PANJAB UNIVERSITY, CHANDIGARH-160014 (INDIA)

’Est un r t n v rs t A t Ho m’ t t Govt o In ’

SYLLABI

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B.A./B.Sc. (Ho o!"#) Co!"#$
THIRD YEAR
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A E I DIA L I GI E G I H

Max. Marks : 100
Theory : 90 marks
Internal Assessment : 10 marks
Time : 3 Hours

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(आन्तरिक परीक्षा- 10 लिखित परीक्षा- 90)

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A E III HI Y F E IA L E A E

AFI ID E I D

100 Marks

Time : 3 Hrs.

Boo s o n

1. History of Persian Literature by Dr. Razazadeh Shafaq.
2. History of Persian Literature by Dr. Brown Vol. III.

[illegible]E IA

B A 'H [illegible] HI D YEA EXA I A I [illegible]

[illegible] E E E I

[illegible]p r I [illegible] DE [illegible]E IA

100 Marks
Time : 3 Hrs

1. PROSE:
   (i) The following three short stories of Saeed-Nafisi
      (a) Azan-E-Maghrib
      (b) Khana-Ye-Pidari.
      (c) Janayat-E-Man

   (ii) The following three short stories of Mohammed Heijazi:
      (a) Khud Khusi.
      (b) Eedi.
      (c) Mah-e-man

Boo [illegible]r s r

Nasib-Jadid-e-farsi, jayyed Press, Ballimaran, Delhi-6

2. POETRY:
   Quasidan
   1. Namund Namah by Bahar.
      "Dar Sher Band Mehro-Wafa Dilbari Namund."
   2. Ghazalliyat-E-Parveen Etisami by Mehdi Hameedi.
   3. Qataat by Mehdi Hameedi.

Boo s o n

1. Barguzida-Ye-She'r-e-Farsi-Ye-Mu' aasir Part-I by Dr. Muneeb-al-Rehaman.
2. Edara-ye-Ulam-e-Islami, Danish gah-e-Islami,Aligarh.

A ABIC

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B A 'H HI D YEA EXA I A I

F E E

st r F E CH L E A E

Max. Marks	:	100
Theory	:	90 Marks
Internal Assessment	:	10 Marks
Time	:	3 Hrs.

I D C I HI Y F F E CH L E A EF t t CE Y

Questions should be asked strictly from the prescribed text book.

1.	Five questions of 8 marks each based on History of French Literature	40 Marks
2.	Fill in the blanks or multiple choice questions on History of literature with maximum of 2 marks each.	20 Marks
tr	Explanation, central idea, critical appreciation of poems	30 Marks

1. L'amour et la folie (La Fontaine)
2. Le laboureur et ses enfants (La Fontaine)
3. Le lion et le rat (La Fontaine)
4. Le chêne et le Roseau (La Fontaine)
5. La Jeune veuve (La Fontaine)

Cours s o n

Memento de Littérature française, by Hélène, Publication Hatier, Profil Littèrature. Only from 17-18 centuries to be studied.

ot
1. The latest syllabus should be followed.
2. Choice should be given in questions.

r n Boo s

1. Collection littéraire—Moyen age – 20eme siècle -Lagarde et Michard, Bordas.
2. Recueil de Textes littéraires français. M

HI DI

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E E V

Theory : 90 Marks
Internal Assesment : 10 Marks
Time : 3 Hours

p r I ov tt

n t I

Novelette-‘ Dilruba’ Ka tanqidi Jayeza 25 marks

n t II

Plot aur Character 20 marks

n t III

‘Agle Janam Mohe Bitiya na Kijo’ ka tanqidi jayeza 25 marks

n t I

Plot aur character 20 marks

Books Prescribed:-

1. ‘ Char Novelette’by Qurrat-ul-ain Hyder,Educational Book House,Ali arh.
!. ‘Beesveen "adi #ein $rdu Novel’ by %r. $su& "ar#ast, Education Book House, Ali arh.

D

E E E VI

Theory : 90 Marks
Internal Assesment : 10 Marks
Time : 3 Hours

p r II ov tt

n t I

Ismat Chughtai Ka Novelette ‘Ziddi’ Ka Plot 25 marks

n t II

Character 20 marks

n t III

Critical notes on Ismat Chughtai ki novel nigari ki khususiaat 25 marks

n t I

Ismat Chughtai ki life history 20 marks

GE A

E E E

u r

Max. Marks: 100 marks (Total)
Paper-1 (Theory): 90 marks
Internal Assessment: 10 marks

p r o r s ot
Time: 3 hours
Note: Use of dictionary is allowed

i. Three out of five questions to be attempted on the history of German literature (Literaturgeschichte) : 90 marks
Following movements in literature are to be studied:

i. Aufklärung

ii. Sturm und Drang.

Int rn Ass ss nt r s ot

- Continuous Evaluation
- Attendance

Note:

1. The mode of evaluation for internal assessment is to be followed as per University guidelines.

2. For private candidates, Internal Assessment will be calculated proportionately to the marks obtained by the candidate in written examination

r s r t oo s

i. Geschichte der deutschen Dichtung, Fricke/Klotz.

ii. Wege der deutschen Literatur - Eine geschichtliche Darstellung by Arno Lubos, Jakob Lehmann, Hermann Glaser.

upp nt r oo

i. Deutsche Literaturgeschichte - Von Anfangen bis zur Gegenwart (J.B. Metzler Verlag Stuttgart)

GE A

u r

Max. Marks: 100 marks (Total)
Paper-2 (Theory): 90 marks
Internal Assessment: 10 marks

p r Ess n r ns t on o r s

Time: 3 hours
Note: Use of dictionary is allowed

i. Translation of an unseen text/s from German into English : 50 marks

ii. Translation of an unseen text/s from English into German : 20 marks

iii. Essay writing in German (about 250 words) : 20 marks

i. Länder und Leute

ii. Ausbildung und Berufswege (Indien / Deutschland)

iii. Politik (Indien / Deutschland / Europa / Welt)

iv. Umzug und Einrichtung

Int rn Ass ss nt r s ot

- Continuous Evaluation
- Attendance

Note:
1. The mode of evaluation for internal assessment is to be followed as per University guidelines.

2. For private candidates, Internal Assessment will be calculated proportionately to the marks obtained by the candidate in written examination

r s r t oo s

i. Deutsche Texte zum Übersetzen (Hueber Verlag)

upp nt r oo

i. "Lagune-2" Kursbuch by Hartmut Aufderstraße a.o.

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GE A

E E E I

Summary

Max. Marks: 100 marks (Total)
Written Paper (Theory): 90 marks
Internal Assessment: 10 marks

r tt n p r o r s ot

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ot There will be one theory paper of 90 marks. The internal assessment will be of 10 marks. The theory paper will have one compulsory short answer type question containing 15 question of 2 marks each covering the entire syllabus. The candidates will be required to attempt any 10 short answer type questions. In addition, there will be four sections of the questions paper. The candidate will be required to attempt one question from each of these carrying 17 ½ marks each.

p r Ar tu s C n I

Max. Marks	:	100
Theory	:	90 marks
Internal Assessment	:	10 marks
Time	:	3 Hrs.

Total Teaching Periods: 75

EC I I

1. Military Geography of China : Location, size and strategic importance.
2. Economic and Industrial resources (in brief).
3. Population, composition and characteristics of major ethnic groups.

EC I II

1. History of China in brief from the CH'IN to Manchus Dynasty.
2. Nationalist Revolution in China under Dr. Sun Yet Sen : Events and effects.

EC I III

1. Rise of Chiang Kai Shek.
2. The Nanking Government of China, long march in China.
3. The Civil War in brief.

EC I I

1. Party-Army Relationship.
2. Communist party and its relationship with the Armed Forces.
3. Higher Defence Organisation.
4. Cultural Revolution.

B EC E DED

1.	Balance, Edger O.	:	The Red Army of China, Russell Square, London.
2.	Chatterji, B.R.	:	Modern China –A Short History, Meenakshi Printing, Meerut.
3.	Encyclopaedia of Britannica.		
4.	Gupta, R.S.	:	History of Modern China, Sterling Pub.
5.	Kapur, Harish	:	China in World Politics, Div. Pub., N.D.
6.	Liu, F.F.	:	A Military History of Modern China, Princeton Uni. Press.
7.	Mao Tse Tung	:	Communist Rule in China.
8.	Mc. Aleavy, Henry	:	The Modern History of China.
9.	Mitchison	:	Chinese Revolution.
10.	Nung Chen Li	:	The Political History of China, Princeton Uni. Press.
11.	Pelissier Roger	:	The Awakening of China, Secker and Warturg, London.
12.	Tregear, T.R.	:	A Geography of China, University of London.
13.	Wilson Dick	:	A Quarter of Mankind, Weidenfeld and Micholson Olson, London.

