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NORTH MAHARASHTRA UNIVERSITY

JALGAON

Syllabus for

T.Y.B.A.

GEOGRAPHY

w. e. f. June 2009

T.Y.B.A.

(W. e. f. June 2009)

G 3 : Population Geography

OR

G 3 : Geography of Health

S 3 : Geography of Disaster Management

OR

S 3 : Monsoon Asia

S 4 : Practical Geography

NORTH MAHARASHTRA UNIVERSITY JALGAON

Syllabus for T.Y.B.A.- Geography

G3- Population Geography

With effect from – June – 2009

Unit No.	Topic	Sub-Topics	Periods
I	Introduction to Population Geography and Population data	<p>A)Definition, Nature and Scope , Approaches to the study of population geography- systematic, regional, behavioral and system approach</p> <p>B)Population Data</p> <p>C) Needs of population data</p> <p>D)Types of population data- Primary data and secondary data</p> <p>E)Methods and sources of collection of population data:</p> <p>i) Collection of primary data- personal survey, survey by questionnaires, survey by local reports and sample survey.</p> <p>ii) Collection of secondary data- census reports, registration records, national sample survey and international publications with internet.</p> <p>F) Problems related to utilization of population data.</p>	12
II	Distribution and Density of population	<p>A)General distribution of world population: Dense, Medium , Sparse</p> <p>B)Factors affecting the distribution of world population:</p> <p>i) Physical Factors:- Topography, climate, soil, availability of water, location.</p> <p>ii) Cultural/Human Factors:- Religion, family system, industrial, development, transportation, economic development, government policy, political principle, agricultural system.</p>	10

		<p>C)Density of population :- Definition, Types of density of population-</p> <ul style="list-style-type: none"> i) Arithmetic ii) Agricultural iii) Economic iv) Critical 	
III	Population change	<p>A)Meaning and Measurement of Population Changes</p> <p>B)Absolute change, Relative change</p> <p>C)Rate of population growth:-</p> <ul style="list-style-type: none"> i) Arithmetic change ii) Geometric change iii) Exponential change <p>D)Types of population growth:-</p> <ul style="list-style-type: none"> i) Natural growth ii) Actual growth <p>E)Components of population change;-</p> <ul style="list-style-type: none"> i) Fertility ii) Mortality iii) Movement or Migration 	10
IV	Fertility and Mortality	<p>A)Fertility:</p> <ul style="list-style-type: none"> i) Meaning of fertility ii) Measurement of fertility <ul style="list-style-type: none"> a) Crude birth rate b) General fertility rate c) Age specific birth rate d) Total fertility rate e) Reproductive fertility rate iii) Determination of fertility <ul style="list-style-type: none"> a) Biological b) Demographic c) Socio-cultural d) Economic e) Political <p>B)Mortality:</p> <ul style="list-style-type: none"> i) Meaning of mortality ii) Measurement of mortality <ul style="list-style-type: none"> a) Crude death rate b) Infant mortality rate c) Maternal mortality rate d) Age specific mortality rate e) Age and sex specific mortality rate iii) Determinants of mortality <ul style="list-style-type: none"> a) Demographic 	

		<ul style="list-style-type: none"> b) Social c) Economical d) Political e) Physical factors 	
V	Movement or Migration of population	<ul style="list-style-type: none"> A) Definition of Migration B) Forms of migration <ul style="list-style-type: none"> i) Emigration ii) Immigration C) Laws of migration D) Types of migration <ul style="list-style-type: none"> i) Internal ii) International E) Causes and effects of migration 	08
VI	Composition of population	<ul style="list-style-type: none"> A) Biological composition <ul style="list-style-type: none"> i) Age composition <ul style="list-style-type: none"> a) Meaning b) Importance c) Determinants d) Age pyramids e) Age groups f) Age indices ii) Sex composition <ul style="list-style-type: none"> a) Meaning b) Importance c) Determinants of sex composition B) Cultural composition <ul style="list-style-type: none"> i) Religious ii) Literacy iii) Marital status 	08
VII	Population and resource	<ul style="list-style-type: none"> A) Meaning and classification of resources <ul style="list-style-type: none"> i) Natural resources ii) Human resource; Population resource relation iii) Concepts of optimum, over and under population B) Theories of population <ul style="list-style-type: none"> i) Malthusian theory of population ii) Theory of optimum population iii) Demographic transition theory 	10
VIII	Population of India	A) Causes, Problems and Remedies for rapid Population growth in India	10

