

**Department of Higher Education, Govt. of M.P.**  
**Under Graduate Semester wise Syllabus**  
as recommended by Central Board of Studies and approved by the Governor of M.P.

<b>Class</b>	<b>%B.Sc.</b>
<b>Semester</b>	<b>%V</b>
<b>Subject</b>	<b>%GEOLOGY</b>
<b>Title of Subject Group</b>	<b>%Earth History-Palaeontology</b>
<b>Paper No.</b>	<b>%FIRST</b>
<b>Compulsory/Optional</b>	<b>%Compulsory</b>
<b>Max. Marks</b>	<b>%35</b>

**Particulars**

<b>Unit-1</b>	1. Introduction to Palaeontology. 2. Conditions and Modes of fossilization. 3. Uses of fossils
<b>Unit-2</b>	1. Index fossils and their importance. 2. Morphology and geological distribution of Rugose Corals. 3. Morphology and geological distribution of Brachiopoda
<b>Unit-3</b>	1. Morphology and geological distribution of Graptolite. 2. Morphology and geological distribution of Trilobite. 3. Morphology and geological distribution of Echinoides.
<b>Unit-4</b>	1. Morphology and geological distribution of Lamellibranchia. 2. Morphology and geological distribution of Gastropoda. 3. Morphology and geological distribution of Cephalopoda.
<b>Unit-5</b>	1. Basic ideas about micropalaeontology. 2. Morphology and geological distribution of foraminifera. 3. Study of the following plant fossils: Glossopteris, Gangamopteris. Vertebraria, Schizoneura and Ptilophyllum.

**Suggested Readings :**

1. Invertebrate Palaeontology – H. Woods
2. Introduction to palaeontology – A.N. Davis
3. An introduction to invertebrate Palaeontology – P.C. Jain and M.S. Anant Raman

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<b>Class</b>	<b>%B.Sc.</b>
<b>Semester</b>	<b>%V</b>
<b>Subject</b>	<b>%GEOLOGY</b>
<b>Title of Subject Group</b>	<b>%Earth History –Stratigraphy</b>
<b>Paper No.</b>	<b>%Second</b>
<b>Compulsory /Optional</b>	<b>%Compulsory</b>
<b>Max. Marks</b>	<b>%35</b>

**Particulars**

<b>Unit-1</b>	<ol style="list-style-type: none"> <li>1. Introduction to Stratigraphy. Geological time scale.</li> <li>2. Basic concept of Lithostratigraphic. Chronostratigraphic and biostratigraphic units.</li> <li>3. Principles of Stratigraphic correlation.</li> </ol>
<b>Unit-2</b>	<ol style="list-style-type: none"> <li>1. Stratigraphy, geographic distribution and economic importance of Archaeans of South India.</li> <li>2. Stratigraphy, geographic distribution and economic importance of Archaeans of Madhya Pradesh &amp; Chhatisgarh</li> <li>3. Stratigraphy, geographic distribution and economic importance of Archaeans of Rajasthan.</li> </ol>
<b>Unit-3</b>	<ol style="list-style-type: none"> <li>1. Stratigraphy, geographic distribution and economic importance of Cuddapah Supergroup.</li> <li>2. Stratigraphy, geographic distribution and economic importance of Vindhyan Supergroup.</li> <li>3. Stratigraphy, fossil contents and geographic distribution of Palaeozoic of Salt Range and Spiti.</li> </ol>
<b>Unit-4</b>	<ol style="list-style-type: none"> <li>1. Stratigraphy, classification and geographic distribution of Gondwana Supergroup.</li> <li>2. Palaeoclimate and economic importance of Gondwana Supergroup.</li> <li>3. Stratigraphy, distribution and fossil contents of Jurassic of Kutch.</li> </ol>
<b>Unit-5</b>	<ol style="list-style-type: none"> <li>1. Stratigraphy, distribution and fossil contents of Cretaceous of South India, Bagh beds and Lameta beds.</li> <li>2. Deccan Traps. Age of Deccan traps.</li> <li>3. Siwalik Group and importance of vertebrate fossils.</li> </ol>