DEFE CE A EGIC DIE
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ut n s o sts n Cours s o n

ot There will be one theory paper of 90 marks. The internal assessment will be of 10 marks. The theory paper will have one compulsory short answer type question containing 15 question of 2 marks each covering the entire syllabus. The candidates will be required to attempt any 10 short answer type questions. In addition, there will be four sections of the questions paper. The candidate will be required to attempt one question from each of these carrying 17 ½ marks each.

Max. Marks : 100
Theory : 90 Marks
Int. Ass. : 10 Marks
Time : 3hrs

Total Teaching Periods: 75

p r Ar tu s C n II

EC I I

I I DIA A '

1. Events Leading to the war.
2. Operation in brief.
3. Lessions learnt

EC I II

1. Determinants of Chinese Foreign Policy.
2. China's Relations with India.
3. China's Relations with Pakistan and its impact on India.

EC I III

1. China's Relations with other neighbouring countries.
2. China's Relations with the U.S.A.
3. China's Relations with Russia.

EC I I

1. Defence Potential of China.
2. China's Modernization Program.
3. China's Nuclear Weapon Development.

Boo s o n

1. Dalvi, J.P. : Himalyan Blunder, Thackei' and Co., Bombay.
2. Griffith Samoul, B. : The Chinese People's Liberation Anny, Army Pub., N.D.
3. Kapur, Harish : China in World Politics, Div. Pub., N.D.
4.

L III

REVOLUTION AND REFORM

7. Boxer Rebellion 1900
8. Intellectual, Social and Economic Change
9. Rise of Sun Yat Sen and Revolution

L I

RISE OF THE REPUBLIC

10. Intellectual Revolution and National Unification
11. National Government 1928-37
12. Chinese People's Republic 1945-49

o n s

1. Chesneaux, Jean Francoise Le : *C n Fro t p u rs to vo ut on o I* Delhi : Khosla, 1978.
2. Hsu Immanuel : C.Y., *s of o rn C n* , New York : Oxford University Press, 1970.
3. Vinacke, Harold M. : *A H stor of t F r E st n o rn s,* New York : Appleton Century Crafts, 1961 (6th edn.).
4. Clyde, Paul Hibbert, : *F r E st A H stor of t I p t of t st on E st rn As* , Englewood Cliffs, N.J. Prentice Hall : 1958 (3rd edn.).

HI Y F IA

r s
or
Int rn Ass ss nt
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G n r Instru t on

1. In all ***nine*** questions will be set, Each question will carry 18 marks.
2. First question shall be a Short Answer type containing 15 short questions spread over the whole syllabus. Candidates will attempt ***nine*** out of the fifteen short answer type questions in about 25-30 words each. It shall carry 18 marks (9x2) and shall be **o pu sor**
3.

L II

3. *uss n F r E st* Interventions in China, Mongolia and Manchuria.

4. *B roun of uss n vo ut on* Revolution of 1905; Russia on the eve of the Revolution of 1917 – Polity, Society, Economy; Lenin's Contribution to the Revolution.

L III

C us s of t uss n vo ut on n ts Aft r t The February Revolution and the Provisional Government, the Bolshevik (October Revolution), its impact on Russia and the World.

6. *C v r* Russian withdrawal from First World War; Peace of Brest Litovisk; Allied Intervention.

L I

ov t E ono War Communism; New Economic Policy and its impact.

nn E ono Weaning from the New Economic Policy and the First Five Year Plan.

o n s

1. Barrington Moore (Jr.) : *o r ns of D t tors p n D o r*
2. Paul Kennedy : *s F of Gr t ow rs* Fontana Press London, 1988
3. Lionel Kochan : *n of o rn uss* Penguin Books, 1962.
4. Basil, Dymtrystyn : *H stor of uss* Prentice Hall, New Delhi, 1977.
5. E.H. Carr : *Bo s v vo ut on* Penguin Books Ltd., Victoria, 1971 (Reprint).
6. M.T. Florinsky : *uss A ort H stor* Macmillan, London, 1971 (2nd ed.)

L I G r n

7.

L ICA CIE CE

L III Tr ns or t on n ost or r II Int rn t on t ons

(a) Decline of Bipolarity.
(b) Nature of Emerging World Order.

L I G o n r o n Int rn t on t ons

(a) Demand for New International Economic Order (NIEO)
(b) Issue of Global Terrorism.

u st t n s

1. Peter Calvocoressi : r o t s n , London : Longman, 1945.
2. Budhraj, V.S. : *Int rn t on t ons Aft r on r r* (in Hindi), Chandigarh, Haryana Sahitya Academy, 2000.
3. Keswani, K. B. : *Int rn t on t ons n o rn r* (1900-1988), Bombay, Himalaya Publishing House, 1994.
4. Baylis and Steve Smith : *G ob t on of r o t s An Intro t on to Int rn t on t ons*, Oxford, Oxford University Press, 2001.
5. Alan C. Lamborn and Joseph Lepgold : *r o t s nto t w nt F rst C ntur n qu Cont t En r n tt rns*, New Jersey, Prentice Hall, 2003.

r n s

1. Paul Kennedy : *s n F o r t ow r*, Fontana Press ( )Tj /R8 9.96 Tf -2.52 -10(K)-0.8912 6 Tf 194.04 0 Td [( )-2S6.0241(e)-1.78252( )-3.0120

question. Rest of the paper shall contain 4 units. Each unit shall have two questions and the candidates shall be given internal choice i.e. the candidates shall attempt one question from each Unit – 4 in all, of 18 marks each.

t v s The paper aims at creating understanding about the evolution of political thought in modern India with special reference to the stated philosophers.

7.	Chattarjee, Partha	:	*t on st ou t n Co on r D* : OUP, 1986.
8.	Lyer, Raghavan	:	*or n o t ou t of t G n* , Delhi : OUP, 1973.
9.	Pantham, Thomas, Parekh,	:	*G n s o t osop* , London, Macmillan, 1989, Bhikhu.
10.	Ghatak, B.K. (ed.)	:	*Dr A b r s ou t*, New Delhi : APH, 1997.
11.	Keer, Dhanajayay, Dr. Ambedkar	:	*f n ss on Bo b* : Popular Parkashan, 1964.
12.	Zelliot, Eleanor	:	*o n o t ou t of B A b r n nt n D uts*

There shall be 9 questions in all. The first question shall be short answer type containing 15 short questions spread over the whole syllabus and each to be answered in about 10 to 20 words. The candidate is required to attempt any 9 short answer type questions i.e. 2 marks each. It shall carry 18 marks and shall be a compulsory question. Rest of the paper shall contain 4 units. Each unit shall have two questions and the candidates shall be given internal choice i.e. the candidates shall attempt one question from each Unit – 4 in all, of 18 marks each.

t v s The paper aims to introduce students to the key approaches of Feminist thought contemporary debates concerning women and politics in India. It will include an analysis of the Indian State, the role of women's movement and the major feminist issues in contemporary Indian politics.

L I **or t Appro s to o n tu s**

(a) Liberal Feminism.

(b) Marxist / Socialist Feminism .

L II **s o o n ov nt ts ro n Cont por r o t s**

H stor

(a) French Revolution, Civil Rights and Suffrage Movements in the West.

(b) Role and Contribution of Women in Indian National Movement.

L III **o n n o t n In**

(a) Evolution of Women's position in India – an historical overview-

(i) Vedic period

(ii) Medieval Period (Post Vedic Period)

(iii) Modern Period

(b) Social Position:

(i) Demographic pattern- Sex Ratio.

(ii) Legal, Political and Property Rights.

(iii) Access to Education.

L I **o ov nt n Cont por r In**

(a) Women Movement in India- Women Movements against Dowry & Rape

(b) Women and Political Participation in India-Status & Barriers, 73rd & 74th Amendment.

o n n s

1. Millet, Kate, *u o t s*, New York, Doubleday, 1970.

2. Michele Barrett, *n s ppr ss on o* , London, Verso, 1980.

3. Lenin, V.I.,

8. Phadnis, Urmilla and Malani Indira eds., *n of t r I us on n t* , New Delhi, Vikas, 1978.
9. Desai, N., *n n o rn In* , Bombay, Vora & Co., 1977.
10. Nanda, B.R. ed., *In n n fro ur to o rn t* , New Delhi, Vikas, 1976.
11. *I C t tus of n s Co tt port*, New Delhi, ICSSR, 1975.
12. Mazumdar, Vina, *ow r s Equ t* , ICSSR, Delhi.
13. Desai, Neera and Krishanaraj, M., *n n o t n In* , Delhi, Ajanta, 1987.
14. Chakaravarty, Shanti, *ur n s C to r or t* , New Delhi, C.W.D.S., 1986.
15. "Women's Struggles and Movement", Paper of Third National Conference, Chandigarh, IAWS.
16. Kaushik, S. (ed.), *n s ppr ss on tt rns n rsp t v* , Vikas, New Delhi, 1984.
17. Kumar, Radha, *A H stor of Do n* , Kali Publications, New Delhi, 2006.
18. Gandhi, Nandita & Shah, Nandita, *Issu s t t t* , New Delhi, Kali Publication, 1992.
19. Menon, Nivedita (ed.), *G n r o t s n In* , New Delhi, Oxford University Press, 1999.
20. Rao, Anupama (ed.), *G n r C st* , Delhi, Sage Publications, 2005.

