Department of Geology

College of Science & Technology

ANDHRA UNIVERSITY

M.S. GEOLOGY

(5-YEAR INTEGRATED COURSE)

Syllabus and Model Question Papers with Credit Points

V-Semester

(Effective from 2007-08 Admitted batch)

2009-10 admitted batch

5 YEAR INTEGRATED M.S. GEOLOGY COURSE

Scheme of Instruction and Examinations

SEMESTER – V

S.No	Course	Teaching Lab. Hours per Week	Duration of Examination hours	Allotment of Marks		Total	Subject Credits
1.	FIG.51: Indian Geology	4	3	70	30	100	4
2.	FIG.52: Economic Geology	4	3	70	30	100	4
3.	FIG. 53: Numerical Statistical Methods	4	3	70	30	100	4
4.	FIG. 54: Database Management Systems	4	3	70	30	100	4
5.	FIG. 55: Economic Geology Practical	4	3	35	15	50	2
6.	FIG. 56: Numerical Statistical Methods Practical	4	3	35	15	50	2
7.	FIG. 57: Database Management Systems Practical	4	3	35	15	50	2
				TOTAL		550	22

M.S. GEOLOGY 5 YEAR INTEGRATED COURSE

V-SEMESTER

SYLLABUS

INDIAN GEOLOGY

UNIT-I

Definition to stratigraphic principles, standard geologic time scale; principles of correlation – physical and biological evidences.

UNIT-II

Physiographic divisions of India with their stratigraphic and structural characters; A brief study of type area, distribution in India, fossil content and economic importance of Dharwars.

UNIT-III

A brief study of the type area, succession, fossil content and economic importance of Cuddapa system, Vindhyan system and Kurnool system.

UNIT-IV

Successions of the type area, distribution in India, fossil content and economic importance of Triassic of Spiti, Jurassic of Kutch, and Cretaceous of Trichinopoly.

ASSIGNMENTS

Classification, distribution in India and economic importance of gondwanas, Description, distribution and economic importance of Deccan Traps, Siwaliks with vertebrate fossils.

TEXTBOOKS:

1. Geology of Indian and Burma by M.S. Krishnan. .
2. Fundamentals at Historical geology and stratigraphy of India by Ravindra Kumar.
3. Geology of India by D.N. Wadia.

REFERENCES:

1. Stratigraphic principles and practice by Weller.

M.S. GEOLOGY 5 YEAR INTEGRATED COURSE

V-SEMESTER MODEL PAPER

Subject: INDIAN GEOLOGY

Answer five questions choosing one from each unit. All questions carry equal marks.

Max. Marks. 70

UNIT-I

1. Write an essay on the principles of correlation.
      (Or)
2. Describe the various stratigraphic principles.

UNIT-II

3. Write and essay on the classification, distribution of Dharwars.
      (Or)
4. Write short notes on any TWO of the following.
   (a) The northern mountain region
   (b) The great plains of the north
   (c) The Himalayan rivers

UNIT-III

5. Classify the Cuddapah system of rocks. Add a brief note on its economic importance.
      (Or)
6. Describe the vindhan system of rocks.

UNIT-IV

7. Write an essay on the classification of the Triassic of Spiti. Mention about its economic importance.
      (Or)
8. Describe the Cretaceous rocks of Trichinopoly and its fossil content.

ANDHRA UNIVERSITY
DEPARTMENT OF GEOLOGY
M.S. GEOLOGY 5 YEAR INTEGRATED DEGREE EXAMINATION
V-SEMESTER
ECONOMIC GEOLOGY SYLLABUS

UNIT-I

Definition to Economic Geology, Mineral resources and their peculiarities, Ore, gangue, tenor, syngenetic deposits, epigenetic deposits, ecdogenetic deposits; Classification of Mineral deposits – Bateman's classification modified by jenssen.

UNIT-II

Process of formation of mineral deposits, Magmatic concentration, Contact metasomatism, hydrothermal caity filling and replacement.

UNIT-III

Sedimentation, residual and mechanical (Placer) concentration, Oxidation and Supergene enrichment, metamorphism.

UNIT-IV

Study of important ores – their chemical composition, physical properties, mode of occurrence, distribution in India and uses of the following metals – Gold, Copper, Lead, Zinc, Aluminium, Iron Manganese, Chromium, Uranium and Thorium (radioactive minerals), Chemical composition, Physical properties, mode of occurrence and distribution in India. Minerals required for the following industries: refractories, Abrasives, Steel, Cement, Ceramic, Insulators.

