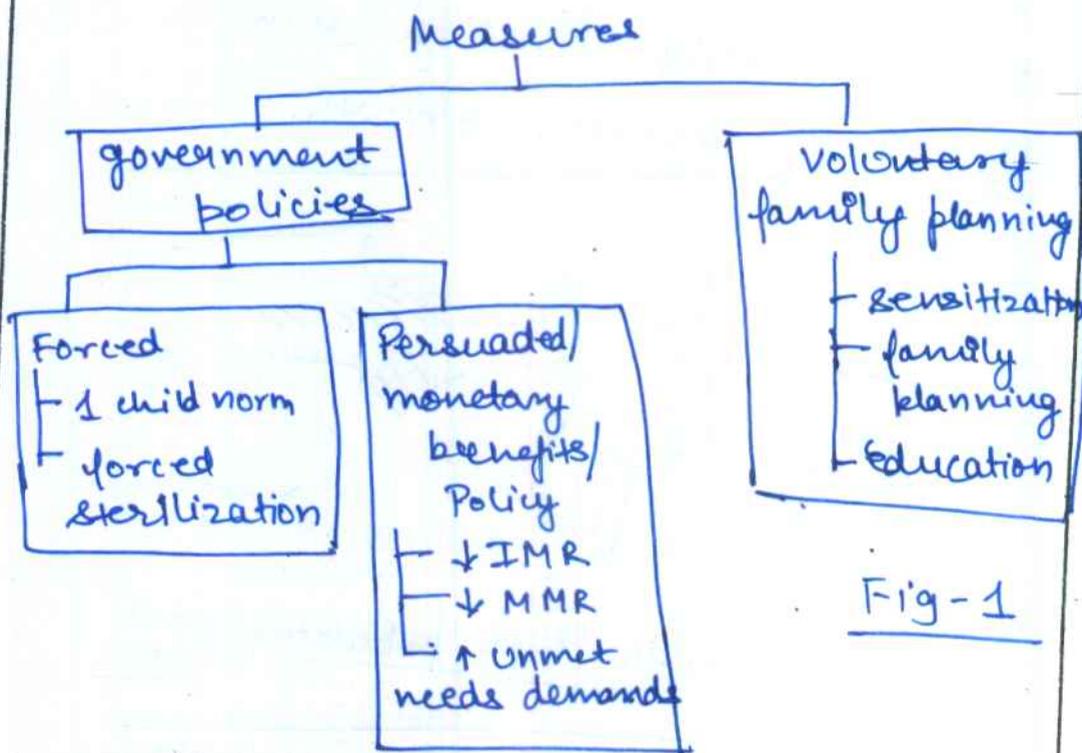Measures for global population control can be divided as follows:-

Fig - 1

1 child norm adopted by china (recently withdrawn) decreased TFR successfully to 1.4 but now population is increasingly old & unsustainable.

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Forced sterilization was adopted in Balkans & India & it is not a popular method.

Policy based action involves decreasing IMR & MMR which are responsible for high growth rate as per India's Population policy & world population report. Similarly meeting unmet needs will counter growth.

Fig -2

/// : Regions with high population growth rate
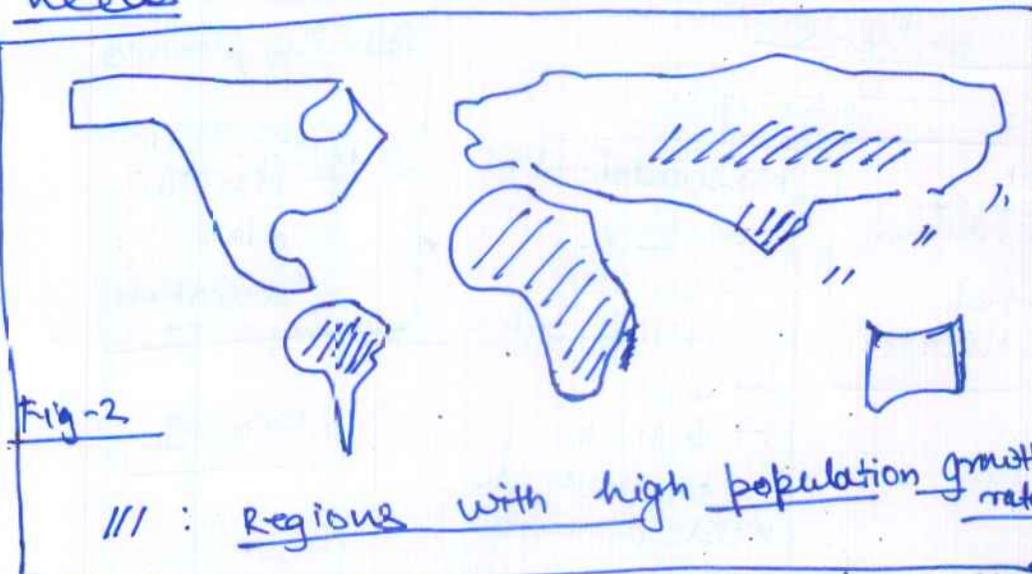
Voluntary measures like family sensitization, family planning, education have been successful in western nations to decrease population growth rates to TFR about 1.7, 1.8.

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anything this
margin
(इस भाग में
कुछ ना लिखें)

1. (b) Major causes of regional imbalances

10

Regional imbalances are unequal access to benefits & resources in a particular country or a region.

Fig - 3
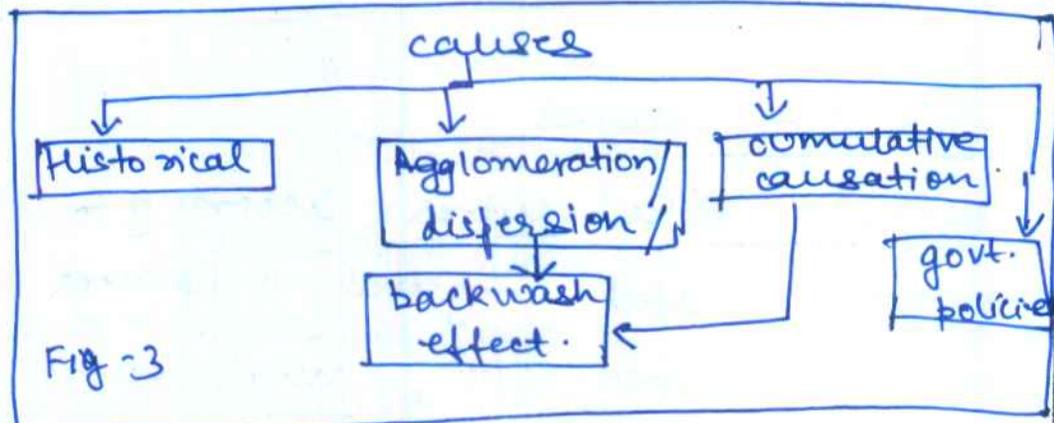
Historical reasons

Some reasons are early starters & hence led Industrial development Ex U.S, U.K. These are more developed than African / Asian region

Agglomeration / Dispersion

Some regions acquire all benefits as they grew along & hence initiate regional imbalances [ex N.E England states of U.S.A].