6. Shapiro, Ian, Rogers M. Smith and Tarek E. Masoud, *rob s n t o n t tu of o t s C br*

u st n s

1. Bandhyopadhya, J., *o t n o ou t of G n* , Bombay, 1969.

2. George Lichtheim, Marxism : An Historic

o n ' n s

1. Sabine, G.H., *A H stor of o t ' or* , Bombay : Oxford & IBH, 1973.

2. Dunning, W.A., *A H stor of o t ' or s*, 3 Vols., Allahabad : Central, 1973.

EC IC
E E E

The candidates are required to study **on o t** following papers:

I Money and Banking.

II International Economics.

Paper III INTERMEDIATE MICROECONOMICS

Max. Marks : 100 Marks
Theory : 90 Marks
Internal Assessment : 10 Marks
Time : 3 Hours

Objectives Application of economic theory need a reasonable understanding of economic relationship

L I

Dummy Variables The dummy Variable Trap. Interpretation of Slope and Intercept.
Lagged Variables Uses in Economics. Estimation Problems, Koyck Transformation, Partial and Stock Adjustment Models.

o n s

1. Gujarati, Damodar (2007) : Basic Econometrics, McGraw Hill, New Delhi.
2. Ohnson, J. (1977) : Econometrics Methods, 2nd Edition, McGraw Hill, New

upp nt r s

1. Intrilligator, M. D. (1978) : Econometric Models and Applications, Prentice Hall
2. Kendall, M. G. & A. Sturat (eds.) : Advanced Theory of Statistics, Vols. I & II, Griffin and Co., London.
3. Maddala, G. S. (1977) : Econometrics, New Delhi, McGraw Hill.
4. Wallis, K. F. (1973) : Topics in Applied Econometrics, London, Bray Hills

EC IC
E E E I

The candidates are required to study **on o t** following papers:

IV Environmental Economics
V Economics of Labour
VI Public Finance

p r I Env ron nt E ono s

Max. Marks : 100

n t I

Role and Functions of Trade Unions, Growth, Pattern and Structure of Trade Unions in India, Achievements of Labour Unions, Collective Bargaining.

Industrial Disputes: Causes of Industrial Disputes, Their Settlement and Prevention Mechanism.

B EC E DED

1. Binswanger, H. P. & M. R. Rosenzweig (eds.) (1984) : Contractual Arrangements, Employment, and Wages in Rural Labour Markets in Asia, Yale University Press, New Haven.
2. Datt, G. (1996) : Bargaining Power, Wages and Employment; An Analysis of Agricultural Labour Markets in India, Sage Publications, New Delhi.
3. Deshpande, L. K., P. R. Brahmananda and E isputes, 68n : Employment Policy in a Developing

L I

Balance and Unbalanced Budgets.
Fiscal Federalism Principles of Federal Finance.
Development Finance Functional Finance vs. Development Finance.
Mobilisation of Financial Resources for Planned Developments.

u st n s

1. Buchanan J.M. : Public Finance in the Demostic Process (Collected works of James M Buchanan), Library Fund, USA.
2. Musgrave, R. A. (1959) : Theory of Public Finance, McGraw- Hill Publishers.
3. Musgrave R A. & Musgrave P B (5th edition) : Public Finance in Theory and Practice, Mc Hill Publishers
4. Taylor P.E (1949) : The Economics of Public Finance, Macmillan Publishers, New York.

Ess nt

B n As n t r r n p s of opu t on r v s u b
r

Ess nt ' ' n s

1. Bridgman, P.W.

B A 'H HI D YEA EXA I A I

p r B- pt on GIC

p r B pt on HI HY F C E

p r B- pt on' AE HE IC

Max. Marks	:	100
Theory	:	90 Marks
Internal Assessment	:	10 Marks
Time	:	3 Hours

A A D B EC I E

The paper aims at training the students in skills of critical reasoning by introducing laws of thought, criteria for validity of arguments, deductive and inductive reasoning.

I C I F HE A E E A D CA DIDA E

s bus s b n v nto four un ts

There shall be 9 questions in all. First question shall be short answer type containing 15 short questions spread over the whole syllabus and each to be answered in about 25 to 30 words. The candidate is required to attempt any 9 short answer type questions i.e. 2 marks of each. It shall carry 18 marks and shall be **o pu sor** question. Rest of the paper shall contain units. Each unit shall have **t o** questions and the candidates shall be given internal choice i.e. the candidates shall *tt pt on qu st on* from each Unit – 4 in all, of 18 marks each.

Cours Cont nts

L I

1. Nature and Scope of Logic.
2. Deductive Inference.
3. Laws of Thought.

L II

4. Aristotelian Classification of Propositions.
5. Immediate and Mediate Inference.
6.

Ess nt **n s**

[illegible]YCH GY

B A 'H [illegible] HI D YEA EXA I A I [illegible]

Boo s o n

u st ' n s

1. Anastasi, A. (1998) : *s ˈo o st n* New York : Macmillan.
2. Gregory, R.J. (1996) : *s ˈo o st n* Singapore : Allyn and Bacon.
3. Guilford, J.P. and Fruchter, B. (1981): *Fun ˌ nt t t st s n s ˈo o n ˌE ˈa t on* Singapore: McGraw Hill.
4. Guilford, J.P. (1954) : *s ˈo tr t ˈo ˈs* New Delhi : Tata McGraw Hill.

r n Boo s

1. Freeman, F.S. (1962) : *ˈ or n ˌ r t of s ˈo o st n* New Delhi : Oxford and IBH.
2. Cronbach, L.J. (1990) : *Ess nt s of s ˈo o st n* New York : Harper and Row.
3. Brown, F.G. (1976) : *r n p s of E ˈa t on n ˌ s ˈo o st n* New York : Holt, Rinehart and Winston.

YCH GY

B A 'H HI D YEA EXA I A I

E E E I

A E Couns n n r n t on s o o

Theory	:	90 marks
Internal Assessment	:	10 marks
Time	:	3 Hours

B EC I E

GE G A HY

B A B 'H HI D YEA EXA I A I

E E E

p r A IED GE G A HY

r s

(Terminal Exam: 90 Marks)
(Internal Assessment: 10 Marks)

Time: 3 Hours

t v s

To understand the prevalent issues in environment, society and economy and to provide a geographical interpretation with special reference to India

Cours Cont nt

n t I

App G o r p n n n on pts

Meaning, nature , scope and significance of Applied Geography. Concept of planning region.

Regionalisation scheme with reference to economic regionalization. (20 lectures)

n t II

App G o r p t o s n t n qu s

Cartographic techniques of dot, choropleth, graduated circle; quantitative methods and techniques of crop combination; Quantitative methods and techniques of graduated circles. (20 lectures)

n t III

App G o r p Contr ut ons

Industrial location theory of Weber and its application in industrial planning.

Christaller's Central Place Theory and its application in location of central places.

Von Thunen's Agricultural Location Theory and its application in agricultural location.

Perroux's Growth Pole Theory and its application in regional development planning.

Harris' Functional classification of urban centres. (30 lectures)

L I

n us stu s ur n r n

Rural Land Use: Survey and Classification.

Urban Land Use : Survey and Classification. (20 lectures)

ot s

1. A compulsory question containing 15 short answer type questions shall be set covering the whole syllabus. The student shall attempt any 10 parts in about 25-30 words each. Each part will carry 2 marks (total 20 marks).
2. The whole syllabus will be divided into 4 Units. Eight questions will be set out of the whole syllabus, 2 from each unit. The students will be required to attempt one question from each unit. These will be in addition to the compulsory question at serial number 1.
3. Internal assessment may include written assignments, snap tests, participation in discussion in the class, term papers, attendance etc.

Boo s o n

Ess nt n s

1.	Carter, H.	:	The Study of Urban Geography, Arnold-Heinemann, New Delhi, 1979.
2.	Chorley, R.J. & P. Haggett (Ed.)	:	Models in Geography, Methuen & Co., London, 1967.
3.	Jones, Alun	:	Fieldwork in Geography, Longman, Green Co., London, 1968.
4.	Stamp, L.D.	:	Applied Geography, Penguin Books, England, 1960.
5.	Singh, R.L. (Ed.)	:	Applied Geography, National Geographical Society of India,Department of Geography, B.H.U., Varanasi, India.