ASSIGNMENTS

Fuels – Coal and Petroleum, their origin, occurrence and distribution in India: Major mineral resource of Andhra Pradesh – Asbestos, barites coal, clays, limestone bauxite, petroleum, Manganese and Gemstones.

TEXT BOOKS:

1. Economic Geology by A.M. Bateman.
2. India mineral resources by S. Krishna Swamy.
3. Introduction of India's Economic Minerals by N.L. Sharma, K.S.V. Ram.
4. Geology & Mineral Resources of Andhra Pradesh by N.V.B.S. Dutta.

PRACTICAL:

Megascopic study, mode of occurrence, distribution in India and use of the following economic minerals, Hematite, Magnetite, Pyrite, Pylolusite, Chalcopyrite,

malschite, galena, sphalerite, magnesite, gypsum, asbestos, stealite, graphite, monazite, limestone, zircon, fluorite, barite, corundum, topaz calcite, kaolinite, kyanite, sillimanite, garnet, mica.

ANDHRA UNIVERSITY

DEPARTMENT OF GEOLOGY

M.S. GEOLOGY 5 YEAR INTEGRATED DEGREE EXAMINATION

V SEMESTER MODEL PAPER

PAPER: ECONOMIC GEOLOGY

Time: 3 Hours   Max. Marks. 70

Answer any FIVE questions choosing ONE from each unit.

All questions carry equal marks.

UNIT-I

1. Write an account on the concept of Economic Geology considering the study of Mineral resources and their peculiarities.

        (Or)

2. Write short notes on any Two of the following:
   a) Bateman's classification of Mineral deposits.
   b) Ore, gangue and tenor
   c) Syngenitic and Epigenetic Deposits.

UNIT-II

3. Write an essay on various processes of Mineral formation with emphasis on Magmatic concentration. Give examples.

        (Or)

4. Write short notes on any TWO of the following.
   a) Magmatic segregation and dissemination
   b) Early and late magmatic deposits
   c) Cavity fillings.

UNIT-III

5. Write an account on the Mineral formation due to Mechanical concentration. Add a note on different types of placer deposits.

        (Or)

6. Write short notes on any Two of the following.
   a) Gossans
   b) Oxidation of sulphide ores
   c) Sedimentation

UNIT-IV

7. Write an account on the physical properties, mode of occurrence, distribution in India and uses of any four minerals given below.

        (Or)

8. Write short notes on any Two of the following.
   a) Refractory and abrasive minerals
   b) Minerals used in steel Industry
   c) Minerals used in cement Industry.

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ANDHRA UNIVERSITY
DEPARTMENT OF GEOLOGY
5 YEAR INTEGRATED M.S. GEOLOGY
SEMESTER – V <u>MODEL PAPER</u>

DATEBASE MANAGEMENT SYSTME

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UNIT-I:

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INTRODUCTION

Basic Concepts: File processing system, Need of DBMS, data, database, database systems, database management system, data abstraction, data independence, overall system architecture of DBMS.

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UNIT-II:

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DATA MODELING :

ER modeling: Entity, entity set, attributes, relationship type, relationshipset, relationship instance, role, recursive relationship, cardinality ration, participation constraint, attributes of relationship types, weak entity type, the identifying entity type, the identifying relationship Entity relationship Diagram, Extended E-R features. Design of an E-R schema for a realistic problem.

RELATINAL DATA MODEL: Relational structure – tables (relations), rows, (tuples), domains, attributes keys, super keys, candidate keys, primary key, entity integrity constraints, referential integrity constraints.

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UNIT-III:

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RDBMS DESIGN:

Normalization: need of normalization, functional dependency, Inference Rules for Functional Dependencies, closure of functional dependencies, algorithm to find candidate key, Algorithm to find closures of given attribute set, algorithm to find minimal cover of functional dependencies, Normal forms 1 NF, 2NF, 3NF, 4NF, 5NF, AND DKNF.

Checking of lossless join decomposition.

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UNIT-IV:

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RELATIONAL DATABASE IMPLEMENTATION USING SQL:

DDL, DML, DCL, simple and Nested queries, sub queries, PL/SQL procedures, functions, triggers.