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Cumulative causation theory of Gunnar Myrdal explains backwash effect by which a region 'sucks up" development from nearby region. ex Paris.

Government Policies

① Growth Poles/centres according to Coragio created regional imbalances ex: Paris - desert effect, imbalances in India post IInd FYP.

② Design of deliberate imbalances promoted by developmental theories based on invisible hand of adam smith. ex in African sub-Saharan regions.

Hence there are different reasons for regional imbalances
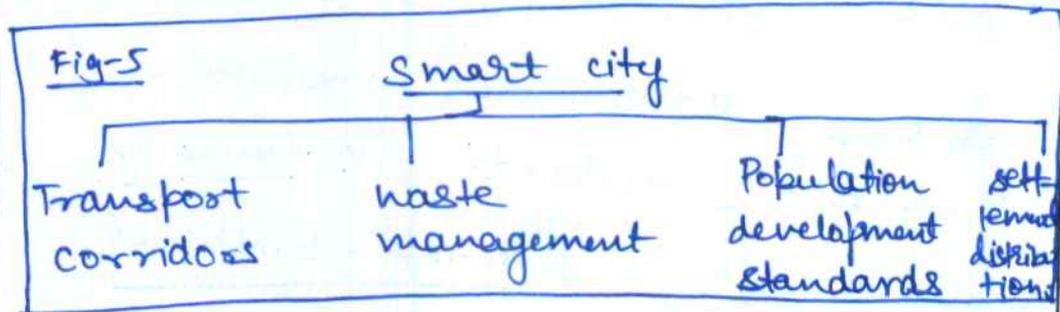

Fig-4

Bottom 20% earn less than 3%.

/// : High imbalances.

developed some imbalance

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1. (c) Concept of smart cities

10

Smart city concept is a geographical- sociological concept. Geographically it deals with :-

Fig-5   Smart city

Transport corridors	waste management	Population development standards	settlement distribution

Settlement Distribution :-

It shall reflect high standards. ex : stockholm where settlement planning is model for others to follow. It lacks social- segration patterns & morphology represents 21st century needs. connectivities with metropolis, dormitory towns etc.

Transport corridors :-

Along with RRTS, corridors & seamless transport involving

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monorails, metros etc feature in Zeurich & Paris making them smart cities. India is also focussing on Metro rails etc.

Population : standard of living

singapore government maintains high urban standards in housing, infrastructure, forward - backward linkages in different sectors leading to high quality of living. [collaboration with India].

waste management, security, tourism sustainability, jobs for all etc are

other dimensions.

Fig - 6

Prospects

/// smart city regions

Hence country like India, aspiring to form smart cities shall take tearning from them.

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1. **(d)** Give in brief a development strategy for Desert regions.

10

Desert regions of world are largely divided under <u>cold</u> & <u>hot deserts</u>. Development planning in <u>Hot deserts</u> is of particular interest as these are <u>inhabited regions</u> of <u>world</u> [ex <u>tropicals</u>].

<u>Strategy for development</u> :-

① Development of <u>growth poles</u> & <u>growth centres</u> which suit the local <u>resource utilization</u> (minerals) & generate employment for <u>local</u> <u>populations</u>. Ex. Millets based agriculture & agro industries in plateau interiors of India.

② <u>Connectivity</u> with mainland should be improved example Gobi desert & <u>simpson</u> desert, <u>Perth</u> region of <u>Australia</u> are

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well linked to mainland regions.

(3) Decreasing Imbalances

By adopting α J β convergences,
increasing participation in
development, making transport
corridors etc

(4) Promoting settlements

various land rehab measures
like sand dune stabalization
(By causering grass etc) shall
be done (as in Thar desert) to
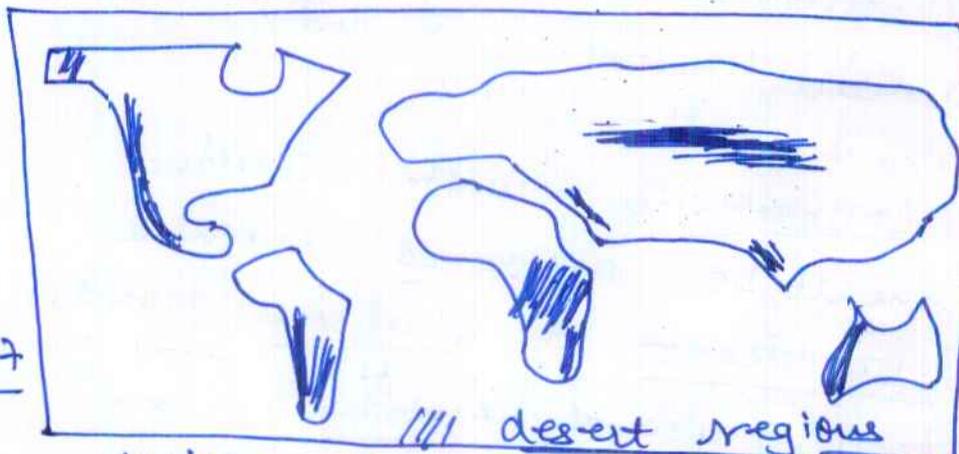promote settlements (wet point)
to lead development etc.

Fig—7

//// desert regions

Hence various strategies lead to development

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1.   (e) The role of 'buffer States' in geopolitics.   10

Buffer states are states between two politically rival nations that have potential to be at skirmishes with each other.

Role in geopolitics :-

① Maintenance of "buffer" for peace

example E. germany was a buffer state between earstwhile west germany & soviet & prevented a direct war.

② Brinkmanship

It plays role of keeping states on their toes as neither would want other to gain hold of the buffer state. ex Ukraine as buffer state between west & Russia.
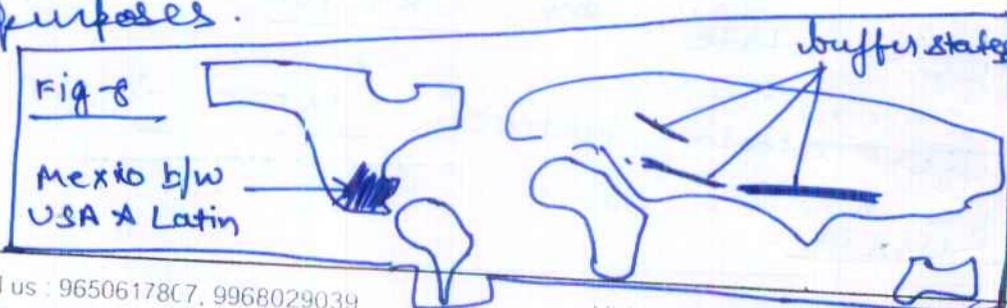
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(3) cultural regions

Iraq is example of state that seperates culturally different Iran and saudi. This serves as a **cultural seperator** & **avoids direct tussle** of different cultural religional ideologies.