**Suggested Readings :**

1. Invertebrate Palaeontology – H. Woods

1. Introduction to Palaeontology – A.N. Davis

2. An introduction to Invertebrate Palaeontology – P.C. Jain and M.S. Anant Raman

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 मध्य प्रदेश उच्च शिक्षा विभाग  
 के अधीन स्नातकोत्तर स्तर पर  
 सिद्धान्त, व्याख्यात्मक, प्रयोगिक एवं  
 प्रयोगिक विषयों के लिए  
**Session 2010-11**

Class- B.Sc.  
 Semester-V  
 Subject- GEOLOGY  
 Paper – Practical  
 Paper Title – Earth History-Palaeontology and Stratigraphy

	<p>1. Detailed study of the following fossils in hand specimens:</p> <p>Nummulitis, Calceola, Zaphrentis, Micraster, Hemiaster, Cidaris, Productus, Rhynchonella, Spirifer, Terebratula, Gryphea, Pecten, Venus, Cardita, Arca, Trigonia, Cerithium, Conus, Physa, Murex, Natica, Cypraea, Trochus, Turritella, Belemnitis, Orthoceras, Nautilus, Goniatites, Ceratite, Acanthoceras, Perisphinctis, Calymene, Paradoxides, Phacops, Monograptus, Diplograptus, Glossopteris, Gangamopteris, Vertebraria, Schizoneura and Ptilophyllum.</p> <p>1. The distribution of the important stratigraphic units on the outline map of India.</p>
	<p>1- fuEufyf [kr thok'eka dk LFknh; v/; ; u %U; ti; nykbVt] dSyfl ; syk] tQj fVI] ekbØLVj] gfe, LVj] fl MfjI ] i kMDVI ] VjhcV/nyk] fj dksusy] Li hjhQj] xSQ; k] i DVsu] ohul ] dkfMk/k] vkdk] VRbxksu; k] I jhFkh; e] dksuI ] Qkbl k] E; j d t] ukfVdk] I kbfi z k] VRcdI ] V; j Vsyk] osyeukbfVI ] vkj FkksI jkl ] ukMVI ] xksu; kVkbV] I jkVkbV] , dkfFkksI jkl ] i fjl fQDVl ] dSyhehu] i j kMkDI kbV] QdksI ] eksuksii VI ] fMIyksii VI ] Xykd kSVfj t] xSkksVfjI ] ofVb f j ; k] I kb t k s ; j k] fvykQk; ye]</p> <p>2- Hkkjr ds ekufp= ea fofHku 'ksy Lrfjr foKku dh Qkjesku dks n'kkZuk</p>

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mPp f'k{kk foHkk} e-iz 'kkI u  
Lukrd d{kkvka dsfy; s l ekVj vuq kj ikB; de  
dnh; v/; ; u e.My }kjk vuqkai r rfk e- iz dsjkt; iky }kjk vuqkai  
**Session 2010-11**

Class- B.Sc.  
Semester- V  
Subject- Geology  
Paper - Project

M.M.-50

- 1. Description of fossils local area.**
- 2. Study of the invertebrate fossils found in an area.**
- 3. Study of stratigraphic sequence of an area.**
- 4. Project work allotted as per the necessity and facilities available at the local level.**

1- LFkkuh; {ks= ds thok'eka dk foj.k

2- {ks= ea ik; s tkus okys vd'ks dh thok'eka dk v/; ; u

3- LFkkuh; {ks= ds Lrj Øe dk v/; ; u

4- LFkkuh; vko'; drkvka , oami yC/k l qo/kkvka ds vuq lk vkoVr i fj; kst uk dk; l

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mPp f'k{k foHkx] e-iz 'kk u  
Lukrd d{kvk dsfy; s l ekVj vuq kj ikB; de  
dnh; v/; ; u e.My }kjk vuqkál r rFk e- iz dsjkt; icy }kjk vuqkánr  
Session 2010-11

Class / d{k	% B.Sc.
Semester / l ekVj	% VI
Subject / fo"k;	% GEOLOGY HkfoKku
Title of Subject Group fo"k; l eg dk 'kkzd	% Earth Resources
Paper No. / izui = dekd	% H&I d k/ku
Compulsory / vfuoK; l; k Optional / ofiyi d vfuoK; l	% First
Max. Marks vf/kdre vó	% Compulsory % 35