		<p>B) Population policy meaning, need and aims of Population policy</p> <p>C)Population polices of India</p> <p>i) National population policy- 1976</p> <p>ii) National population policy- 2000</p> <p>D)Population resource regions of India</p> <p>i)Dynamic regions</p> <p>ii)Prospective regions</p> <p>iii)Problematic regions</p>	
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Weightages of Marks

Unit	Marks
I	12
II	10
III	10
IV	12
V	08
VI	08
VII	10
VIII	10
Total Marks	80

Reference Books

1. Geography of population: J. B. Garnier, Longmans, London(1966)
2. Fundamentals of population geography : B. N. Ghosh, Sterling Publication, New Delhi (1985)
3. A Geography of population : Chandana R. C. ,Kalyani publication, New Delhi (1994)
4. Population Geography : Mohammad Izhar Hassan, Rawat publication
5. Principals of population Studies : Bhende and Katarak , Himalaya Publication House Mumbai (1964)
6. Population Geography : Prof. S. A. Kazi, Navaid Shabir Qazi, A.P.H. Publication Corporation, New Delhi (2006)
7. Loksankhya Bhugol (Marathi) : Dr. T.N.Gholap, Nishikant Prakashan ,Pune
8. Loksankhya (Marathi) ; Ahirrao Alizad & etc.
9. Loksankhya Bhugol (Marathi) : Dr. Sawat, Athawale,Mulmude.
10. Loksankhya Bhugol (Marathi) : Patil, Dhake, Prashant Publication Pune.
11. Jansankhya Bhugol(Hindi) : Hira Lal, Vasundhara Prakashan, Gorkhapur

NORTH MAHARASHTRA UNIVERSITY JALGAON

Syllabus for T.Y.B.A.

G3 – Geography of Health

w. e. f. from – June-2009

Unit No.	Topic	Sub-topic	Periods
I	Introduction To Geography of Health	A) Meaning and Definition of health B) Factors of holistic health C) Human health and geography D) Definition of geography of health E) Nature of geography of health F) Scope of geography of health G) Significance of geography of Health H) Approaches to study of geography of health	16
II	Factors Influencing on Human Health	A) Physical :- Relief, climate, soils, Vegetation, drainage B) Social:- Population, literacy, poverty, social customs & habits, housing condition, dietary system, rural & tribal life. C) Economic :- Crops & food culture, occupations, standard of living, industrialization, transportation, livestock D) Environmental:- Urbanization, water, air, noise & solid waste pollution	16
III	Nutrition and Food	A) Meaning of nutrition and food B) Nutrition elements of food C) Meaning of balance diet D) Purpose of balance diet E) Significance of nutrition in food	10
IV	Epidemiology of communicable	A) Concept and meaning of epidemiology and classification B) Geo-ecology, types, transmission, symptoms and causes, distribution, prevention and eradication programmes of	14

		<p>following communicable diseases</p> <p>i) Malaria</p> <p>ii) Hepatitis</p> <p>iii) Tuberculosis</p> <p>iv) HIV-AIDS</p>	
V	Epidemiology of Non-communicable diseases	<p>A) Classification</p> <p>B) Geo-ecology, types, transmission, system and causes, distribution, prevention and eradication programmes of following non-communicable diseases</p> <p>i) Malnutrition</p> <p>ii) Anemia</p> <p>iii) Hypertension</p> <p>iv) Cancer</p>	14
VI	Health care system	<p>A) Meaning and concept of health care</p> <p>B) Different types of health care system</p> <p>C) Health care facilities in India</p> <p>D) Distribution of bed facilities in India</p> <p>E) Imbalances of healthcare facilities in rural, tribal and urban India</p>	10
VII	Healthcare planning and management	<p>A) Meaning and objectives of healthcare planning</p> <p>B) Health education</p> <p>C) National health policy in India</p> <p>D) Health for all</p> <p>E) Immunization programmes</p> <p>F) Health management</p>	10
VIII	Health organizations	<p>A) WHO</p> <p>B) UNICEF</p> <p>C) Indian Red Cross Society</p> <p>D) Voluntary health agencies in India</p> <p>Structure, objectives, functions and awareness programmes of above health organizations</p>	10