(4) use by other nations

For vested interests buffer states have been used by others for their strategic interest. EX: **Afghanistan** was buffer between **Russia & Britain** & used to good effect by **U.S.A** for its vested interests. other buffer states like Tibet/Nepal (between India-china) serve same purposes.

Fig-8
Mexico b/w
USA & Latin
buffer states

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2. (a) Discuss how the concepts of over, optimum and under population are related to a region's resource potential. 15

The population concentration index (C.I) is defined as ratio between ~~average~~ actual density of area/region to average density of state/country.
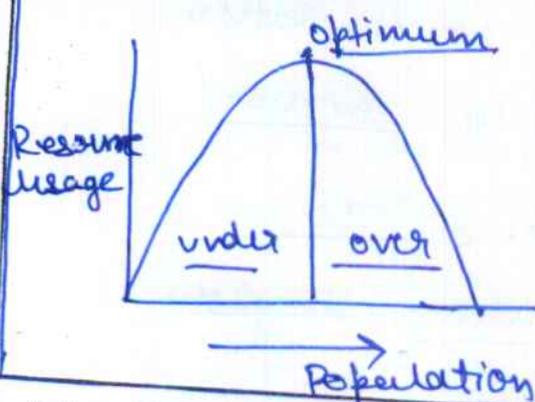
If $C.I > 1.5 \rightarrow$ over population

If $C.I = 0.5 - 1.5 \rightarrow$ optimum population

If $C.I < 0.5 \rightarrow$ under population

Fig-9

overpopulation, under population & optimum relation with resource potential :—

- Region with high resource ~~potential~~ has high carrying capacity & hence attracts more population [agglomeration, backwash]. This leads to high concentration index & consequentally higher/ over population. Ex: China's Pearl river agglomeration [Hongkong,

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Macao, Guangzhou] has high resource potential in form of fisheries, minerals, tourism & hence island regions are over-populated w.r.t carrying capacity.

- Regions with poor carrying capacity are generally adverse regions due to physical barriers like lack of resources. Still thinly populated region can be over populated if population is still above capacity. That under population in China's Gobi desert & over - population in India's Thar are examples.

This curve depicts relation of resource use to concentration index. Hence it can be seen

Fig - 10

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that optimum population is that level where resource usage is at it's optimal best. This leads to optimal economic levels, also reflected by Pareto optimality of D. Smith as
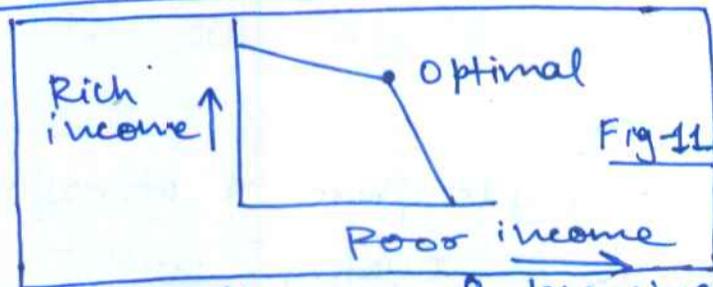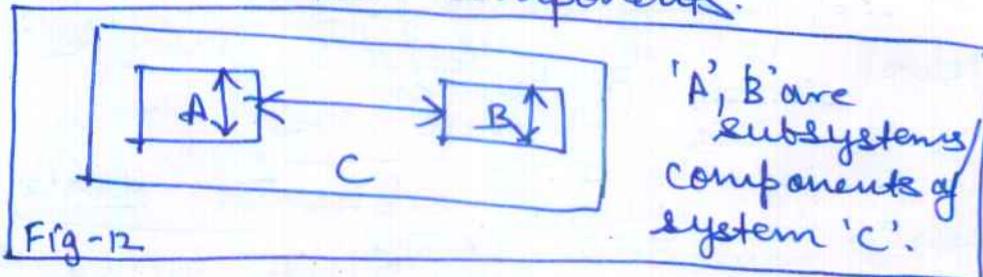

Hence concepts are intertwined with region's resource potential.

2. (b) Analyse the importance of System's analysis in human geography. 20

System Analysis in geography existed since long but was institutionalized by Berry & chorley using principle of cybernetics & Bertalanffy's General System Theory.

According to them, a system is a whole which functions as such due to interconnectedness

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between it's components.

'A', 'B' are subsystems/ components of system 'C'.

Fig-12

Various geographical principles can be explained by system analysis:-

① Ecosystem

Lithosphere, Hydrosphere & atmosphere function as a _system_ with inter connected between them & form biosphere


lithos   atmos   Fig-13

Hydro   Biosphere.
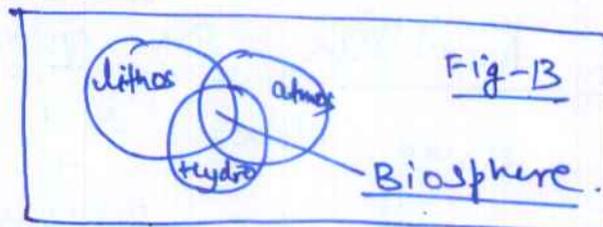
System analysis explains complex relations between the components.

② Food chain- Food web

System analysis can be used to study integral parts, keystone

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Species etc In separate & lead to logical conclusions by Integrating them as subsystems under larger system.

(3) understanding relationships between components :-

simple relation

parallel relation

simple-compound relation

complex compound

feedback

Fig-14
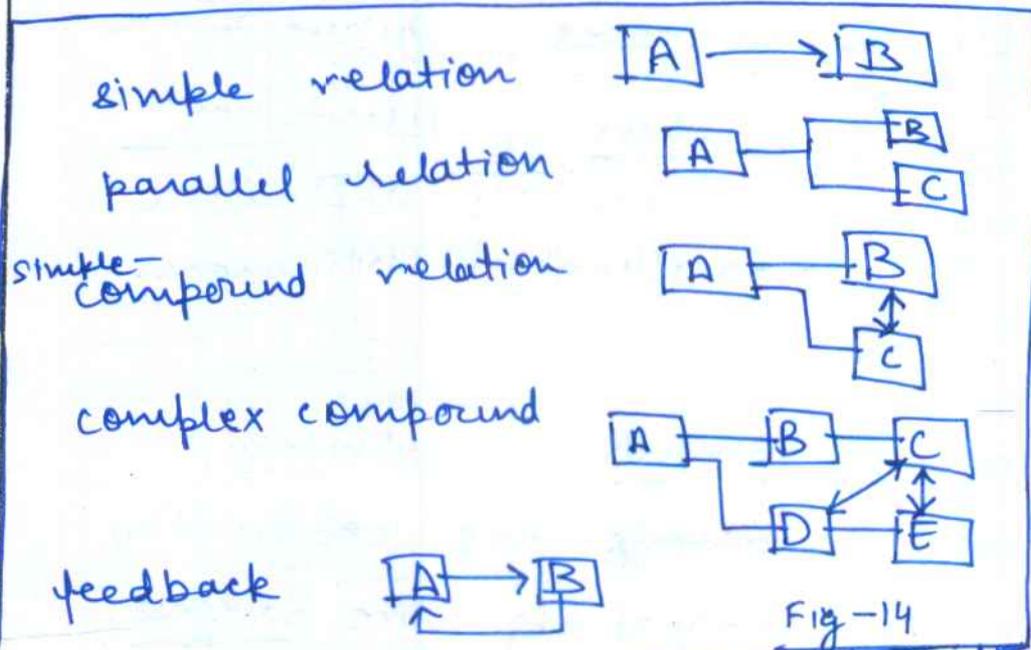
These relations can be applied over different geographical concepts like climatology, landform evolution, ocean crust development etc to understand varying processes as subsystems & systems.