TRANSACTION MANAGEMENT & CURRENT TRENDS

.   Transaction concept, ACID properties, schedule and recoverability, serializability, cascade less schedule, concurrency control and protocols

Introduction to data warehouse, properties and use of data warehouse, introduction to data mining, multimedia databases, Spatial and temporal databases.

TEXT BOOKS:

1. Silberschatz, Korth and S. Sudarshan, 'Database System Concepts' , McGraw-Hill International Edition. Fifth Edition. 2006
2. Elmasri and Navathe, 'Fundamentals of Database System' , Addison Wesley, Second Edition, 1994.

REFERENCE BOOKS

1. Thomas Connolly and Carolyn Begg, 'Database Systems', Pearson Education Low Price Edition. Third Edition, 2003.
2. Ramakrishnan and Gehrke, 'Database Management Systmes', McGraw-Hill International Edition, Third Edition, 2003.

Department of Geology
Andhra University, Visakhapatnam.
5 yearsIntegrated M.S. Geology
SEMESTER – V <u>MODEL PAPER</u>
DATABASE MANAGEMENT SYSTEM
(EFFECTIVE FROM ADMITTED BATCH OF 2007-2008)

Time: 3 Hours   Max. Marks. 70

All questions carry equal marks.

<u>UNIT-I</u>

1. a) What is meant by DBMS? Explain the structure of DBMS.
        (14M)
                (Or)
    b) What is Data Independence?
        Explain the levels of Data Independence? (7M)
    c) Explain briefly about Data abstraction? (7M)

2. a) Explain about E-R diagrams, Construct E-R model for University Data Base
    System. (14M)
                Or
    b) Define weak entity and strong entity. (5M)
    c) Explain about Relational data model.(9M)

3. a) What is normalization? Explain the different normal forms.(14M) OR

b) Explain Functional Dependency.(5M)

c) Explain inference rules for functional dependency. (9M)

4. a) What is oracle? Explain features of oracle.(9M)

b) Define PL/SQL Functions, Procedures, Triggers (5M)

EMPNO		JOB	MGR	HIREDAT	SAL	COMM	DEPTN
7369	SMITH	CLERK	7902	17-DEC-80	800	0	20
749	ALLE	SALESMA	7698	20-FEB-8!	1600	300	30
752	WAR	SALESMA	7698	22-FEB-81	1250	500	30
756	JONE	MANAGE	7839	02-APR-81	2975		20
765	MARTI	SALESMA	7698	28-SEP-8]	1250	1400	30
769	BLAK	MANAGE	7839	01-MAY-	2850		30
778	CLAR	MANAGE	7839	09-JUN-81	2450		10
778	SCOTT	ANALYST	7566	19-APR-87	3000		20
783	KING	PRESIDEN		17-NOV-8!	5000		10
784	TURNE	SALESMA	7698	08-SEP-8!	1500	0	30
787	ADAM	CLERK	7788	23-MAY-87	1100		20
790	JAME	CLERK	7698	03-DEC-81	950		30
790	FORD	ANALYST	7566	03-DEC-81	3000		20
793	MILLE	CLERK	7782	23-IAN-82	1300		10

Answer following queries

a) Write a query to show of name of employee where name contains 'A' as 3rd alphabet. (1M)

b) Write a query to display the sum, avg, highest, and lowest salary of the employee from emp (1M)

c) Write a query to display employees name and salary and review date which is date after 6 months of hired ate (1M)

d) Write a query to display the name, job title and the salary of the employee who is not manager. (1M)

e) Write a query to display sum, avg, highest and lowest salary of the employee group by department (1M)

f) List the details of all employees where annual salary is between 25000-40000 from table emp. (1M)

g) List employees deptno, name and hiredate for three deptno 10,20 and 30 (1m).

h) Write PL/SQL script using IF statement to find whether a given number 'num' is odd or not. (2M)

i) Write cursor FOR loop to display only those employee names that have salary less than or equal to 7200 but no commission. (3M)

j) Create a trigger that restricts the decrement of salary in emp table (3M)

5. a) What is transaction management? Explain the ACID properties.

Or

b) Define data warehouse. Explain the applications of data warehouse (7M)

c) Explain special and temporal databases. (7M).

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DEPARTMENT OF GEOLOGY
5   YEAR INTEGRATED M.S. GEOLOGY
V- SEMESTER
NUMERICAL AND STATISTICAL METHODS

UNIT- 1 :

NUMERICAL ANALYSIS:

Finding the roots by numerical methods: Bisection method – Regula – falsi method – Newton – Raphson method. Interpolation; Finite difference – symbolic relations interpolation by Newton's formula (forward and backward) Central difference formula (Gauss forward and backward) Bessel's formula – Lagrangian formula.