**Particulars / foOj .k**

<b>Unit-1</b>	1. Introduction to Economic Geology. 2. Classification of Mineral Deposits. 3. Processes of formation of Ores-Magmatic Concentration, Hydrothermal Solutions and Skarns.
<b>bdlbz &amp; 1</b>	1- vkfFkd HkfoKku dk ifjp; A 2- [kfu t fu{ki ka dk oxhdj .kA 3- v; Ldka ds fuekz k i Øe&eXeh; l kUnz k] m".k tyh; foy; u , oa LdkuA
<b>Unit-2</b>	1. Oxidation and Supergene Sulphide Enrichment. 2. Sedimentation as process of Ore formation. 3. Weathering Products and Residual Deposits. 4. Geological Thermometers
<b>bdlbz &amp; 2</b>	1- vkDI hdj .k , oa A/ozt fur l YQkbM l ef) A 2- vol knu&v; Ld fuekz k i ØeA 3- vi {k; mRi kn , oa vof' k"V fu{ki A 4- HknoSKkfud rki eki h
<b>Unit-3</b>	1. Metallic mineral deposits of India with reference to their mode of occurrence, mineralogical characters, geographic distribution and economic uses of:-Iron, Manganese, Chromium, Copper, Lead-Zinc, Aluminum and Gold.  2. Non-metallic deposits of India with reference to their mode of occurrence, mineralogical characters, geographic distribution and economic uses: Mica, Magnesite. Talc, Barite, Asbestos, Kyanite, Diamond, Corundum, Beryl, Fluorite. and Gypsum.

<b>bdlbz &amp; 3</b>	<p>1- Hkkjr ds l nHkZ ea fuEufyf[kr /kkfRod [kfut fu{ksi ks dh ikfir voLFkk [kfuth; xqk] HkkSxksyd forj.k ,oa vkfFkd mi ; ksx 'kh"kd vUrxr o.ku &amp; ykSj] e&amp;uht] Økfe; e] rkck] l hl k&amp;tLrk] ,Y; ehu; e ,oaLo.kA</p> <p>2- Hkkjr ds l nHkZ ea fuEufyf[kr v/kkfRod [kfut fu{ksi ks dh ikfir voLFkk [kfuth; xqk] HkkSxksyd forj.k ,oa vkfFkd mi ; ksx 'kh"kd vUrxr o.ku&amp; ekbdk] e&amp;ud kbV] Vkkd] cjkV] ,Lct.VI ] dk; ukbV] Mk; e.M] dkj UMe] cfjy] ¶lykj kbV ,oafll eA</p>
<b>Unit-4</b>	<p>1. Origin of Coal. Stratigraphy of Coal Measures in India. Peat, Lignite, Bituminous and Anthracite Coals.</p> <p>2. Coal and Lignite Deposits of India.</p> <p>3. Origin, Migration and Entrapment of Natural Hydrocarbons (Oil and Natural Gas).</p> <p>4. Structural and Stratigraphic Traps On-shore and Off-shore Distribution of Petroliferous Basins (Oil and Natural Gas) in India.</p>
<b>bdlbz &amp; 4</b>	<p>1- dks yk dh mRi fRr] Hkkjr ds dks yk l rjka dk l rj foKku &amp; ihv fyXukbV] fcVteul ,oa ,UFkd kbV dks ykA</p> <p>2- Hkkjr ds fyXukbV ,oa dks yk fu{ksi</p> <p>3- ikdfrd gkbMRkdcku ¼[kfut rsy ,oa ikdfrd xS ½ dh mRi fRr ,oa ikotua</p> <p>4- l jpuRed ,oa l rj rsy l p; {ks= A Hkkjr ds [kfut rsy vkSj ikdfrd xS fu{ksi %LFkyh; ,oa l kxjrVh; {ks=A</p>
<b>Unit-5</b>	<p>1. Mineral Wealth of Madhya Pradesh.</p> <p>2. Principles of Mineral Economics.</p> <p>3. National Mineral Policy.</p> <p>4. Environmental Impact due to Exploitation of Mineral Resources.</p>
<b>bdlbz &amp; 5</b>	<p>1- e/; insk dh [kfut l ankA</p> <p>2- [kfut vkfFkd dh ds fl )kar] ¼Mineral economics½</p> <p>3- jk"Vh; [kfut ulfrA</p> <p>4- [kfut l kska ds vR; f/kd nksu ds i ; kbj .kh; i HkkoA</p>