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Benefits of using system analysis
are that it helps in model
making, theory building, understand
different cause-effect dimesions.

At the same time challenges
like ignoring complexities, over-
simplifying processes, failure to give
theories elsewhere, quantification's
problems etc hinder it's application
for geographical phenomenons.

2. (c) What role does the hierarchy of urban settlements play in population
distribution in a country. Discuss with respect to different parts of the
world.
                                                                          15

Urban settlements morphology,
types & patterns are explained by
different geographers like Burgess,
Hoyt etc.

Urban settlement hierarchy deals
with different settlements like
towns, cities, metro cities,
megacity, agglomeration,

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conurbations, metropolitan regions apart more recent concepts like smart city, transport - corridors based city expansions etc

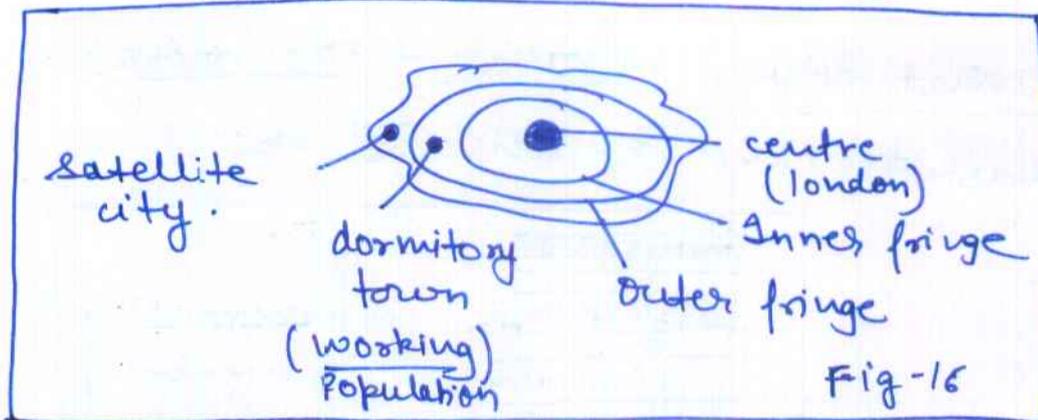increasing hierarchy levels.
Fig 15
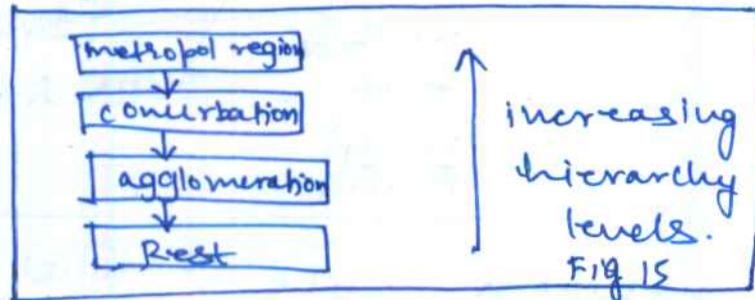
Role in population distribution :-

• Towns are census towns / statutory towns as in India and divided into levels like Tier 1 (> lakh population), tier 2 (1 lakh - 50000) and so on till tier 6 (< 5000 population). Hence these largely have lower populations. A lead in rural → urban migration.

• Agglomerations or town outgrowth as in UK, Australia are country side towns (ex Hemel near London).

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These house dormitory towns & support working populations

Satellite city.

dormitory town (working) Population

centre (london)

Inner fringe

Outer fringe

Fig-16

Conurbations like Bowash in USA, horseshoe of canada, Pearl river delta of China etc support more than 40% populations of respective regions [especially in Canada, Japan] (Honshu)

Metropolitan regions like NCR of India spreads across 5-6 states & supports huge population chunk & leads immigration due urbanization.

Hence different hierarchies have led to population distribution across the world with Top10 populous cities spread across globe including Tokyo, Delhi etc

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3. (a) Discuss how demographic attributes present the real picture of socio-economic development of a region. 15

Demographic attributes of a region deal with population related Indicators like sex ratio, IMR, MMR, U5MR, age-structure, disease indices (Aids, malaria), work-dependency, expectancy of life etc

① sex ratio

It is 986 for world. Above 1000 for latin america, Russia, North America while 926 for china, 940 for India etc. This shows lack of women empowerment in region & hence poor socio-economic development. [differs to growth]

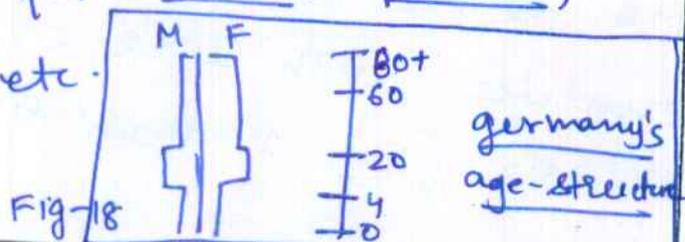② IMR/MMR

IMR target under MDGs was 28. countries with IMR < 28 are S/E/ asia [13], western Europe [15],

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North America , Japan etc. while India (42), Pakistan (56), African nations (>50) are poor in socio-economic development leading to poor health standards & consequential high IMR, MMR, U5MR, malnourishment stunting etc.