Weightage of Marks

Unit	Marks
I	12
II	12
III	08

IV	12
V	12
VI	08
VII	08
VIII	08
Total marks	80

Reference Books

1. Agnihotr R.C. (1995): 'Geo-medical environment and health care; A study of Bundelkhand, Rawat Publication Jaipur
2. Basheer Anisari(1994): 'Environment Epidemiology' , Rawat Publication, Jaipur
3. Bedi Yashopal (1979) : 'A Hand book of social and preventive medicine' , Atmaram and sons, New Delhi
4. Choubey Kailash (2001) : 'Chikitsa avam Swasthya Bhugol' , Madhya Pradesh Hindi academy, Bhopal
5. Hazra J (1997) : 'Healthcare planning in developing countries', University of Calcutta
6. Husain Majid (1994): 'Medical Geography', Amol Publication Pvt. Ltd. New Delhi
7. Learmonth A.T.A. (1978) : 'Patterns of diseases and hunger' , A case study in Medical Geography, David and Charles, Victoria
8. May J.M. (1970) : 'The world atlas of diseases' National Book Trust, New Delhi
9. Mc. Glashan N.D. (1972) : 'Medical Geography, Methuen, London
10. Misra R.P. (1970): 'Medical Geography', National Book Trust, New Delhi
11. Pnacholi Sarojini (1993) : 'Medical Geography of Malaria in Madhya Pradesh, Northern Book Center, New Delhi
12. Park and Park (1979) : 'Textbook of Preventive and social medicine', 18th edition M/S Banarsidas Bhanot, Jabalpur
13. Philips D.R. (1990) : ' Health and Healthcare in the third world' ,Longman London
14. Pyle G. (1979) : 'Applied Medical Geography' ,Winston Halstea Press, Sliver Spring,Md, U.S.A.
15. Rais A.S. Learmonth A.T.A.(1990) 'Geographical aspects of health and diseases in India ' , Rawat Publication , Jaipur
16. Stamp L.D. (1964) ; 'Some aspects of Medical Geography' , Oxford University Press Oxford
17. Suryawanshi D.S. (2005) : 'Geographical Epidemiology' , Raj Publication, Jaipur
18. Suryawanshi D.S. (2007) : 'Geographical of tribal health care', Raj Publication, Jaipur

NORTH MAHARASHTRA UNIVERSITY JALGAON

Revised Syllabus for T.Y.B.A.

S3- GEOGRAPHY OF DISASTER MANAGEMENT

w. e. f. June2009

Unit No.	Topic	Sub-topic	Periods
I	Introduction	A) Definition. B) Type of Disaster. C) Importance of Disaster Studies D) Aims and objectives of studies.	05
II	Natural Disaster	A) Causes, Pre , During , Post disaster Management of - a) Physical : i) Earthquake ii) Volcano iii) Landslides iv) Tsunami b) Atmospheric : i) Cyclone ii) Flood iii) Drought.	20
III	Manmade Disaster	A) Cause, Management of i) Fire ii) Terrorism iii) Food Poisoning iv) Strike and Lockouts v) Accident vi) Fair and Festivals vii) Pollution a) Air b) Water c) Noise d) Solid waste	15
IV	Wars Disaster	Effects & Management of :- i) Biological war ii) Chemical war iii) Atomic war	10
V	Emerging environmental issues	i) Global warming ii) Depletion of Ozone iii) Population explosion	08

		iii) Acid rain iv) Desertification.	
VI	Preparedness & Mitigation	A) Factors of Disaster Management. B) First Aid. C) Role of Civilians and NGOs in Natural Calamities. D) Home guard. E) Role of Armed forces in Natural Calamities. F) Role of Para-Military forces in Natural Calamities. G) Role of Police forces in Natural Calamities	20
VII	Manifesting the Mitigation	A) Resources Planning and mobilization i) Immediate survival kit ii) Medical kit to provide for injuries iii) Rescue equipment iv) Permanent infrastructures v) Financial resources B) Working out requirement of Medical teams C) Establishing a control center D) Schematic layout of a control centre E) Functions of a control center F) Forming and deploying of rescue teams G) Organizing activities at Ground Zero H) Security I) Disposal of dead and records J) Casualty evacuation K) Records	12