Furt r n s

1.	Dawson, J.A.	:	Geography, Teach Yourself Books, Hodder and Stoughton, UK 1983.
2.	Misra, R.P. and others	:	Regional Development Planning in India, Vikas, New Delhi.1974
3.	Misra, V.C. & others	:	Essays in Applied Geography, University of Sagar, India.1976

4.	Sen Gupta, P. &Sadasyuk Galina	:	Economic Regionalization of India, Problems and Approaches, Registrar General Census of India.
5.	Singh, Jasbir & Dhillon, S.S.	:	Agricultural Geography, Tata McGraw Hill, New Delhi, 1998.

6. World Report, World Bank & OUP (Annual Report)

o

- Exposure to media.
- National Five Year Plan documents and publications related to planning.
- Field work related to land –use and other socio-economic issues.

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GE G A HY

B A B 'H HI D YEA EXA I A I
st r I

An on of t fo ow n opt ons

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pt on L ICA GE G A HY 'An E nt r Cour
pt on ' E I E A GE G A HY 'An E nt r Cour

pt on AG IC A GE G A HY 'An E nt r Cour

r s
(Terminal Exam: 90 Marks)
(Internal Assessment: 10 Marks)

Time: 3 Hours

t v s

- To familiarise the students with the concepts and development of agriculture;
- To examine the role of agricultural determinants towards changing cropping patterns, intensity, productivity, diversification and specialisation. The course further aims to familiarise the students with the application of various theories, models and classification schemes of cropping patterns and productivity.
- Its objective is also to discuss environmental, technological and social issues in agricultural sector with special reference to India.

Cours Cont nt

n t I

Nature, scope and significance of agricultural geography.

General landuse classification.

Physical determinants of agricultural landuse: Relief, climate, soils.

n t II

Social and cultural determinants of agricultural landuse, land tenure, size and fragmentation of holdings and labour.

Economic determinants of agricultural landuse: Marketing facilities, transport facilities, tariff and import restrictions, price incentives, credit.

n t III

A critical review of Whittlesey's agricultural classification.

Characteristics and world patterns of the following:

Subsistence types of agriculture: Nomadic herding, shifting cultivation, rudimentary sedentary tillage, intensive subsistence tillage, subsistence crop and livestock farming.

n t I

n t I

International tension: Identification of tension areas and factors contributing to tensions in different areas with special examples from Middle East and Indian Ocean.

Political Geography of the Indian Ocean.

ot s

1. A compulsory question containing 15 short answer type questions shall be set covering the whole syllabus. The student shall attempt any 10 parts in about 25-30 words each. Each part will carry 2 marks (total 20 marks).
2. The whole syllabus will be divided into 4 Units. Eight questions will be set out of the whole syllabus, 2 from each unit. The students will be required to attempt one question from each unit. These will be in addition to the compulsory question at serial number 1.
3. Internal assessment may include written assignments, snap tests, participation in discussion in the class, term papers, attendance etc.
4. For reappear/improvement candidate(s) who have not been assessed earlier for Internal Assessment, the question paper(s) in their case shall be of Maximum Marks allotted to the paper(s) concerned.

Boo s o n

Ess nt **n s**

1. De Blij, H.J. Glassner, M. : *st t o t G o r p* , John Wiley, New York, 1968.
2. Dikshit, R.D. : *o t G o r p* : A Contemporary Perspective, Tata McGraw Hill, New Delhi, 1996.

Furt r n s

1. Adhikari, Sudeepta : *o t G o r p* , Rawat, Jaipur, 1997
2. Muir, R. : *o rn o t G o r p* , Macmillan, London,1981.
3. Prescott, J.R.V. : *o t G o r p* , Methuen, London, 1992.
4. Prescott, J.R.V. : *G o r p of Front rs Boun r s*, Aldine Pvt. Ltd., Chicago, 1965.
5. Valkenberg, S.V. : *E nts of o t G o r p* , Prentice Hall of India, Ne948,.65326(m)4.60948(e)-10948(e)-e anbenbee

o

- Fieldwork to understand the political/administrative boundary configuration and people's problems and their perceptions.
- Consult political maps (large scale, small scale).
- Atlases and archival records.
- Collect relevant newspaper items for group discussion.
- Prepare pin-up board for display of important events of geopolitical nature.

n t I

Population and Environment: Basic issues, environmental impact of population growth and agenda for action.

Global Environmental Issues: Water contamination; atmospheric pollution; acid rain; noise pollution; and control strategies.

Legislative strategies, environmental issues and the international community; Rio-de-Janeiro Earth Summit of 1992; selected environmental protection laws in India; Environmental Protection Act, National Environmental Tribunal Act, Wildlife Protection Act, Forest Conservation Act, Air Act, Water Act. (6 + 6 + 6 = 18 lectures)

ot s

1.

B IC AD I I A I
F E E I

A E I n t s v to s t on out o t o o n our opt ons

Unit III

Groups : Concept; Types
Leadership : Styles of Leadership
Motivation : Concept; Determinants

Unit I

Organisational Change : Concept; Resistance to change
Organisational Development : Concept; Need; Techniques
Organisational Effectiveness : Concept; Approaches

L I

Co-operation : Meaning, Significance and Evolution
Co-operative Principles
Co-operative Legislation : Government of India Act, 1912 and Punjab Co-operative Societies Act, 1961(as amended from time to time)

L II

Registration of a Co-operative Society
General Body, Board of Directors and Committees
Chief-Executive : Appointment, Functions and Role
Co-operative Administration at Union Level – Organisation and Functions

L III

Co-operative Department at State Level – Organisation and Functions
Registrar Co-operative Societies : Appointment and Role
Forms of Co-operatives : Role of Apex Federations and Primary Co-operatives
Co-operative Education

L I

Human Resource Management : Recruitment and Training
Financial Management

Ess nt

Dubhashi, P.R. (1970) . *r n p s n osop of Coop r t on* . Pune: VMNICM.
Goel, B.B. (1988). *D n s of Coop r t v A n str t on* . Delhi: Deep and Deep.
Goel , S.L., & Goel, B.B. (1979). *r n p s rob s n rosp ts of Co op r t v A n str t on* .Delhi: Sterling.
Kamra, P.K. (1986) .*Coop r t v n nt* . Delhi: Deep and Deep.
Krishnaswami, O.R. (1978) . *Fun nt s of Coop r t v s* .Delhi: S.Chand and Co.
Mathur, B.S.(1971). *Coop r t on n In* . Agra: Sahitya Bhawan.

Furt r

Bhatia, B.S. (ed.). (1994). *En op of Coop r t v n nt* New Delhi: Deep & Deep Publications Pvt. Ltd.
Dwivedi, R.C. (1982).*D o r n Coop r t v ov nt* New Delhi. National Cooperative Union of India.
Gill , M.S. (1983).*A r u tur Coop r t v s* .Delhi: Vilas.
I.C.A. (1977). *n s n Coop r t v n nt* Delhi: ICA.
I.C.A. (1980).*E p rts Consu t t on on Coop r t v b r E t on* . Delhi: ICA.
I.L.O.(n.d.).*Coop r t v n nt n A n str t on* .Geneva: I.L.O.
Puri, S.S.(1979). *En s n ns of Coop r t v D v op nt* . Delhi: NCUI

[illegible] I [illegible] B IC E : E [illegible] I E A AGE E : : L H [illegible] ECIA EFE E CE : I DI[illegible]

Max. Marks : 100
Theory : 90 Marks
Internal Assessment : 10 Marks

L III

ENVIRONMENTAL STUDIES

Max. Marks	:	100
Theory	:	90 Marks
Internal Assessment	:	10 Marks
Time	:	3 Hours

Objective

The objective of the paper is to give the student an in-depth understanding of the concept and components of environment, environment administration and sustainable development. In addition, the students would be made aware of environment problems, threats and impact of development on environment. The student

L I

Pollution Control Boards–Organisation, Functions and Role

Environmental Policy with special reference to Water, Air and Forest; Constitutional Provisions; Legislative Measures

Environmental Priorities in India—Population Stabilisation; Forest Cover; Deforestation; Wildlife Protection; Recycling of Wastes

L I

Environment and Global Issues— Conventions; Depletion of Ozone Layer; Global Warming

Environment Education, Awareness and Ethics; Role of NGOs in Environment Protection and Conservation

Ess nt

Chandana, R.C. (1998) .*Env ron nt Aw r n ss* . New Delhi : Kalyani.

Edmunds, S. and Latey, J. (1973). *Env ron nt n str t on* . New York : McGraw-Hill.
Nanda, V.K. (1997). *Env ron nt E t on* .New Delhi : Anmol.
Sapru, R.K. (2002) . *D v op nt n str t on* . New Delhi : Sterling.
Sapru ,R.K. (2004). *ub o* . New Delhi : Sterling.

Furt r

Agnihotri , Sheo Parkash. (1992). *Env ron nt Cons rv t on n nt n nn n* Allahabad : Chugh.

ﷺA E I ﷺI E r n Issu s n ﷺū A n str t on

Max. Marks: 100
Theory: 90 Marks
Internal assessment: 10 Marks
Time: 3 Hours

t v o t ﷺp r

The purpose of this course is to familiarize the students with the emerging issues in Indian Administration. At the end of the course the students will have an understanding of the concepts of disaster management, human rights, regulatory administration in India, consumer protection, right to information, new areas of governance in India.