Fig - 17   \\\\ LDCs
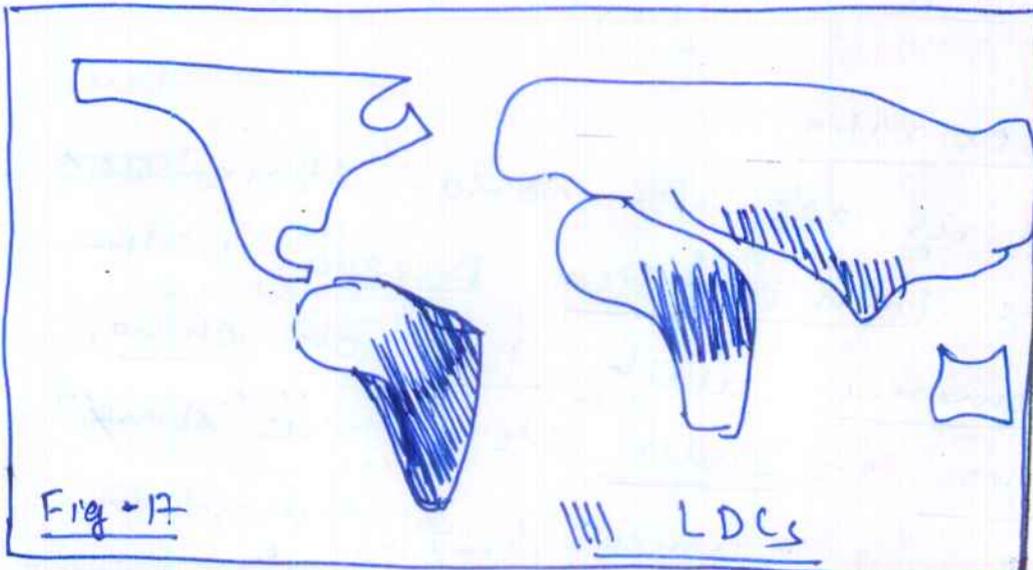
Age structure due to high TFRs is disbalanced for Africa while because of levels less than 2.4 is narrow for china, france, germany etc.

Fig-18   germany's age-structure

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This shows presence of effective family planning in western nations attributed to education & better socio-economic development.

Similarly disease indices like 16% increase in AIDS over last decade in Africa show that LDCs (least developing nations) are poor w.r.t socio-economic development. This is reflected by Demographic transition Models for them:

3. (b) Elaborate Von thunen's Model and its usefulness in present day world.

Von-thunen gave economic model where in he was analyzing this estate (isolated estate) for crop pattern & cropping intensities.

This became quantification model for agricultural locations in geography.

Assumptions:- ① Ideal estate, isolated estate with physical barrier.

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② 1 market centre

③ Isotropic surface [no fertility differences]

④ Perfect-market [no decrease in prices]

⑤ Rational- economic man.

⑥ cost of transportation ~~depends~~ only factor is deciding locational rent.

Theory:-

As surface is an Isotropic one, cost of land / transportation decreases away from the single-perfect market centre, equally in all directions leading to concentric zonations.

High value crops are grown in the regions near market to yield highest profit (Rational economic man, pre- behavioural model).

Profit = PY − CY − Ytd (Profit/yield − cost/xyield = yieldxcost/yieldxyield)

Hence crop pattern & intensity are

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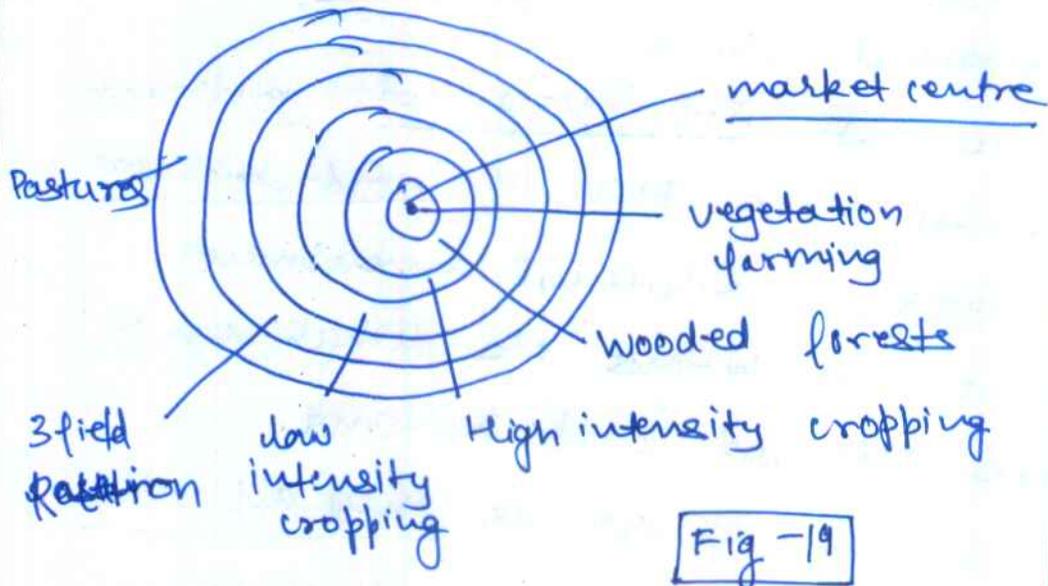Page 22 of 45

reflected in following diagram:—

Fig - 19

Analysis :-

① It is idealistic, normative model & not applicable universally

② Based on Locational rent rather than economic rent.

③ Ethnocentric, descriptive, least-cost theory assuming passive role of man.

Present Day usefullness :-

① Distance still matters example in India due to poor transport facilities. But not applied as

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such.

② Applicable in great plains & new england states.

③ He has <u>not recognized</u> government policies like <u>HYV</u>, <u>forward-backward linkages</u>, institutional developments, export orientations etc which can & have changed crop patterns.

④ Thus the model is <u>only applicable</u> <u>in spirit</u> & <u>not letter</u> which is reflected in lack of <u>concentric zonation</u> & strict pattern/intensity <u>norms</u>.

3. (c) Discuss religions' role from geographic perspective.   15

Religions <u>of world</u> have <u>evolved</u> & had geographic roles to play since ages.
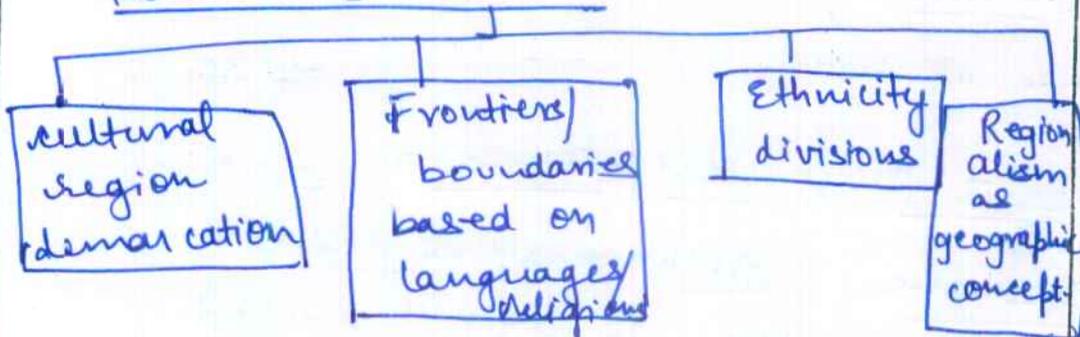
<u>Role in geography :-</u>

Fig - 20

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- Cultural regions of world are divided on religion's basis as Islamic region, Christian region, Buddhist, Hindu etc

/// Protestants

Hindu region
Muslim region
Catholic romans
Other christans + Indegenous
Buddhists + others
Orthodox christans + others.