Weightage of Marks

Unit	Marks
I	06
II	14
III	14
IV	10
V	12
VI	12
VII	12
Total marks	80

Reference Books

1. Disaster Management; Future challenges and opportunities Editor: Jagbir Singh
I.K. International Publishing House Pvt. Ltd.
New Delhi, Mumbai, Bangalore.
S-25, Green Park, Extension
Uphar Cinema Market , New Delhi 110016.
A-6, Royal Industrial Estate, Naigaum cross Road, Wadala, Mumbai 400031
2. Concept and Practices in Disaster Management, Colonel (Retd.) P.P.Marathe,
Diamond Publications,1691, Sadashiv Peth , Near Grahak peth, Pune 411030
Diamond Book Depot,661, Narayan peth, Appa Balawant Chouk Pune
411030
Tel. no- 020- 24480677 , 56020252.
3. Hand Book of Effective Disaster : Recovery, Planning, Mc Grow Hill
Publication London
4. The Book of Natural Disaster: Alladin Books Ltd. London
5. Disaster Management : Ed. Vinod Sharma, National Center for Disaster
Management, Indian Institute of Public Administration, Indraprastha Estate
,Ring Road New Delhi 110002
6. Earthquake: A.K.R. Hemmody, NBT OF India
7. Disaster Preparedness, Council for Advancement of Peoples Action and Rural
Technology, D- Block, Ponkha Road Janakpuri New Delhi 110075
8. Disaster in India studies of grim Reality, Anu Kapur and Neeta Meena
Deeplima ,Roshani, Debhanjal, Rawat Publication, Jaipur
9. Environmental Geography and Natural Hazards, A.A.Pirazizi Concept
Publlication Co. New Delhi 110059
10. Disaster Management ;Future challenges and opportunities Editor: Jagbir Singh
I.K. International Publishing House Pvt. Ltd.
New Delhi, Mumbai, Bangalore.
S-25, Green Park, Extension
Uphar Cinema Market , New Delhi 110016.
A-6, Royal Industrial Estate, Naigaum cross Road, Wadala, Mumbai 400031
11. Concept and Practices in Disaster Management, Colonel (Retd.) P.P.Marathe,
Diamond Publications,1691, Sadashiv Peth , Near Grahak peth, Pune 411030
Diamond Book Depot,661, Narayan peth, Appa Balawant Chouk Pune
411030
Tel. no- 020- 24480677 , 56020252.
12. Hand Book of Effective Disaster : Recovery, Planning, Mc Grow Hill
Publication London
13. The Book of Natural Disaster: Alladin Books Ltd. London
14. Disaster Management : Ed. Vinod Sharma, National Center for Disaster
Management, Indian Institute of Public Administration, Indraprastha Estate
,Ring Road New Delhi 110002
15. Earthquake: A.K.R. Hemmody, NBT OF India
16. Disaster Preparedness, Council for Advancement of Peoples Action and Rural
Technology, D- Block, Ponkha Road Janakpuri New Delhi 110075

17. Disaster in India studies of grim Reality, Anu Kapur and Neeta Meena
Deeplima ,Roshani, Debhanjal, Rawat Publication, Jaipur
18. Environmental Geography and Natural Hazards, A.A.Pirazizi Concept
Publlication Co. New Delhi 110059

Marathi Medium :

1. APATTI WYAWASTHAPAN- Sankalpana ani Kruti : Colonel (Retd.)P.P.Marathe
2. NAISARGIK APATTI ANI WYAWASTHAPAN : Dr. R.G.Patil
Om Sai Enterprises Anupam Teresa 754/ B, Kothrud Pune 411029
3. APATTI WYAWASTHAPAN : Prof. A.P.Choudhari & Sau. Archana
Choudhari,Prashant Publication ,17 Stadium Shopping Center ,Front of S.B.I.
Bank Jalgaon 425001

NORTH MAHARASHTRA UNIVERSITY JALGAON

Revised Syllabus for T.Y.B.A.

S3- MONSOON ASIA[INDIA, PAKISTAN, SHRILANKA, BANGALADESH, BHUTAN, NEPAL,
MALDIV- SAARC Countries]

w. e. f. June 2009

Unit No.	Topic	Sub-Topic	Periods
I	Introduction	A) Geographical importance of Monsoon Asia B) Region of Monsoon Asia C) Location, Size, Shape, and Area D) Monsoon Asia in the Modern world	10
II	Physiography	A) Relief, Physical back ground of Monsoon Asia i) Plain areas ii) Mountain regions iii) Plateaus B) Drainage i) Indian drainage ii) Costal region drainage	14
III	Climate	A) Characteristics of climate i) Summer ii) Winter B) Climatic region . i) Tropical region ii) Tropical Monsoon region iii) Tropical- Desert Monsoon region	12
IV	Soil and Natural vegetation	A) Soil i) Types of soil ii) Distribution and characteristics of soil B) Vegetation i) Tropical forest ii) Tropical monsoon forest	14

