SHIVAJI UNIVERSITY, KOLHAPUR.

Accredited By NAAC with 'A' Grade

Revised Syllabus For

Bachelor of Science

Part-II

GEOLOGY

CBCS PATTERN

Syllabus to be implemented from

June, 2019 onwards.

SHIVAJI UNIVERSITY, KOLHAPUR

CBCS SYLLABUS WITH EFFECT FROM JUNE 2019

B.Sc. Part II

SUBJECT : GEOLOGY

Semester – III

DSC-C Theory Course

Title of the Paper: **IGNEOUS, SEDIMENTARY & METAMORPHIC PETROLOGY**

DSC 21C: IGNEOUS PETROLOGY Marks 50(02 Credits)

Unit-I: (15 Hours) (18-19 lectures)

Magma: definition, composition, types and origin; Forms of igneous rocks - Concordant and Discordant forms; textures of igneous rocks – Porphyritic, Poikilitic, Ophitic, Graphic, Trachytic, Xenolithic, Spherulitic, Perthitic and Reaction rims (9 hours)

Differentiation – Liquid Immiscibility, Gravitational Differentiation, Filtration Differentiation; Role of volatiles in Differentiation (3 hours)

Assimilation – Reactions between Basaltic magma and acidic igneous rocks; Basaltic magma and Sedimentary rocks; Reactions with Granitic magma and basic igneous rocks; Granitic magma and Sedimentary rocks; Bowen's Reaction Series (3 hours)

Unit-II: **(15 Hours) (18-19 lectures)**

Classification of igneous rocks based on i. Mode of Occurrence, ii. Silica Percentage, iii. Colour Index iv. Feldspar Content v. Silica Saturation vi. Alumina Saturation (2 hours)

Crystallization of unicomponent magma – Augite (2 hours)

Crystallisation of Bicomponent magma (two independent components) – Diopside – Anorthite system (3 hours)

Crystallisation of Bicomponent magma (mixed crystals) – Albite-Anorthite system (4 hours)

Crystallisation of Ternary magma – Diopside – Albite – Anorthite system (4 hours)

DSC 22C: SEDIMENTARY AND METAMORPHIC PETROLOGY

Marks 50(02 Credits)

Unit-I: (15 Hours) (18-19 lectures)

Processes of formation of sedimentary rocks- Residual deposits, Sedimentary Deposits, Chemical deposits, Organic deposits; (6 hours)

Textures based on grain size, sorting, shape and roundness; (3 hours)

Structures of sedimentary rocks – Primary and secondary; (3 hours)

Depositional Environments – Continental, Transitional, Marine; Provenance (3 hours)

Unit-II: (15 Hours) (18-19 lectures)

Definition of metamorphism; Agents of metamorphism; (1 hour)

Types of metamorphism – Thermal, Cataclastic, Dynamothermal and Plutonic Metamorphism; (9 hours)

Zones and grades of metamorphism; Outline of Facies of Metamorphism (2 hours)

Textures and structures of metamorphic rocks. (3 hours)

DSC C- LAB COURSE

Teaching : 15 Practical turns – each of 3,2 hours (4 lectures of 48 minutes)

Marks 50 (02 Credits)

IGNEOUS, SEDIMENTARY AND METAMORPHIC PETROLOGY

Section I

• **Igneous Petrology:**

- Identification of rocks: On the basis of their physical properties in hand specimen; and optical properties in thin sections.

- Textures and Structures of igneous rocks : Megascopic and Microscopic

Section II

• **Sedimentary and metamorphic Petrology:**

- Identification of sedimentary and metamorphic rocks both in hand specimen and optical properties in thin sections.