I C I F ﷺA E E A D CA DIDA E

For Private/University School of Open Learning (USOL) students, who have not been assessed earlier for the internal assessment, the marks secured by them in the paper will proportionately be increased in lieu of the internal assessment.

ﷺp r tt r ust put not n qu st on p p r n t s r r

The candidate shall attempt 5 questions in all (one compulsory and one each from four units). The first compulsory question shall comprise of 12 short-answer type questions, covering the whole syllabus, to be answered in 25-30 words each, out of which the candidate would be required to attempt any 9. Each question will carry 2 marks. Rest of the paper shall contain 4 units, each unit having two questions, out of which the candidate would be required to attempt one. Each question will carry 18 marks.

n t I

Good governance – Concept and significance
E- governance – Concept and significance
Regulatory Administration - Concept and significance

n t II

Transparency and Accountability in Administration – Significance
Mechanism – Social Audit, Results Framework Document (RFD)

n t I

Sustainable Development - Concept and significance
Environment Administration - Concept and significance
Disaster Management - Concept and significance

u st n s

Arora , Ramesh K. (2013). *Et Gov rn n n Bus n ss n ov rn nt*. Jaipur : Aalekh Publishers.
Bhandari, Sunanda (2015). s t r nEv Yo n Jaipur: Ritu Publications.
Bystydzienski, Jill M. (2008).*D o r t t on n s Gr ssroot ov nts* JotiSekhon. Zubaan.
Centre for Good Governance.Social Audit Tool Kit,"n.d" from www.cgg.gov.in
Food & Agricultural Organization (F.A.O *A n oo for tr n rs on p rt p tor o v op nt n t r n n o on so Au t*
Kawadia, Ganesh & Ahuja, Kanhaiya. (2006) .*Env ron nt Issu s of D v op nt* AmbalaCantt, India: The Associated Publishers.
Goel, S.L. (2006).*En op of D s st r n nt*, Deep and Deep Publication Pvt. Ltd.
Government of India. *Gu n s for su ts Fr wor Do u nt FD* "n.d" retrieved from www.performance.gov.in
Government of India. (2006,September). *on A C r port Cr s s n nt Fro D sp r to Hop*
Government of India.(2006,june) . *on A C F rst port t to Infor t on st r to Goo Gov rn n*
Government of India. (2008,December). *on A C E v nt port ro ot n ov rn n rt Forw r*
Government of India.Ministry *of D v op nt n Entr pr n urs p " n r tr v ro* www.skilldevelopment.gov.in/pmkvy.html
Government of India *n str of n C D v op nt* "n.d'' retreived from www.nmew.gov.in.
Government of India. *E ov rn n for C t n E pow r nt t on Infor t on C ntr* . ''n.d''retreived from www.nic.in
Mohanty, Jagannath. (2005). *Hu n ts w r n s n Innov t ons*. New Delhi: Deep & Deep.
Verma, J.S. (2006). *n v rs of Hu n ts* Delhi: Universal Law Publishing Company.
Kumar, Abhishekand Tripathy, Pramod Kumar. *D v op nt n In An v rv w of In t t v s s* New Delhi: Kanishka Publishers.
Mathur, B.P. (2014). *Et s for Gov rn n nv nt n ub rv s* India: Routledge.
Jaswal, P.S.and Jaswal, Nishtha. (2000). *Env ron nt w* Pioneer Publications.
Palekar, S.A. (2012). *D v op nt A n str t on*. New Delhi: PHI Learning Private Limited.
Manisha Priyam; Menon Krishna and Banerjee, Madhulika. (2009). *Hu n ts G n r n t Env ron nt* Pearson.
Trivedi, Priya Ranjan. (1999). *En op of E o o n Env ron nt o u Env ron nt E t on*. New Delhi :Indian Institute of Ecology and Environment.
Vayunandan, E. and Mathew, Dolly. (2003). *Goo Gov rn n In t t v s n In* . New Delhi : Prentice Hall of India.

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U I : Excavations of early historic cities of :

(a) Northern India and Gangetic doab : Taxila and Hastinapura.

(b) Eastern India : Sisupalgarh and Chandraketugarh.

(c) Southern India : Arikamedu and Brahmagiri.

o o t Cours or

The students are made familiar with prehistoric, proto historic and historical sites through field visits. Slides, photographs of relevant sites, their significance in establishing chronologies is also discussed in the class. Visits to museums is also an important aspect through which students are made familiar with the material ev8315(s),8[illegible]

I C I F HE A E E E A D HE CA DIDA E

s bus s b n nto four un ts

There shall be questions in all. All questions carry equal marks. The first question shall be short answer type containing 15 short questions spread over the whole syllabus and each to be answered in about 25 to 30 words. The candidate is required to attempt any 9 short answer type questions. It shall carry 18 marks i.e. 2 marks of each and shall be **o pu sor** question. Rest of the paper shall contain units. Each unit shall have **t o** questions and the candidates shall be given interna

A CIE I DIA HI Y C E A CHAE GY

E E E I

ot The students shall have to opt for one paper for Semester - VI examination out of the following two papers :

ut n so st

Paper VII : Epigraphy and Numismatics

Paper VIII : Spread of Indian Culture in South-East Asia upto 12th Century A.D.

p r II E G A HY A D I A IC

Total Marks	:	100
Theory	:	90 Marks
Internal Assessment	:	10 Marks
Time	:	3 Hours

t v s

The paper is aimed to prepare students to handle the original source material – inscriptions and coins, which make the backbone of Ancient Indian History, as without the knowledge of epigraphy and numismatics, the subject cannot be mastered.

ot

1. The paper setter is required to set 9 questions in all.
2. The candidates are required to attempt five questions in all.
3. All questions shall carry equal marks.
4. The first question shall be short answer type containing 15 short questions spread over the entire syllabus. The candidates are required to attempt 9 short questions in about 25 to 30 words each. It shall carry 18 marks and shall be a **o pu sor** question.
5. The rest of the paper shall contain 4 Units. The entire syllabus has been divided into 4 Units. Each unit shall have two questions and the candidate shall be given internal choice i.e. the candidate shall attempt one question from each Unit i.e. 4 in all, of 18 marks each.

L I

(a) Origin and antiquity of writing in India with special reference to the origin of Brahmi script.
(b) Origin and antiquity of coinage in India.

L II

(a) Ashokan inscriptions – Pillar Edicts I to IV; Girnar Rock Edicts I, II and XIII. (Both for study and decipherment).
(b) Besnagar Pillar inscription of Heliodorus; Nasik Cave Inscription of Queen Balasri; Sarnath Buddha Image inscription of Kanishka's year 3; Junagarh Rock inscription of Rudradaman I, Saka year 72 (Study only). Gupta inscriptions—Allahabad P i l l a r inscription of Samudragupta, Mehrauli

Iron Pillar inscription of Chandra, Bhitari Stone Pillar inscription of Skandagupta (Study only).

(c) Post-Gupta inscriptions : Mandasor Stone inscription of Malava Samvat 589, Banskhera Copper-

felt in those countries, it is, therefore, necessar

Ess nt ' ' n s

1. Chatterji, B.R. : *H stor of In 'on s* (Early and Medieval) Meenakshi Prakashan, Meerut,1967.
2. Chatterji, B.R. : *In ' n Cu tur Inf u n n C bo '* University of Calcutta, Calcutta, 1933.
3. Coedes, C. : *' n of out ' E st As* University of California Press, London, 1966.
4. Coomaraswamy, A.K. : *H stor of In ' n n 'In 'on s n Art* Kessinger Publishing, New Delhi, 1972.
5. Harrison, Brian, : *out ' E st As A ' ort H stor* Macmillan Press, New York, 1966.
6. Majumdar, R.C. : *H n 'a Co on s n t ' F r E st* K.L. Mukhopadhaya, Calcutta, 1944.
7. Majumdar, R.C. : *uv rn 'p An nt In ' n Co on s n t ' F r E st* Modern Publication Syndicate, 1937.
8. Majumdar, R.C. : *bu D s or An An nt H n 'a Co on n C bo '* Lighting Source Incorporated, Madras, 1944.
9. Singhal, D.P. : *In ' n '_r 'C v t on* Vols. I & II, Michigan State University Press, Calcutta, 1972.

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Essential Readings

1. Adams, Thomas F. : Police Field Operations, Prentice Hall, New Jersey, 1998.
2. Petraco, Nicholas & Sherman, Hal : Illustrated Guide to Crime Scene Investigation, C.R.C. Press, Taylor & Francis Group Boca Raton, London, 2006.
3. Williams, J.E. Hall : The Role of the Prosecutor, Avebury, Gower Publishing Company, Ltd., England, 1988.
4. Carter, Robert E. : Arson Investigation, Glencoe Publishing Co., California, 978.
5. International Association: Criminal Investigation: Basic Procedures, Bureau of of Chiefs of Police Operations and Research, Maryland, USA 1975.
6. Fuqua, Paul & Wilson, Jerry V. : Security Investigator's Handbook, Gulf Publishing Company, London, 1979.
7. Vadackumchery, James : Professional Police Witness Interviewing, A.P.H. Publishing Corporation, New Delhi, 1999.