Fig-21

Frontiers & boundaries based on religion like India, Pakistan - Bangladesh partition, Basque region of spain etc.

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Ethnic divisions due to religious diversities example In India, gurumukhi- sikh ethnicity, urdu- muslim, Hindi-Hindu etc.

Regionalism as geographic concept can be attributed to not only region & linguistic phenomenon but also to religion ex Shia vs sunni regionalism between Iran & Saudi.

Religions also serve as integrating role by formation of pluralistic societies, cultural assimilations etc which preserve geographic integrity & unity of nations like U.S.A, U.K, India etc.

Hence religion has vast role as geographic perspective.

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4. (a) Briefly explaining, compare the Central Place theories of Christaller and Losch.

25

Central place theory of Christaller & Losch are arrangements in urban settlements with aim to solve conundrum of efficient spacing, hierarchy & profit maximisation for buyers- sellers both.

comparisons :-

① christaller's is a top down model as he first plots the highest central order & than lower orders while Losch's is model of bottom-up.

② christallers lacks specialization of functions as every higher order performs tasks of lower order while Losch basis settlement on specialization.

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③ christaller calls for <u>hexagonal</u>, <u>isotropic</u>, <u>evenly spaced</u> settlements central places to ensure <u>perfect market</u> while Losch draws circular pattern, having <u>6 sectors</u> each for rich & poor that are not evenly spaced & based on <u>revenue-maximisation</u> due to <u>maximising local production</u>.
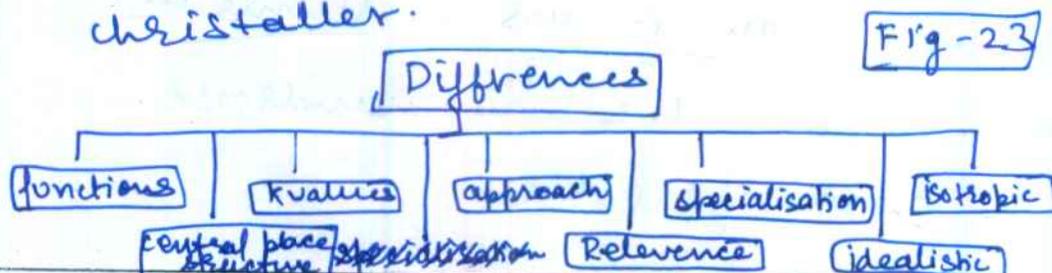

christaller's central place

Loshs' landscape.

‖ rich class.
□ poor class.

Fig-22
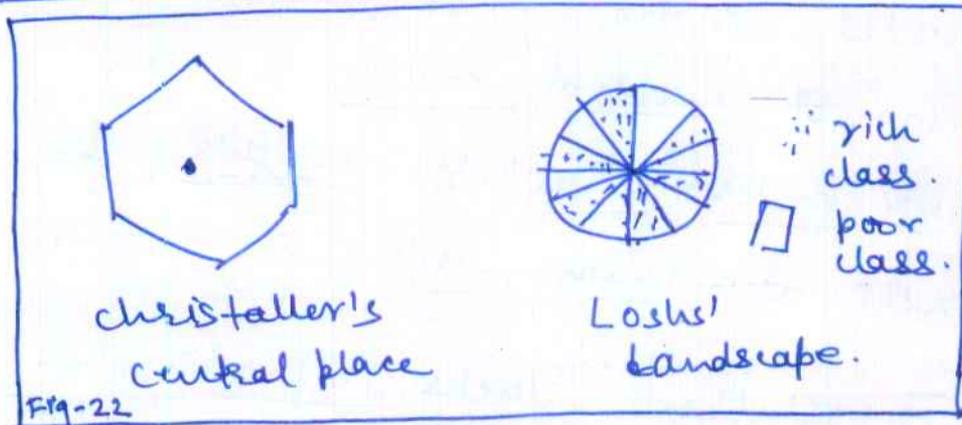
④ <u>christaller considers only 3 functions</u> namely transport, marketing & administration while Losch considers 150 functions and more <u>K values</u>, <u>continuous</u>,

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K values unlike christaller's discrete K values.

⑤ Hence Losch represents more of Rank size rule unlike christaller's arrangement.

⑥ Losch's arrangement is hence less normative, less ideal, less isotropic surface & hence more applicable tool for urban planning etc.

⑦ Agglomeration & dispersion are ~~better~~ reflected in Losch's model leading to revenue maximization rather than being simply a least cost theory like that of christaller.