- Textures and Structures of sedimentary and metamorphic rocks : Megascopic and Microscopic

Books Recommended:

1. Turner, F.J. & Verhoogen, J.,Igneous & Metamorphic petrology. McGraw Hill Co.
2. Bose, M.K., Igneous petrology. World press
3. Tyrell, G. W., Principles of Petrology. Methuren and Co (Students ed.).
4. Ehlers, WG, and Blatt, H., Petrology, Igneous, Sedimentary and Metamorphic rocks, CBS Publishers
5. Moorhouse, WW., The study of rocks in thin sections. Harper and sons.
6. Friedman & Sanders, Principles of Sedimentology. John Wiley and sons.
7. Pettijohn, F.J.,Sedimentary rocks, Harper & Bros. 3rd Ed.
8. Prasad, C., A text book of sedimentology.
9. Sengupta. S., Introduction to sedimentology. Oxford-IBH.
10. Turner, F.J., Metamorphic petrology. McGraw Hill.
11. Mason, R., Petrology of Metamorphic Rocks. CBS Publ.
12. Winkler, H.G.C., Petrogenesis of Metamorphic Rocks. Narosa Publ.

SHIVAJI UNIVERSITY, KOLHAPUR

CBCS SYLLABUS WITH EFFECT FROM JUNE 2019

B.Sc. Part II

SUBJECT : GEOLOGY

Semester – IV

DSC-D Theory Course

Title of the Paper: **STRATIGRAPHY AND PALAEONTOLOGY**

DSC 21D: STRATIGRAPHY Marks 50(02 Credits)

Unit I: (15 Hours) (18-19 lectures)

Definition, Principle of stratigraphy- stratigraphic correlation, Concepts of Uniformitarianism and catastrophism; (3 hours)

Geological Time Scale and stratigraphic classification; Physiographic division of India. (3 hours)

Study of following Precambrian succession: Dharwar, Cuddapah, Vindhyan and Delhi Supergroups; (9 hours)

Unit II : (15 Hours) (18-19 lectures)

Brief idea of Palaeozoic succession of northwestern Himalaya; (5 hours)

Brief idea of Mesozoic succession : Triassic of Spiti; Jurrasic of Kutch; Cretaceous of Tiruchirapalli; (5 hours)

Study of following type localities: Gondwana with flora and fauna ; Deccan Volcanic Province (5 hours)

DSC 22D: PALAEONTOLOGY Marks 50(02 Credits)

Unit-I: **(15 Hours) (18-19 lectures)**

Palaeontology: Definition, Fossils: definition, characters, binomial nomenclature in taxonomy, mode of preservation, condition of fossilization and significance of fossils; (5 hours)

Morphology, geological distribution and age of brachiopods, pelecypods, cephalopods. (10 hours)

Unit II: (15 Hours) (18-19 lectures)
Morphology, geological distribution and age of Trilobite, Echinoidea. (4 hours)
Microfossils – Introduction; Foraminifera and its significance (3 hours)
Vertibrate Palaeontology – Introduction; Evolution of Horse, Elephant and Man. (5 hours)
Plant Fossils – Morphology, Distribution and age of Ptilophyllum, Glossopteris and Gangmopteris (3 hours)

DSC D- LAB COURSE

Teaching : 15 Practical turns – each of 3,2 hours (4 lectures of 48 minutes)

Marks 50 (02 Credits)

STRATIGRAPHY AND PALAEONTOLOGY

I. Morphological characters, systematic position and age of fossil genera pertaining to brachiopods, pelecypods, cephalopods, trilobite and Echinoidea.
II. Preparation of lithostratigraphic maps of India showing distribution of important geological formations.

Books Recommended:

1. Wadia, D., Geology of India. Mc Graw Hill Book co.
2. Krishnan, M.S., Geology of India and Burma, 6th Edition. CBS Publ.
3. Ravindra Kumar, Fundamentals of Historical Geology & Stratigraphy of India. Wiley Eastern.
4. Shrock, R.R. & Twenhoffel, W.H., Principles of Invertebrate Paleontology. CBS Publ.
5. Swinerton, HH., Outlines of Paleontology. Edward Arnold Publishers
6. Jain, P.C. & Anantharaman, M.S., Paleontology: Evolution & Animal Distribution. Vishal Publ.
7. Lehmann, U., Fossil Invertebrate. Cambridge Univ. Press.
8. Rastogi, Organic evolution. Kedrnath and Ramnath Publ.