Further Readings

1. Singh, S.P. : Combating Bio- terrorism with Special Reference to Anthrax Bacteria, Reliance Publishing House, New Delhi, 2002.
2. Dutta, K.K. : Some Aspects of Criminal Law, A.P.H. Publishing Corporation, New Delhi, 1998.
3. Ghosh, S.K. and Rustamji, K.F. : Encyclopaedia of Police in India, Volume III Ashish Publishing House, New Delhi, 1997.
4. Vadackumchery, James : Indian Police and Miscarriage of Justice, A.P.H. Publishing Corporation, New Delhi, 1997.
5. Vadackumchery, James : Police, the Court and Injustice, A.P.H. Publishing Corporation, New Delhi,1997.
6. Sharma, R : Human Rights and Bail, A.P.H. Publishing Corporation, New Delhi, 2002.

Cours Cont nt

n t I

Death; Types of death- death due to suffocation hanging, drowning, accident, suicide and murder. Bodily changes after death.

n t II

Preservation of finger prints, footprints, and blood at the scene of crime.

n t III

Physical evidence, handling packing and forwarding of physical evidence, and types of opinion to be obtained from physical evidence.

n t I

Photography and its importance in police work; Polygraph; Brain mapping; and Narco Analysis.

Ess nt n s

1. Adams, Thomas F. : Police Field Operations, Prentice Hall, New Jersey, 1998.
2. Petraco, Nicholas & Sherman, Hal : Illustrated Guide to Crime Scene Investigation, C.R.C. Press, Taylor & Francis Group Boca Raton, London, 2006.
3. Williams, J.E. Hall : The Role of the Prosecutor, Avebury, Gower Publishing Company, Ltd., England, 1988.
4. Carter, Robert E. : Arson Investigation, Glencoe Publishing Co., California, 1978.
5. International Association : Criminal Investigation: Basic Procedures, Bureau of of Chiefs of Police Operations and Research, Maryland, USA, 1975.
6. Fuqua, Paul & Wilson, Jerry V. : Security Investigator's Handbook, Gulf Publishing Company, London, 1979.
7. Vadackumchery, James : Professional Police Witness Interviewing, P.H. Publishing Corporation, New Delhi,1999.

Furt r ⁄ n s

1. Singh, S.P. : Combating Bio- terrorism with SpeciaL Reference to Anthrax Bacteria, Reliance Publishing House, New Delhi, 2002.
2. Dutta, K.K. : Some Aspects of Criminal Law, A.P.H. Publishing Corporation, New Delhi, 1998.
3. Ghosh, S.K. and Rustamji, K.F. : Encyclopaedia of Police in India, Volume III Ashish Publishing House, New Delhi, 1997.
4. Vadackumchery, James : Indian Police and Miscarriage of Justice, A.P.H. Publishing Corporation, New Delhi, 1997.
5. Vadackumchery, James : Police, the Court and Injustice, A.P.H. Publishing Corporation, New Delhi, 1997.
6. Sharma, R : Human Rights and Bail, A.P.H. Publishing Corporation, New Delhi, 2002.

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IC' CA A D I E A
E E E

G n r Instru t ons

1. In case of the private candidates, there will be no internal assessment and the marks obtained in the external assessment of the practical examination shall be proportionately increased.
2. Harmonium will not be allowed as accompaniment in vocal music, but harmonium can be used while singing Alankars.
3. While sending the syllabus to paper-setter in theory, the syllabus prescribed for the practical paper also to be sent.
4. There will be ten questions in five units. The candidates will be required to attempt any five questions selecting at least one from each unit.
5. Separate Practical paper shall be set for each session from the syllabus prescribed for Practical Paper- B.
6. There should not be more thaPapP.( )-3241(s05(241(r)-4.34894(e)-1.78252( )-3.01205(t)0. 19.0241(o)-6.0241(u621)-6.0241(n)6u

Part B – Practical

(a) List of Detailed Ragas:
- (i) Marwa
- (ii) M adhang Sarang

(b) Non-detailed Ragas, description with Aroh, Avroh and pakad in the following Ragas:
- (i) Sohni
- (ii) Megh

(c) Talas : Tivara, Sultal on Tabla.

(i) One slow khayal with extempore Alaps and Tanas in any of the detailed Ragas.

One slow Gat with extempore Alaps and Toras in any of the detailed Ragas.

(ii) Two fast khayals or two fast gats with elaboration in each of the prescribed Ragas. 2.5 marks

(iii) Ability to recite Tivra, Jhoomra, and Punjabi talas in single .

(iv) Tuning of your instrument. 2.5 marks

(v) Capacity to play on Tabla the Talas prescribed in the course. 2.5 marks

(vi) Capacity to play on the Harmonium any raga

IC' CA A D I E A

E E E I

G n r Instru t ons

1. In case of the private candidates, there will be no internal assessment and the marks obtained in the external assessment of the practical examination shall be proportionately increased.
2. Harmonium will not be allowed as accompaniment in vocal music, but harmonium can be used while singing Alankars.
3. While sending the syllabus to paper-setter in theory, the syllabus prescribed for the practical paper also to be sent.
4. There will be ten questions in five units. The candidates will be required to attempt any five questions selecting at least one from each unit.
5. Separate Practical paper shall be set for each session from the syllabus prescribed for Practical Paper- B.
6. There should not be more than eight students i

(b) Tarana or one Fast Gat in Ektal 2.5 marks

(c) Any one of the following:- 2.5 marks

H E CIE CE

The syllabus of Home Science for B.A./B.Sc. (Honours) Third year (SEMESTER SYSTEM) has been E I ABEYA CE

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PHYSICS

B.Sc. (HONOURS) THIRD YEAR (SEMESTER SYSTEM) EXAMINATION

PAPER

Semiconductors

Unit I

Crystal Properties and Growth of Semiconductors Semiconductor materials, Crystal lattices, Ge and Si crystal structure, production of electronic grade Si, Bulk crystal growth, Epitaxial growth.

Bonding forces and energy bands in solids, Metals, semiconductors and insulators, Direct and Indirect semiconductors, intrinsic and extrinsic semiconductors, compensation, Electrons and holes, effective mass, Fermi level, Conductivity and mobility, temperature dependence of Carrier concentration, effect of temperature, doping and field on mobility, Hall effect, Invariance of Fermi level at equilibrium.

Excess carriers in semiconductors: Optical absorption, Photoluminescence, Electroluminescence, Carrier lifetime and photoconductivity, photoconductive devices.

Unit II

Diffusion and drift of carriers: Einstein relation, built-in fields in semiconductors with different doping profiles, energy band diagrams. Steady state carrie

Unit I

Computer Fundamentals

Types of Computer Systems and Operating Systems.
Introduction to Programming : Algorithms, Structured Programming. Basic idea of Compilers.
Data and Statements : Data Types. Constants and Variables. Mathematical, Relational, Logical and Bitwise Operators. Expressions and Statements. Block, Local and Global variables. Auto, Static and External Variables.
I/O Statements : printf, scanf, getc, getch, getchar, getche, etc.
Manipulators for Data Formatting: setw, width, endl and setprecision etc. ASCII Files I/O.
Preprocessor : #include and #define directives.
Control Statements :- If-statement. If-else Statement. Nested if Structure. Else-if Statement.
Ternary Operator. Goto Statement. Switch Statement. Unconditional and Conditional
Looping. While Loop. Do-while Loop. For Loop. Break and Continue Statements. Nested
Loops.
Arrays and Structures :- One and Two Dimensional Arrays. Idea of Structures, Strings and Pointers
Functions : Standard Library Functions and User-defined Functions.
Functions returning Values. Function Prototypes. Function Call by Value and by Reference.
Recursion.

Unit II

Design of algorithm and computer programs based on the numerical techniques read in Paper III “Statistics and Numerical Techniques”.
Programs : (a) Data handling: find standard deviation, mean, variance, moments etc., (b) the least squared fitted curve for a data set, (c) roots of quadratic equations, (d) first order derivative at given x for a data set using Lagrange interpolation, (e) numerical integration on 1-D function using Simpson methods, (f) solving a differential equation using Euler/Runge-Kutta method, (g) Sum, Difference and Product of Matrices, (h) determinant of a matrix - its eigenvalues and eigenvectors.(h)Plotting and evaluation of mathematical functions.

Books

1. Schaum's Outline of Programming with C, Byron Gottfried, McGraw-Hill.
2. Computer Programming in C, V. Rajaraman (Prentice Hall of India Pvt. Ltd.) (2006)
3. Computer Applications in Physics: S. Chandra (Narosa) (2008).
4. Computational Physics: R.C.Verma, P.K. Ahluwalia and K.C. Sharma (New Age) (2005).