Fig-23

```
                    ┌─────────────┐
                    │  Differences │
                    └─────────────┘
         ┌──────────┬──────┼───────────┬──────────────┐
  ┌───────────┐ ┌────────┐ ┌─────────┐ ┌───────────────┐ ┌──────────┐
  │ functions │ │ Kvalues│ │approach │ │ specialisation│ │ Isotropic│
  └───────────┘ └────────┘ └─────────┘ └───────────────┘ └──────────┘
  ┌──────────────┐ ┌──────────────┐ ┌──────────┐ ┌───────────┐
  │central place │ │              │ │ Relevence│ │ idealistic│
  │ structure    │ │              │ └──────────┘ └───────────┘
  └──────────────┘ └──────────────┘
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⑧ Losch recognizes that ideal settlements can not exist in real life & hence does not assumes a same shape across settlements.

Hence both models present different assumptions & theories & Losch's model is more applicable which can be seen in ~~their~~ given examples :-

① Christaller model has near-administrative <u>hierarchy</u> Similarity with India. Real : 6, <u>Prescribed : 7</u>

② But it has poor <u>administrative</u> <u>spacing</u> <u>ratio mismatch</u>.

③ Existence of <u>old</u> & new <u>settlements</u>, <u>rural urban fringes</u>, <u>slums</u> etc prove that loschian landscape is more applicable.

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4. (b) Examine the major streams of migration from the various Asian regions and there overall effect

15

Migration is not just temporary travel or transhumance but a relatively settlement in area different than that of residence or birth.

Asian Migrations :-

- Slave trade / indentured labour Indians & chinese were taken to Africa, Spain, U.S, U.K as indentured labourers. This led to racial mixing., forced labours, exploitation of labourers, social-segregation etc.
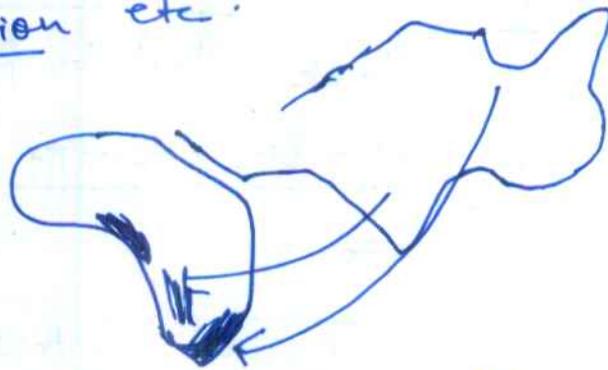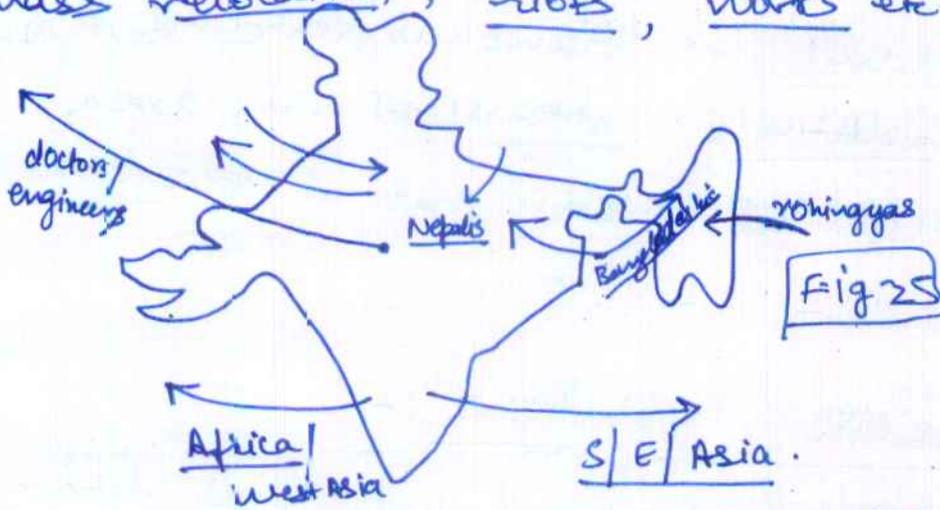

Fig-24

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- Post <u>partition</u> of India : migration <u>to & from</u> <u>pakistan</u>. <u>This</u> led to mass <u>relocation</u>, <u>riots</u>, <u>wars</u> etc.

Fig 25

- Post <u>Bangladesh</u> freedom, migration of Bangladeshi to India. Led to <u>ethnic</u> <u>conflicts</u> in <u>north east</u> & <u>west Bengal</u>.

- Migration of Indians to <u>S/E/Asia</u>, <u>west asia</u> from <u>southern India</u> in search of work led to poor <u>dependency</u> ratio in country, increased <u>sex ratio</u> etc.

- Migration of <u>Indian doctors</u>, engineers, <u>Chinese migrants</u> to US, UK etc

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in search of better opportunities.

Recent <u>conflict zone migrations</u> of <u>Afghanistanis</u>, <u>pakistanis</u> to <u>Europe</u> is leading to <u>population pressures</u> their A consequential lack of support.

These A others like <u>Tamil migrants</u>, <u>Kashmiri Pandits</u>, <u>Rohingya Muslims</u> etc present challenges in both source A destination nations.

4. (c) What are the major environmental issues in regional planning in tropical regions of the world.

10

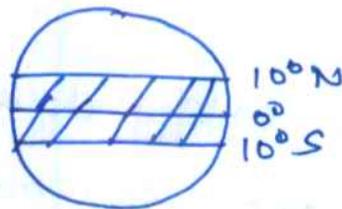Tropical regions of world spread from <u>10°N</u> to <u>10°S</u> of equator.

10°N
0°
10°S

Fig-26

Major environmental issues in regional planning are :-

① <u>Desert development</u> In tropical

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hot deserts like Atacama desert of Peru, Thar desert (India) etc. These challenges range from sand-dune stabilization to creation & sustenance of growth poles that suit the region. [Neo determinism shall be followed]

(2) Climate management is cause & effect of development measures Hence need is to follow ecosystem management system & prevent emissions that are particularly high in developing regions of tropics like India, Brazil etc

(3) Deforestation, exploitation of fisheries etc are environmental challenges in regional-resource development in Brazil, Myanmar (80% deforested), India etc. [This is in line with cultural determinism.]

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(4) Sea routes management along with preventing global warming effects on island nations of region like singapore, malaysia etc.

Fig 27

/ fisheries
● deforestation
/// tropics.

Hence various regions have different challenges.

5. (a) Characteristics of Rural-Urban Fringe and development potential   10

Rural - urban fringe is transition area between rural & urban areas with mixed characteristics like :-

① urban land use alongwith rural use { ex Pushta, delhi)

② low-intensive land use, single storeyed houses, haphazard development, lack of

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planning, no building gradation

(3) Existence of new & old structures together.

(4) The fringe areas lack proper governmental regulations & hence have private squatters, land spread development, strip malls etc leading to eventual regulations

Fig 28

- Urban area
- URF
- Rural area.
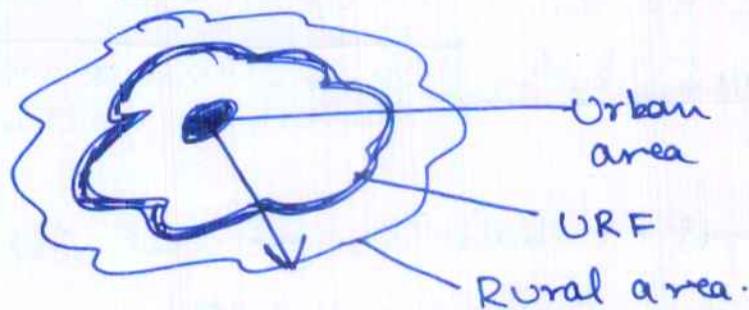
Development potential in region :-

① It can be developed to counter sub-urbanization & over-urbanization by developing dormitory towns & hence regulating migration ex ghaziabad.

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(2) It can be developed to provide urban amenities in rural areas to convert them to countrysides like Hemel region of London.

(3) Potential is also high in construction sector by taking in labourers. ex in Brazil, Mexico.

Hence URFs present various developmental prospects but challenges like crime, slums formation etc.

