K.S.K.V. KACHCHH UNIVERSITY

SYLLABUS OF B. Sc. (GEOLOGY)

(In force from June 2013)

SEMESTER- 6

US CEGE 610 PALAEONTOLOGY

Unit: 1 Study Of Phylum Mollusca (class Cephalopoda, Bivalve and Gastropods) , Gondwana and Tertiary flora of India. **(15 Marks)**

Unit: 2 Study of Phylum Arthropoda (order Trilobita), Phylum Echinodermata (Class Echinoidea and crinoidea) & Phylum Hemichordata (Class Graptoloidea) **(15 Marks)**

Unit: 3 Study of Phylum Protozoa (order Radiolaria and Foraminifera), Cnidarians (Class Anthozoa), Phylum Brachiopoda: **(15 Marks)**

Unit: 4 Ichnology: **(15 Marks)**

Principal and applications of Ichnology, Occurrence of trace fossils in different rocks. Classification of trace fossils. Ichnofacies and environmental usefulness of trace fossils. Common Ichnogenera: Skolithos, Gyrochorte, Planolites, Palaeophycus, Chondrites, Gyroliths, Rhizocorallium, Thalassinoides, Ophiomorpha, Zoophycus, Boring Bivalve and Polychaetes tubes.

Reference Books:

- Wood, H. (1982): An Introduction to Invertebrate Palaeontology.
- Shrock and Twenhofel: Principles of Invertebrate Palaeontology. Cambridge University Press.
- Davies, A.M. (1972): An introduction to Palaeontology. Thomas Murby & Company.
- Clarkson, E.N.K. (1998): Invertebrate Palaeontology and Evolution. IV Edition. Blackwell.
- Benton, M.J. (1990): Vertebrate Palaeontology and Evolution. Unwin Hyman.
- Arnold, C.A. (1947): An Introduction to Palaeobotany. Mc Graw Hill.
- Haq, B.V. and Boersma, A. (1998): Introduction to Marine Micropalaeontology. Elsevier.

SEMESTER- 6

US CEGE 611 INDIAN STRATIGRAPHY

Unit: 1 Study of Precambrian Era: (15 Marks)

- Detailed study of Fundamental Complex - Archaeans and Dharwars of Gujarat and Rajasthan and their mineral wealth. Cuddapah and Vindhyan formation with their economic importance.

Unit: 2 Study of Palaeozoic Era: (15 Marks)

- Paleozoic rock formation of extra peninsular India: Salt Range, Saline series, Spiti.
- The Gondwana Group

Unit: 3 Study of Mesozoic Era: (15 Marks)

- Mesozoic rock formation of extra peninsular India: Salt range, Spiti. Mesozoic rock formation of Gujarat.
- The Deccan Traps.

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Unit: 4 Study of Cenozoic Era: (15 Marks)

- Rise of Himalaya, Siwalik system, Tertiary of Salt Range.
- Study of Cenozoic stratigraphy of Gujarat, origin and geology of Rann of Kutch and Rajasthan Desert.

Reference books:

- Wadia, D.N. (1962): Geology of India. Tata Mc Graw Hill.
- Krishnan, M.S. (1968): Geology of India and Burma. Higgin Bothams.
- Ravindra Kumar (1982): Fundamentals of Historical Geology and Stratigraphy of India. Willey Eastern Ltd.
- Naqvi, S.M. and Rogers, J.J.W. (1987): Precambrian Geology of India. Oxford University Press.

SEMESTER- 6

US CEGE 612 APPLIED AND ENGINEERING GEOLOGY

Unit: 1 Continental drift and Plate tectonics: (15 Marks)

- Continental drift and Plate tectonics: Plate boundaries, Mid Oceanic Ridges, Convection in the earth, production of magnetic field and heat flow.

Unit: 2 General Geology: (15 Marks)

- Coral reefs, Age of the earth, Isostasy, Mountain building process, Glaciation.
- PT and KT boundary mass extinction

Unit: 3 Applied Geology: (15 Marks)

- Toposheets, Geological maps and reports.
- Methods of Prospecting. Methods of geological and geophysical prospecting and their applications – Magnetic, Gravity, Seismic and Electrical methods.
- Remote Sensing: Introduction to aerial photographs, satellite imageries and preparation of photogeological maps.

Unit: 4 Engineering Geology: (15 Marks)

- Geology in relation to engineering, Properties of rocks to be used as building stones. Important building stones of India.
- Foundations problems, solution and designing.
- Dam: Terminology, Types of dams, Objective of dam, Site selection criteria, Geological problems associated with dam and their solutions.
- Tunnels: Geological investigations, Tunnels in different types of rocks, Structural Problems associated with tunneling, Hydrological problems in tunnels.