PHYSICS
PAPER VIII

Interactions and Detection

Unit I

Radioactivity

Radioactivity Alpha decay, β^-, $\beta+$ and EC decays, Radioactivity units, gamma rays, Internal conversion, X-rays, Auger electron, Bremesstrahlung, Annhilation radiation.
Neutron sources- fission, radioisotope based sources and photoneutron sources, Accelerator based sources.
Radiation Interactions Interaction of light and heavy Charged Particles, Stopping power, energy and range straggling.
Interaction of Fast Electrons - ionsation and radiative loss, backscattering.
Interaction of Gamma rays, photoelectric absorption, Compton scattering and pair production. Attenuation coefficient.
Interaction of Neutrons, Slowing down power, thermal neutrons.
Natural Background Natural radioactivity, Air borne radioactivity, Primary and secondary Cosmic rays.

Unit II

General Properties of Radiation Detectors Modes of detector operation, Current mode, pulse mode, Pulse Height Spectra, Energy Resolution, Detection Efficiency, Dead Time-paralyzable and non-paralyzable models.
Radiation Detectors
Ionization process in gases, Ion pair formation, fano factor, diffusion, charge transfer and recombination, Charge Migration and Collection.
Gas-filled detectors: Gas Multiplication, avalanch

o n Boo s

1. Radiation detection and measurement: G.F. Knoll (Wiley, New York) (2000).

p r III s s t

Note : The students are expected to perform any 6 experiments taking at least 3 from each section.

n t I

1. Measurement of vacuum using the pirani/thermocouple gauge made using electric bulb filament.
2. To study Poisson and Gaussian distributions using a GM Counter.
3. To study absorption of gamma rays in Pb and Fe absorbers.
4. Strength of Alpha source using Solid state nuclear track detector.
5. To study regulated power supply and voltage multiplier circuits (using breadboard).

n t II

6. To design an Astable multivibrator of given specifications using 555 Timer IC.
7. To design a monostable multivibrator of given specifications using 555 Timer IC and to measure the pulse-width of its output.
8. To study logic gates and clocked JK Master-Slave flip flops using IC's.
9. Study of photon intensity variation through crossed polariods and diffraction spectrum from diffraction grating using LDR/Photodiode.
10. To measure resistivity of semiconductor at different temperatures using four probe method and the deduce band gap of the semiconductor.

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PHYSICAL CHEMISTRY

Total Marks : 50
Theory : 45

n t III

t on n s (5 lectures)

Nature and classification of lignad substitution reactions, application of V.B. & C.F. theories to predict the substitution reactions. Mechanism of ligand replacement reactions, substitution in octahedral complexes acid hydrolysis, base hydrolysis, acid-catalysed, acid hydrolysis and acid hydrolysis for chelates.

n t I (5 lectures)

Substitution in square planar complexes. The trans-effect & its Synthetic applications, M.O. theories and trans-effects. Electron transfer reactions & their mechanism. Molecular rearrangements, mechanistic pathways of substitution.

Instructions for paper setters and candidates:

v E n r w s t tot of I E qu st ons o pr s n qu st ons fro un t n E

PAPER III PHYSICAL CHEMISTRY

Total Marks : 50

Theory : 45

Internal Assessment : 5

Total Lectures : 20

OBJECTIVE OF THE COURSE

To teach the fundamental concept of Chemistry and their applications. The syllabus pertaining to B.Sc. (HONOURS) in the subject of Chemistry has been upgraded as per provision of the UGC module and demand of the academic environment. The course contents have been revised from time to time as per suggestions of the teachers of the Chemistry working in the Panjab University, Chandigarh and affiliated colleges. The syllabus contents are duly arranged unit wise and contents are included in such a manner so that due importance is given to requisite intellectual and laboratory skills

Unit I

Colloids I (5 Lectures)

The colloidal state; preparation of colloidal solutions, Methods of purification of colloidal systems, dialysis, electro-dialysis, filtration, Ultra-filtration. Classification of colloidal systems, their typical properties with special reference to optical properties (Tyndall effect).

Unit II

Colloids II (5 Lectures)

The Brownian movement. Electrokinetic phenomena, Stabilization of colloidal systems and theories of stability; zeta potential, Coagulation, Flocculation of colloids by electrolytes and its mechanism. Association Colloids, Micellar system, Emulsions and their types, HLB value of emulsifiers, Introduction to microemulsions.

B A Y

B 'Honou s F t st r 'E n t on D r

PAPER-A: BIOLOGY OF CRYPTOGAMS AND SEED PLANTS

Max. Marks	:	40
Theory	:	36
Internal Assessment	:	04

t v The basic objective of this paper is to make the students understand the diversity in various life forms of plant kingdom. It provides knowledge about evolution of simpler forms to complex ones along with their morphology, anatomy and reproduction.

n t o o o Teaching methodology includes series of lectures, making use of charts, transparencies, LCD, Models, slides, practical demonstrations, extension lectures from experts, field visits, discussions, quiz competitions etc. In practicals, students would be provided with fresh/preserved materials for their morphological and anatomical studies making use of microscopes and binoculars and hands-on tools/equipment etc.

I
BI GY F C Y GA

Algae: Occurrence and distribution; thallus organization and evolutionary tendencies; ultrastructure of algal cell; criteria for classification, structure and life history of *on u* (Chlorophyceae), *u r* (Xanthophyceae), *E to rpus* (phaeophyceae), *B tr osp r u* (Rhodophyceae) and 2(s)3.45768(i)0.89126(8252(e)-1.78252(a)

L III
EED A

n ro s t s r n p nts: General characteristics and types.

v n C s: Distribution; vegetative organography and anatomy; reproductive cycle –sporophytes and sporangia, gametophytes, fertilization, embryogeny and seed development of *C s*.

Con r s: General organography and anatomy; foliage leaves; storbilli and sporangia; reproductive cycle– sporogenesis, gametophytes, fertilization, embryogeny and seed development of *nus*.

Gn t s: Habit and distribution; vegetative organography and anatomy; reproductive cycle – the storbilli, sporogenesis, male and female gametophytes, pollination, fertilization and embryogeny of *Ep* .

L I

A t rn t v s or pro u t on: Vegetative and sexual reproduction.

F o r: Evolution, concept of flower as a modified determinate shoot and functions of flower.

tru tur o Ant r : Microsporogenesis: formation of pollen grains (male gametophyte); pollen germination; pollen tube growth.

Structure of Pistil Ovules; megasporogenesis; development of embryo sac (female gametophyte).

n s s n A n s o n t on: Pollen-stigma interaction; self-incompatibility; double fertilization, apomixis.

n Fru t: Development of endosperm and embryo in monocotyledons and dicotyledons; storage of reserve materials and desiccation in seeds; dormancy and seed germination; fruit maturation; ripening and dispersal.

u st n s

1. Bhojwani, S.S. and Bhatnagar, S.P. The Embryology of Angiosperms, 4th revised and enlarged edition. Vikas Publishing House, Delhi, India, 2000.
2. Bold, H.C., Alexopoulos, C.J. and Delevoryas, T. Morphology of Plant and Fungi (4th Edition), Harper and Foul Co., New York, 1980.
3. Cronquist, A. The evolution and classification of flowering plants, Thomas Nelson (Printers) Ltd., London and Edinburgh, 1968.
4. Delevoryas, Th. Plant Diversification, Modern Biology Series. Halt, Rinehart and Winston, New York, 1965.
5. Dhand, Neelam. Systematics of Spermatophyta, Trueman Book Company, Jalandhar, India, 2006.
6. Dube, H.C. An Introduction to Fungi, Vikas Publishing House Pvt. Ltd., Delhi, India, 1990.
7. Foster, A.S. and Gifford, A.E.M., Jr. The Comparative Morphology of Vascular Plants, Vakils, Peffer and Simons Pvt. Ltd, 1967.
8. Gifford, E.M. and Foster, A.S. Morphology and Evolution of Vascular Plants, W.H. Freeman & Co., New York, 1989.

9. Gilbert, M.S. Cryptogamic Botany, Vol. I & II (2nd Edition), Tata McGraw Hill Publishing Co. Ltd., New Delhi, India, 1985.
10. Johri, B.M. Embryology of Angiosperms, Springer-Verlag, Berlin, 1984.
11. Kumar, H.D. Introductory Phycology, Affiliated East-West Press Ltd., New York, 1988.
12. Puri, P. Brophytes, Atmaram & Sons, Delhi, India, 1985.
13. Raghvan, V. Molecular Embryology of Flowering Plants, Cambridge University Press, New York, 1997.
14. Rangaswamy, G. and Mahadevan, A. Diseases of Crop Plants in India, Prentice Hall India Pvt. Ltd. New Delhi, India, 1999.
15.