5.   (b) Concept of Primate City

10

concept of Primate city was given by Mark Jefferson when he studied 51 countries of europe & found that 29 of those have a Primate city.

He defines it as city having major chunk of region's population. [ex Tokyo has 29% of Japan's population making it a primate city].

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Jefferson listed examples like Monteivedo, Uruguay, Birmingham-London etc which have primate cities. (London >4 times greater than Birminghim).

But Jefferson didnt explain reasons which were later given by Gunnar Myrdal & Linsky.

Myrdal explained it under Backwash effect & ~~explana~~ cumulative causation due to which a region grows on expense of nearby region, due to it's resourcefulness.

Linsky gave characteristics of such cities like small size, large population growth, high density etc but claims get

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refuted when concept is
applied to India (that has
atleast four large cities) &
China.

Hence the theory is not
universally applicable though
reflects population distribution
in major world cities.

Primate
cities

Fig
29

5. (c) Demographic Transition theory and its relevance in present world   10
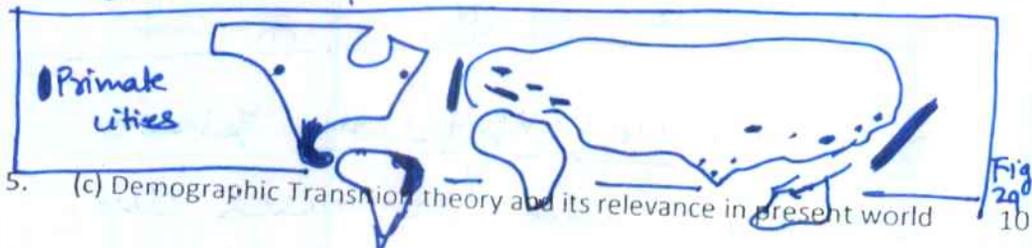
Demographic transition theory is
given by Thompson & Notestein
in context of socio-economic
development of countries according
to the stage of ~~development~~ demography they
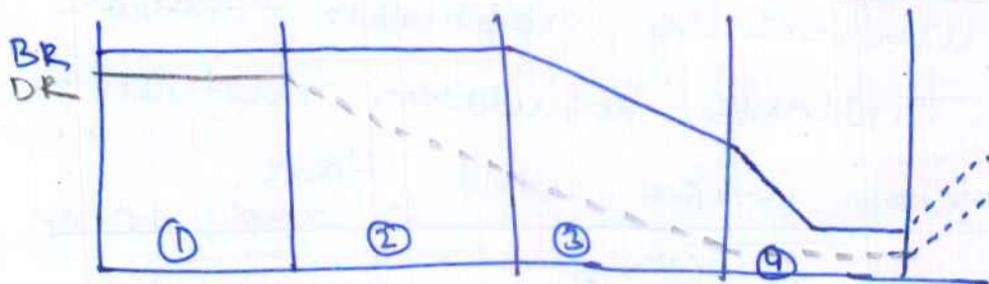are in.

Assumptions : ① Death rate decreases
first

② Birth rate decreases next

③ It traces development of European

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nations.

Theory :—

Stage 1 : primitive stage with
high death rate & birth rate
having agrarian model.

Fig-30

Stage 2 : early expansion phase
where death rate decreases due
to various reasons & birth rate
remains same. This is ~~easty~~ pre
industrial - development phase.

Stage 3 : The industrial development
coincides with late - expansionary
phase where in both Death & Birth
rates decrease.

stage - 4 is last phase of stable
~~population~~ growth due to convergence of death
& birth rates.

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Relevance:-

(A) Later stage 5 was added by scholars to reflect that growth cand be unidirectional & linear. Population growth can increase as in case of conflict zones like Cuba, Iraq & also encounter baby boomer phase. China is also to increase growth again. But theory provides with socio-economic development picture for country like India [3rd phase in 2001].

5. (d) Growth Centres and Growth Poles

10

Growth centre & growth poles are developmental theory models given post world war 2 for economic upliftment etc.

Growth Pole given by Perroux is an economic concept based on Peter schum's assertion that

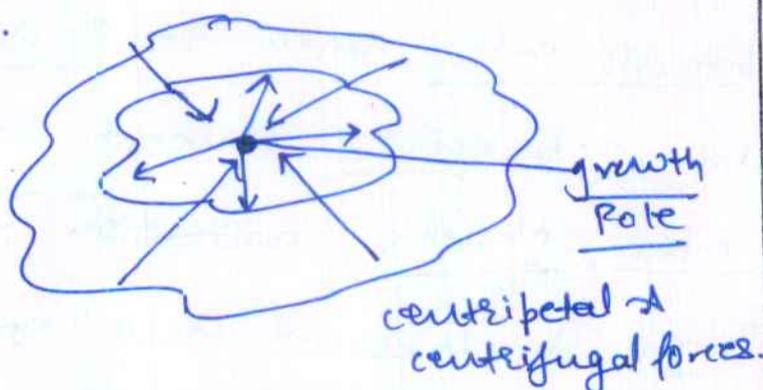" growth does not occur everywhere & all at once but at growth

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poles & emanates from there
into different directions"

growth pole hence as a <u>field of
economic force</u> emanates
centrifugal forces & attracts
centripetal forces leading to
agglomeration & dispersion.

It is applied in <u>new relocation
policies</u>, town planning in
<u>Brazil</u>, <u>Amazon region</u> etc

<u>Boudeville</u> converted pure economic
concept into geographic-locational
concept by providing it spatial
analysis.

Fig-31

growth
Pole

centripetal &
centrifugal forces.

concept was applied by India
in IInd F4P to develop <u>growth</u>

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steel industries in Durg, Bhillai, Raurkella etc.

It suffers from issues like deliberate imbalance, faulted designs (coragio), creation of new poles rather than developing old (India), criteria for poles selection is false (Paris) etc leading to phenomenon called Paris A french desert as Paris has taken all development from vicinity.

5. (e) Contribution of 'Economics of location' in Geographical Models   10

Economics of location in various geographical model relates to distribution of agricultural crop patterns (vonthunen), industries (weber), settlements (christaller & Losch) etc on basis of principles like least cost theories, revenue maximization, locational rent etc.

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Weber model for industrial location :-

It distributes/ locates industries on basis of transportation costs involved in transporting raw materials & finished goods. This takes basis from Material index which is ratio of weight of resource to weight of good. Hence it factors economics of location in industry location.

Vonthunen & christaller also do same in agriculture model (locational rent) & in settlements respectively.

Gunnar's cumulative causation theory aptly explains why certain "economic locations" due to agglomeration & backwash

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corner all benefits.

At same time Hirchmen's model, Rodenstein's balanced development etc also focus on economics of geographical location.

: But it suffers from negatives like rational economic man assumption, reducing him as · dots on maps & overdoing quantification in geography.

Fig-32
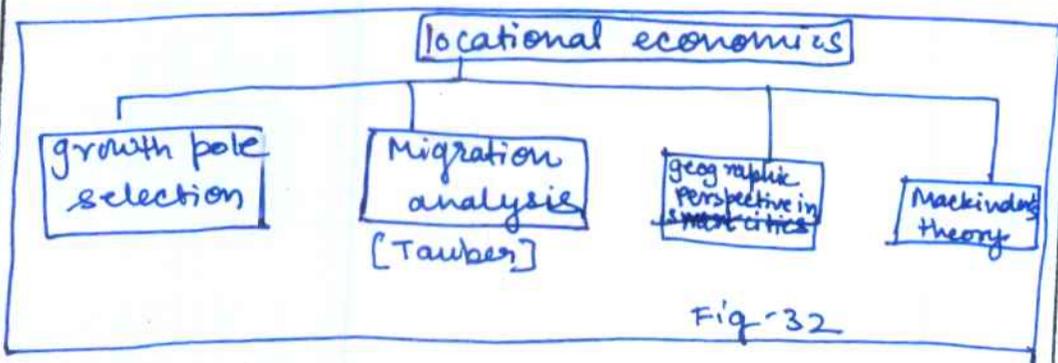
Behavioural geography, human agency & structure etc were ignored for "economic criteria" of location.

Hence it was a paradigm shift in geography.

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