		<ul style="list-style-type: none"> iii) Tropical desert forest iv) Sub-tropical forest 	
V	Agriculture and Crops	<ul style="list-style-type: none"> A) Types of Agriculture B) Characteristics of agriculture in Monsoon Asia C) Agricultural problems and prospects D) Types of crops <ul style="list-style-type: none"> i) Food grains <ul style="list-style-type: none"> a) Jowar b) Bajara c) Rice d) Wheat ii) Cash crops <ul style="list-style-type: none"> a) Sugar cane b) Jute c) Cotton 	12
VI	Industries and Transportations	<ul style="list-style-type: none"> A) Industries <ul style="list-style-type: none"> a) Iron-steel industries b) Sugar Industries c) Cotton Industries d) Jute Industries e) Petro-chemical Industries B) Effect of SEZ on industrial Development C) Transportation <ul style="list-style-type: none"> i) Significance of transportation ii) Role of transportation in development <ul style="list-style-type: none"> a) Road b) Railway c) Air ways d) Water ways 	14
VII	Minerals and Power Resources	<ul style="list-style-type: none"> A) Minerals <ul style="list-style-type: none"> i) Iron-ore ii) Manganese iii) Bauxite B) Power resources <ul style="list-style-type: none"> i) Coal ii) Mineral oil iii) Thermal power iv) Hydel power v) Atomic energy 	12

VIII	Population	A) Characteristics of population B) Migration of population in SAARC countries C) The problems of migration in SAARC countries i) Indo-Pak ii) Indo-Bangla iii) Indo-Sri Lanka D) Case studies of following cities i) Mumbai ii) Karachi iii) Dhaka iv) Colombo	12
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Weightage of Marks

Unit	Marks
I	08
II	08
III	08
IV	12
V	12
VI	12
VII	12
VIII	08
Total marks	80

Reference Books

1. Monsoon Asia : E. H. G. Dobby, University of London Press Ltd
2. Indian Economy: 58th Fully Revised Edition 2008, Rudra Datta, K.P.M. Sundharam S. Chand & Co. Ltd. Ramnagar New Delhi 110055
3. Asia: (Marathi) ; Prof. S.P.Date & Prof. Mrs, Sanjiwani Date, Dr. Vinod Deshamukh. Ravil Publication, Satara
4. Asia : (Marathi) ; Prof. Dr. Prabhakar Karamarkar, Continental Prakashan , Pune
5. Monsoon Asia: (Marathi) Prof. Dr. Prabhakar Karamarkar, Prof. S.P.Pathak, Dr. Vinod Deshamukh. Shri Publication, Pune
6. Bharatacha Bhugol: (Marathi) Dr. Subhash Chandra Sarang, Vidhya Prakashan, Pune.

NORTH MAHARASHTRA UNIVERSITY JALGAON

Revised Syllabus for T.Y.B.A.

S4- Practical Geography

w. e. f. June 2009

[**Weather Maps and Weather Instrument, Elements of Map Reading, G.I.S and Aerial Photographs, Statistical Methods, Excursion**]

Workload :- 12 students per batch and 6 periods per batch per weak

Unit No.	Topic	Sub-Topic	Periods
I	Weather maps and Instruments	A) Indian Daily Weather Report i) Introduction to I.M.D. Weather map ii) I.M.D. Weather signs and symbols iii) Isobaric patterns a) Cyclone b) Anti-cyclone c) Trough / 'V' Depression d) Wedge / Ridge e) Secondary Depression f) Col iv) Study and drawing the following Weather instrument with their function mechanism and uses a) Maximum and Minimum Thermometer b) Thermograph c) Barograph d) Dry and Wet Bulb Thermometer e) Wind Vane and Cup Anemometer f) Rain gauge v) Interpretation of Indian Daily Weather Report (One each) a) Summer Season b) Winter Season	30