B A Y

E E E

A E B GE E IC A D A B EEDI G BI CHE I Y EC A BI GY A D BI ECH GY

t v The course work of this paper deals with basic concepts of genetics, plant breeding, molecular biology and biotechnology. It deals with various types of plant reproduction and methods of plant improvement. It provides knowledge of molecular and cellular basis that would enable the students to understand the hereditary and evolutionary trends in plants kingdom.

n t o o o Teaching methodology includes series of lectures, making use of charts, transparencies, LCD, Models, slides, practical demonstrations, extension lectures from experts, field visits, discussions, quiz competitions etc. In practicals, students would be provided with fresh/preserved materials for their morphological and anatomical studies making use of microscopes and binoculars and hands-on tools/equipment etc.

L I
GE E IC

C v s on - Mitosis and Meiosis.

n s E p r nts n p s o In r t n ; Backcross and test cross; gene interactions and modified dihybrid ratios – complementary, supplementary, duplicate and epistatic factors.

u nt t t v G n t s: Quantitative traits and quantitative genetics; the multiple factor hypothesis; descriptive statistics.

n n o n t on: Coupling and repulsion phases; two and three point testcrosses with their significance in chromosome mapping; interference and co-efficient of coincidence.

t rn In u n on In r t n : Shell coiling in snails and Kappa particles in *r u* ; cytoplasmic inheritance in yeast (mitochondria) and *r b s p* (plastids).

A t r t ons n t G n t up n s t G n t v : Spontaneous and induced mutations; mutagens – types and mode of action; transitions, Transversions and frame-shift mutations; detection of mutations.

A t r t ons n G n t up n s n C ro oso tru tur : Origin, types and effects of duplications, deletions, inversions and translocations; meiosis in structural heterozygotes.

A t r t ons n G n t up n s n C ro oso u r : Origin, types and effects of auto and allopolyploidy; origin and meiosis in nullisomics, monosomics and trisomics.

u st n s

1. Alberts, B., Bray, D., Lewis, J., Raff, M., Roberts, K. and Watson, J.D. Molecular Biology of Cell, Garland Publishing Co., Inc., New York, USA, 1999.
2. Atherly, A.G., Girton, J.R. and McDonald. The Science of Genetics, Saunders College Publishing Co.,

4. Correlation of floral structure with pollination system (e.g. *v , s u* , pea, ~ *t* ' *rus*, wheat, rice, maize).
5. Field exploration for detection of male sterile plants and estimation of their pollen fertility in locally grown crop plants e.g. *or* '*u* , tomato and ~ *nu* .

B A Y

B 'Honou s t st r 'E n t on

A E A IC BI GY A D A H GY

t v s The basic objective of this paper is to make students familiar with the systematic position of microorganisms, their ultrastructure, classification and industrial application. It also deals with the important aspects of plant diseases, their pathogens and disease management.

n t o o o Teaching methodology includes series of lectures, making use of charts, transparencies, LCD, Models, slides, practical demonstrations, extension lectures from experts, field visits, discussions, quiz competitions etc. In practicals, students would be provided with fresh/preserved materials for their morphological and anatomical studies making use of microscopes and binoculars and hands-on tools/equipment etc.

L I

IC BI G

General account of Microorganisms and their characteristics features.

tr stru tur o roor n s s: Prokaryotic microorganisms; fine structure of prokaryotic cell; eukaryotic microorganisms; viruses – properties and classification; characteristic features of host-virus interaction; bacteriophage T4; tobacco mosaic virus; general account of mycoplasma and actinomycetes.

In ustr App t on o roor n s s: Organic acids, alcohol, food processing, milk products, antibiotics and biopesticides.

L II

G n t o n t on n ro r ot s: Conjugation, transformation and transduction.

o o roor n s s n o o n o n tro n n r on B o o t on.

L III

A H G

or D s s s o nts t r s pto s n Contro : Blast and brown spot of rice, rust and smuts of wheat, downy mildew and green ear disease of bajra, white rust of crucifers, late blight of potato, wilt of pigeon pea, damping off seedlings of tomato/mustard

L I

t o n Att n D ns n s Physical, physiological, biochemical and molecular aspects.

nt D s s Ep o o : Transmission and spread of plant pathogens; disease cycles, epidemics; modeling and disease forecasting.

u st n s

1. Agrios, G.N. Plant Pathology, Academic Press, London, 1997.
2. Albajes, R. Gullino, M.L., Van Lenteren, J.C. and Elad, Y. Integrated Pest and Disease Management in Green house crops, Kluwer Academic Publishers, 2000.
3. Bridge, P. et al. Molecular Variability of Fungal Pathogens, CAB International, UK, 1998.
4. Bridge, P. et al. Application of PCR in Mycology, CAB International, UK, 1999.
5. Bridge, P., Moore, D.R. and Scott, P.R. Informational Technology, Plant Pathology and Biodiversity, CAB International, UK, 1998.
6. Clifton, A. Introduction to the Bacteria, McGraw Hill Co., New York, 1958.
7. Mandahar, C.L. Introduction to Plant Viruses, Chand & Co. Ltd., Delhi, India,1998.
8. Persley, G.J. Biotechnologies and Integrated Pest Management, CAB International, UK, 1996.
9. Skerritt, J.H. and Apples, R. New Diagnostics in Crop Sciences, CAB International, UK, 1995.

u st or tor E r s s

1. Calibration of microscope: determination of dimensions of microorganisms (suggested model organisms: yeast, lactobacilli, cyanobacteria).
2. Cultivation media for autotrophic and heterotrophic microorganisms (cleaning of glasswares, mineral media, complex media, solid media, sterilization).
3. Isolation of microorganisms: streaking on agar plates/pour plate method, isolation of clones, preservation.
4. Preparation of Winogradsky column using pond bottom mud, observations on temporal sequence of appearance of microbes. (visual appearance, microscopic observations)
5. Observation on virus infected plants (symptoms).
6. Fermentation by yeast (inverted tube method, use of different substrates, e.g. glucose, fructose, cane sugar, starch)
7. Study of histopathology of various plant diseases included in theory.
8. Isolation and culture of plant pathogens (e.g. *Co totr u Fus r u A t rn r*) and establishment of Koch's postulates and their pathogenicity.
9. Study on antagonism between isolated antagonists and plant pathogens and test of biological control.
10. Demonstration of the assay of prohibitins (phytoalexins).
11. Demonstration of biopesticides (essential oils, neem, turmeric and garlic) against some pathogens.

L III

E I E A BI GY

Intro u t on

13. Srivastava, H.N. Diversity of Seed Plants and Their Systematics, Vol. III, Pradeep Publications, Jalandhar, India, 2014.
14. Vasil, I.K. and Thorpe, T.A. Plant Cell and Tissue Culture, Kluwer Academic Publishers, The Netherlands, 1994.

Gu n s or Bot n ﬁ t E n t on

r s
t
Int Ass ss nt
rs

Q.1 Describe specimen A in technical terms & proper sequence. Draw F.D and V.S of the flower. Cut T.S of ovary and V.S of the flower and show it to the examiner. Write its F.F. as well. 6

Q.2 Identify specimen B and write Histopathological

or Con u t o ‚Ff t ’ E ’ n’t on

Max. Marks : 20
Practical Exam. : 18 marks
Internal Assessment : 2 marks

Note : 1. Practical will be of 4 hrs. duration.

1. The students will be required to submit in writing the principles, methods employed and precautions to be observed wherever necessary within 1 hr. of the start of examination.

I Draw a labeled sketch of given system and show to examiner/Spot parts of system on the charts/models. (3)

II Identification of phases of oestrous cycle. (1)

III Record biota in a given sample from a lake. Make labeled sketches and demonstrate them to the examiner. (2)

IV Examine the water sample for various communities from different zones of a lake and draw labelled sketches. (2)

V Identify the specimens/slides/charts A-D. Give reasons of the identification. (4)

VI. Note book and charts. (3)

VII. Viva-Voce. (3)

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PAPER II APPLIED BIOLOGY II

Max. Marks : 40
Theory Exam. : 36 marks
Internal Assessment : 4 marks
Time : 3 hrs.

Note: Nine questions are to be set. Question No. 1 is compulsory consisting of short answer type questions covering the whole syllabus. It will have 8 parts of 1 marks each. Two questions are to be set from each unit. One question is to be attempted from each unit. In all, Five questions are to be attempted including compulsory one. 50% of the questions are to be split up into 2-4 sub-parts.

UNIT I

Ecosystem: Study of ecosystem with particular reference to the components of aquatic ecosystem. Food chains and food webs. Flow of energy in a food chain.

UNIT II

Physico-chemical factors affecting water environment: Temperature, light, current of water, density, pH, dissolved oxygen, carbon dioxide and nutrients.

UNIT III

or Con u t o ‚Ŧ t ' E ' n't on

Max. Marks : 20
Practical Exam. : 18 marks
Internal Assessment : 2 marks