**Suggested Readings :**

1. Economic mineral deposits of India by : Umeshwar Prasad
2. Economic mineral deposits of India by : Gokhale and Rao
3. Economic mineral deposits of India by :A. Bateman
4. India's minerals resources by : S. Krishnaswami
5. vkfFkd Hk&foKku }kjk %d".k xksi ky 0; kl
6. vkfFkd ,oa0; ol kf; d HkfoKku }kjk % i ks vkj- ih ekat j d j

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 द्वारा अनुमोदित  
 मध्य प्रदेश सरकार द्वारा अनुमोदित  
 मध्य प्रदेश सरकार द्वारा अनुमोदित  
**Session 2010-11**

Class / d{k	% B.Sc.
Semester / l e{Vj	% VI
Subject / fo"K;	% GEOLOGY HkfoKku
Title of Subject Group fo"K; l eg dk 'HkfoKku	% Applied Geology
Paper No. / i{ui = d{kd	% 0; kogkfj d HkfoKku
Compulsory / vfuok; l; k Optional / of{fyi d vfuok; l	% Second
Max. Marks vf/kdre v{	% Compulsory % 35

**Particulars / fooj .k**

<b>Unit-1</b>	1. Engineering Geology and its importance. 2. Elementary ideas about engineering properties of rocks. 3. Geological conditions for construction of Dams 4. Geological conditions for construction of Tunnels.
<b>bdlbz &amp; 1</b>	1- v{Hk; k{=dh HkfoKku , oa ml dk egRoA 2- 'kSyka ds v{Hk; k{=d xq kka dh i kj {Hkd vo/kkj .kA 3- ckd k ds fuekZ k ds fy; s HkfoKku i fj fLFk; kA 4- l j a ds fuekZ k ds fy; HkfoKku i fj fLFk; kA
<b>Unit-2</b>	1. Hydrologic cycle and occurrence of groundwater. 2. Hydrological properties of rocks. Classification of aquifers. 3. Types of wells. 4. Quality of groundwater.
<b>bdlbz &amp; 2</b>	1- Hknt y pØ , oa HkfoKku ty dh mi fLFkfra 2- 'kSyka ds Hknt yh; xq k] ty Hkfr l rj ka dk oxh{dj .kA 3- d{y/ka ds i d kj A 4- Hknt y dh xq koRrka
<b>Unit-3</b>	1. Introduction to mineral exploration. 2. Surface and sub-surface exploration methods. 3. Elementary ideas about gravity, electrical and magnetic methods of expoloration. 4. Elementary ideas of methods of drilling.

<b>bdlbz &amp; 3</b>	1- [kfut vlošk.k dk ifjp; A 2- [kfut vlošk.k dh l rgh , oa v/kkd rgh fof/k; kM 3- vlošk.k dh xq Roh; ] oS] fird , oa pñcdh; fof/k; ka dh i kj fEHkd tkudkjA 4- ošku dh fof/k; ka dh i kj fEHkd tkudkjA
<b>Unit-4</b>	1. Elementary ideas of mining. 2. Surface mining methods. 3. Under-ground mining methods. 4. Environmental impact of mining.
<b>bdlbz &amp; 4</b>	1- [kuu dh i kj fEHkd tkudkjA 2- l rgh; [kuu fof/k; kM 3- [kuu dh Hkñexr fof/k; kM 4- [kuu ds i ; kbj.kh; i HkkoA
<b>Unit-5</b>	1. Introduction to Aerial Photography. 2. Types of aerial photographs. 3. Elements of aerial photointerpretation. 4. Concept and application of Remote sensing techniques
<b>bdlbz &amp; 5</b>	1- gokbz Nk; kfp=.k dk ifjp; A 2- gokbz Nk; kfp=ka ds i zlkjA 3- gokbz Nk; kfp=ka ds foopuk ds rRoA 4- l ñj l ñnu rduhd dh vo/kkj.kk , oami ; ksA