		c) Rainy Season	
II	Elements of Map Reading	<p>A) Topographical Map</p> <ul style="list-style-type: none"> i) Introduction to S.I.O. Toposheets ii) Indexing of toposheets and Marginal Information iii) Grid References ,Four and Six figure co-ordinates iv) Signs and Symbols of S.O.I. Toposheets <p>B) Representation of relief</p> <ul style="list-style-type: none"> i) Definition of relief ii) Methods of Representation of relief <ul style="list-style-type: none"> a) Quantitative method <ul style="list-style-type: none"> i. Spot height ii. Triangulation method iii. Bench mark iv. Contours b) Qualitative methods <ul style="list-style-type: none"> i. Hachures ii. Hill shading iii. Form line c) Profile <ul style="list-style-type: none"> i) Transverse or cross profile ii) Longitudinal profile iii) Cross profile d) Relief Features by contour <ul style="list-style-type: none"> i) Type of slope <ul style="list-style-type: none"> a) Gentle b) Steep c) Concave d) Convex e) Terraced ii) Landform of elevation <ul style="list-style-type: none"> a) Conical b) Hill c) Ridge d) Pass e) Plateau iii) Landforms of depression <ul style="list-style-type: none"> a) 'V' Shaped valley b) 'U' Shaped valley c) Water fall 	

		<p>d) Gorge</p> <p>C) Interpretation of S.O.I. Topographical map on following points</p> <p>a) Physiography b) Drainage pattern c) Vegetation, settlement, d) Transportation and communication e) occupation</p> <p>i. Mountainous region ii. Plains region iii. Plateau region iv. Desert region</p> <p>[Interpretation of any two region given above]</p>	
III	Introduction of G.I.S. and Aerial Photographs, Computer application in Geography	<p>A) G.I.S.</p> <p>i) Definition ii) Meaning and concept iii) Uses of G.I.S. in Geography iv) Soft wares of G.I.S. v) Uses of GPS in Geography</p> <p>B) Aerial Photographs</p> <p>i) Definition ii) Interpretation of aerial photographs on following points (any two)</p> <p>a) Physiography b) Settlement c) Vegetation d) Transportation</p> <p>C) Computer application in Geography introduction</p>	25
IV	Statistical Methods (Use of simple calculator is allowed)	<p>A) Frequency distribution</p> <p>a) Histogram b) Frequency Polygon c) Ogive curve or Cumulative Frequency curve</p> <p>B) Measures of central Tendency.</p> <p>a) Mean b) Median c) Mode d) Quartile</p> <p>C) Measures of Desperssion</p> <p>a) Mean Deviation b) Standard Deviation c) Quartile Deviation</p>	

		D) Tests a) Students ' t ' test b) Chi-square test / χ^2 test E) Correlation and Regression a) Spearman's method b) Pearson's method c) Simple regression equation.	
V	Excursion Report	Visit to a place of Geographical interest and submission of its report (This report should be at least 12 pages)	

Weightage of Books

Unit	Marks
I	20
II	20
III	15
IV	25
V	10
Journal	05
Oral	05
Total marks	100

Reference Books

1. Map work and Practical Geography :R. L. Sing and Kanauja , Central Book Depot, Allahabad
2. Fundamental of Geography : R. P. Misra and A. Remesh , Concept Publication Co. New Delhi
3. Map work and Practical Geography : Gopal Singh, Vikas Publication House New Delhi
4. Geographical Interpretation of Indian Topographical Maps : Prof. Tamaskar, Dr. V.M.Deshmukh,
5. Statistical Geography, Dr. B.S.Negi, Kedarnath, Ramnath, Meerut
6. Remote Sensing,- Principal and Application, A.N.Patel and Surendra Singh, Scientific Publishers, Jodhapur
7. Remote Sensing and Photo, M.L.Jhanwar and Dr. T.S.Chauvan, Vijyan Prakashan Jodhapur
8. Map Interpretation, G.H.Dubey
9. Sankhiki Bhugol ,Jog and Saptarshi
- 10 Pratyakshik Bhugol, Dr. Arjun Kumbhar, Sumeru Prakashan Dombiwali
11. Pratyakshik Bhugol, Dr. D.Y.Ahirrao E.K.Karanjkhele, Sudarshan Prakashan Nasik

12. Nakasha shastra, Dr.S.B.Shinde,Phadake Prakashan Kolhapur
13. Nakasha shastra ani Sankhiki Bhugol Prof. W.R.Ahirrao, Alizad, etc,
14. Sarvekshan and Havasthitidarshak Nakasha wachan , Prof. Baviskar,
Patil,Shewale
- 15 Bhougolik Mahiti Pranali , Dr.S.N.Karlekar, Diamond Prakash Pune
16. Principals of G.I.S. , Andrews,