UNIT -II:

Numerical Differentiation and Integration:

Derivatives using forward difference formula-Backward difference formula - Central difference formula – Maxima and Minima of a tabulated function – Newton - cote's
Quadrature formula-Trapezoidal rule- Simpson's 1/3 rule -Simpson's 3/8 rule-Weddle's rule.

UNIT – III :

Statistics;

Collection of Data-Classification and Tabulation-Frequency Distribution – Discrete Frequency distribution – continuous frequency distribution – cumulative frequency distribution – Diagrammatic representation (Line, Bar and Pie diagrams) Graphic representation (Histogram, Frequency polygon, frequency curve and Ogive curve) Measures of Central Tendency (finding Mean, Median, Mode, Geometric Mean and harmonic mean for Raw data, discrete frequency distribution and continuous frequency distribution) Measures of Dispersion- Range – Standard Deviation – Variance – Coefficient of variation – Karl Pearson's Coefficient of correlation – Applications to Geology.

UNIT – IV:

An introduction to Mathematical Modeling:

Introduction – some mathematical models – The process of modeling Advantages and its applications – applications to geological problems.

BOOKS:
1. Introduction to Numerical analysis by S.S. Sastry
2. Mathematical methods by T.K.V. Iyernager, B.K. Gandhi and Co.,

3. Numerical methods by S.Kalavathy
4. Fundamentals of mathematical statistics by S.C. Gupta and V.K. Kapoor
5. Fundamentals of Statistics by S.C.Gupta
6. Statistics for Advanced level by Jane Miller, Camebridge University press
7. Mathematics for IX class, NCERT.

5 YEAR INTEGRATED M.S. GEOLOGY
ANDHRA UNIVERSITY
V- SEMESTER
MATHEMATICS MODEL PAPER
PAPER: NUMERICAL AND STATISTICAL METHODS

Time: 3 Hours   Max. Marks. 70

SECTION -A   5X2=10M

Answer all the following questions
Each question carries equal marks

1. Define algebraic and transcendental equation.

2. Prove $(1+\Delta)(1-\nabla) - 1$

3. State Weddle's rule

4. What is Median? Give an example.

5. What is Coefficient of Variation.

SECTION -B   5X4=20M

Answer any Five of the following questions.

6. Find the square root of 10 using Newton-Raphson method

7. Prove that 1+

8. State Newton's backward interpolation formula.

9. Using following data, find x for which y is minimum and find this value of y

X	0	2	4	6
y	3	3	11	27

10. Explain Pie – Diagram.

11. Find the Geometric Mean of 2,4,8,12,16 and 24.

12. Represent the following data by means of a Histogram

Weekly wages ('000Rs): 10-15   15-20 20-25 25-30 30-40 40-60 60-80

No. of Workers   :   7   19   27   15   12   12   8

13. What is Mathematical Modelling and what are the stages involved in Mathematical modeling.

Answer any Four of the following questions.

14. Find a real root of equationx^3--- x – 11 = 0 by bisection method.
15. Find, by Gauss forward interpolation formula, the value of f(3.3) from the table

X	1	2	3	4	5
Y=f(x)	15.30	15.10	15.00	14.50	14.00

16. Find $\frac{dy}{dx}$ and $\frac{d2y}{dx2}$ for x = 1.5 from following table of values of x and y

X	1.5	2.0	2.5	3.0	3.5	4.0
Y=f(x)	3.375	7.0	13.625	24.0	38.875	59.0

17. Evaluate $\int_0^6 \frac{1}{1+x}$ dx by using Simpson's $\frac{3}{8}$ rule.
18. Find the value of mean, mode and median from the data given below.
    Weight (in Kg): 93-97 98-102 103-107 108-112 113-117 118-122 123-127 128-132
No. of students   3 5   12   17   14   6   3   1

19. Calculate standard deviation from the following data:
    Value: 90-99   80-89   70-79   60-69   50-59   40-49   30-39
    Frequency   2   12   22   20   14   4   1

20. Suppose you have a room of length 6 cm and breadth 5m. You want to cover the floor of the room with square mosaic tiles of side 30cm. How many tiles will you need? Solve this by constructing a mathematical model.