Reference books:

- Patel H. B.: Engineering Geology- Mahajan Publishing House, Ahmedabad
- Singh, P. (1985): Principles of Engineering Geology.
- Sharma, P.V. (1986): Geophysical Methods in Geology. Elsevier.
- Ramchandra Rao, M.B. (1993): Outlines of Geophysical Prospecting – A Manual for Geologists. EBD Educational Pvt. Ltd. Dehradun.
- Lahee, F.H. (1961): Field Geology. Mc Graw Hill.

KSKV Kutch University, BHUJ

B.Sc. Semester 6 (SIX)

SUBJECT: GEOLOGY **(THEORY)**

(Paper 610, 611 and 612)

Total Marks**: 60** Passing standard : **24 Marks** Duration : **2 Hours**

PATTERN OF QUESTION PAPER FOR SEMESTER-END EXAMS

1. Internal options are compulsory (i.e. Q.1 or Q.1; Q.2 or Q.2 likewise.)
2. There are four questions (Q. 1 to Q. 4) each question carries 15 marks

The structure for the questions is as under:

Questions	Section		Marks
Que– 1 Unit – I	**A**	(Objective type) *(no internal option)*	**05**
	B	(Descriptive - Essay type / Short notes *with internal option)*	**10**
Que – 2 Unit –II	**A**	**–do-**	**05**
	B	**–do-**	**10**
Que – 3 Unit – III	**A**	**–do-**	**05**
	B	**–do-**	**10**
Que – 4 Unit – IV	**A**	**–do-**	**05**
	B	**–do-**	**10**

Note: Types of questions for section A are varied like: one-line answers/ two-line answers/ definitions/ reasoning/ drawing small figures/ matching the figures etc. **but not fill in the blanks.**

KSKV Kachchh University, BHUJ

B.Sc. Semester 6 (SIX)

SUBJECT: GEOLOGY

(PRACTICAL-610)

Total Marks **: 50** Passing standard : **20 Marks**

1. Study of invertebrate and plant fossil specimen representing important phyla belonging to different geological eras - with diagrams.

(PRACTICAL-611)

Total Marks**: 50** Passing standard: **20 Marks**

1. Section and description of geological maps with structural features such as unconformity, overlap, faulting, folding, inliers, outliers and igneous intrusions.
2. Outcrop problems with one series of strata with inlier, outlier and faulting.

(PRACTICAL-612)

Total Marks**: 50** Passing standard: **20 Marks**

1. Clinographic and Stereographic projections of simple crystals of Cubic, Tetragonal and Orthorhombic systems.
2. Graphic solutions of structural problems.
3. Identification of suitable site for construction of Dams and Tunnels.

Note: Compulsory field work in a suitable geological area to study the elementary aspects of field geology.

PATTERN OF QUESTION PAPER FOR SEMESTER-END PRACTICAL EXAM

KSKV Kutch University: BHUJ

B.Sc. Semester 6 (SIX)

SUBJECT: GEOLOGY

Total Marks**: 50** Passing standard: **20 Marks** Time: 11:00 to 5:30 pm
Centre: BHUJ **Place:** Shri R. R. Lalan College, Bhuj

(PRACTICAL-610)

QUESTION PAPER

Q-1 Describe the **Fossil specimen** in **Group no. 1 to 3,** giving their morphological characters, classification and systematic position in geological time range. **(20 Marks)**

Q-2 Describe the **Fossil specimen** in **Group no**. **4**, giving their morphological characters, classification and systematic position in geological time range. Draw neat labelled diagram of each. **(20 Marks)**

Q-3 Certified Journal and Viva voce **(10 Marks)**

(PRACTICAL-611)

QUESTION PAPER

Q-1 Draw a section of **Map No-1** along x-y. Describe physiography, geology, structural features and geological history of the area. ***(15 Marks)***

Q-2 Draw a section of **Map No-2** along x-y. Describe physiography, geology, structural features and geological history of the area. ***(15 Marks)***

Q-3 Complete the given **Outcrop filling problem / Geological map of the area** with the help of given data. ***(10 Marks)***

Q-4 Certified Journal and Viva voce (10 Marks)

(PRACTICAL-612)

QUESTION PAPER

Q-1 Prepare a **Clinographic projection** of the crystal model with the help of unit crystallographic axes supplied to you. State the crystalline system, Elements of symmetry, Symmetry class and the indices for the model. **(15 Marks)**

Q-2 Prepare a **Stereographic projection** of crystal model. State the crystal system, Elements of symmetry, Symmetry class for the model. **(15 Marks)**

Q-3 Solve the given **Geometrical Problem /** Prepare **Graphical solution** for the problem. ***(10 Marks)***

Q-4 Certified Journal and Viva voce (10 Marks)