### Suggested Readings :

1. Principles of Engineering geology and geotechniques. By : Krynine and Judd
2. Groundwater hydrology by: D.K. Todd
3. Textbook of Engineering Geology by : N.C. Kesavulu
4. Conrse in mining geology by R.N.P. Arogyaswami
5. Principles and Applications of Photocopy by : S.N. Pandey
6. Groundwate by : R.M. Raghunath
7. Hkksxy foKku }kjk % MKW , y/ d' fj Nkfj ; k
8. vkfFkd , oa 0; ogkfjd HkñoKku }kjk % vkj- i h- ekat j d j
9. i kj ñHkd [kfuTe ch- ds fl g
10. dñ/ka dk 0; ogkfjd Hkñt y foKku }kjk % d".k xki ky 0; kl



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mPp f'k{k foHkx] e-iz 'kkI u  
Lukrd d{kvk dsfy; s l ekVj vuq kj ikB; dē  
dnh; v/; ; u e.My }kjk vuqkāl r rFk e- iz dsjkt; iky }kjk vuqkāl  
**Session 2010-11**

Class- B.Sc.  
Semester-VI  
Subject- Geology  
Paper - Project

M.M.-50

1. Study of ore minerals of an area.
2. Study of Groundwater conditions of an area.
3. Study of Engineering Properties of rocks of local area.
4. Project work allotted as per the necessity and facilities available at the local level.

- 1- {ks= ds vkfFkZd [kfu tka dk v/; ; u
- 2- {ks= ds Hknt y dh fLFkfr dk v/; ; u
- 3- LFkkuh; {ks= ds 'kSyka ds vfHk; kfi=d xqkka dk v/; ; u
- 4- LFkkuh; vko'; drkvka , oami yC/k l fpo/kkvka ds vuq lk vkoñVr i fj; kst uk dk; l

**Scheme of marks**  
**Geology**  
**B.Sc. Semester-V**  
**Session 2010-11**

<b>Paper</b>	<b>Theory</b>	<b>CCE</b>	<b>Total</b>
Earth History – Palaeontology - I	35	15	50
Earth History – Stratigraphy – II	35	15	50
Practical	---	---	50
Project	---	---	50
Internship	---	---	100
			<hr/> <b>300</b> <hr/>

**Scheme of marks**  
**Geology**  
**B.Sc. Semester-VI**  
**Session 2010-11**

<b>Paper</b>	<b>Theory</b>	<b>CCE</b>	<b>Total</b>
Earth Resources - I	35	15	50
Applied Geology – II	35	15	50
Practical	---	---	50
Project	---	---	50
			<hr/>
			<b>200</b>
			<hr/>

**B.Sc. Semester – V**

Paper – I : Earth History-Palaeontology

1. Dr. P.K. Kathal  
Prof. of Geology  
Dr. H.S. Gour Central University Sagar
2. Dr. P. Dev  
Prof. of Geology  
Vikram University, Ujjain

**B.Sc. Semester – V**

Paper – II : Earth History –Stratigraphy

1. Shri J.P. Saxena  
Prof. of Geology  
Govt. Holkar Science College Indore
2. Dr. B.S. Rathore  
Prof. of Geology  
Govt. Science College Jabalpur
3. Dr. R.N. Tiwari  
Asstt. Prof. of Geology  
Govt. Science College Rewa

**B.Sc. Semester – VI**

Paper – I : Earth Resources (Economic Geology)

1. Dr. V.L. Punwatkar  
Prof. of Geology  
Govt. Motilal Vigyan Mahavidyalay Bholal (M.P.)
2. Dr. Narendra Joshi  
Asstt. Prof. of Geology  
Govt. Holkar Science College Indore

**B.Sc. Semester – VI**

Paper – II : Applied Geology

3. Dr. S.K. Chaure  
Asstt. Prof. of Geology  
Govt. Holkar Science College Indore
4. Dr. V.N. Gadgil  
Prof. & Head Deptt. of Geology  
Govt. Holkar Science College Indore