SH-II/Geology/201/C-P3/(PR)/19

B.Sc. 2nd Semester (Honours) Practical Examination, 2019

GEOLOGY

(Elements of Geochemistry Lab.)

Paper : 201/C-P3

Course ID : 22021

Time: 2 Hours **Full Marks: 15**

The figures in the right hand side margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Plot the chemical analyses of the following four igneous rocks in Harker Variation diagram. Explain the nature of change of the major element oxides with SiO_2 (wt%). Justify whether the rocks are genetically related. 4+4+2=10

Oxides (wt%)	BA-1	BA-2	BA-3	BA-4
SiO_2	49·20	53·42	47·92	50·37
TiO_2	2·57	3·36	2·16	3·09
Al_2O_3	12·77	13·75	10·75	14·02
FeO	11·55	12·41	11·73	11·95
MgO	10·17	4·10	15·61	6·92
CaO	10·75	7·75	9·33	10·39
Na_2O	2·12	3·34	1·79	2·35
K_2O	0·51	1·10	0·44	0·62
P_2O_5	0·25	0·77	0·23	0·32
Total	99·89	100·00	99·96	100·03

2. Laboratory Note Book 5

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SH-II/Geology/202/C-T4/19

B.Sc. 2nd Semester (Honours) Examination, 2019

GEOLOGY

(Structural Geology)

Paper : 202/C-T4

Course ID : 22012

Time: 1 Hour 15 Minutes **Full Marks: 25**

The figures in the right hand side margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Answer *any five* questions of the following: 1×5=5

(a) What is diastrophic structure?

(b) What is lineation?

(c) Give an example of secondary structure which represents brittle deformation.

(d) What is a synformal anticline?

(e) What is longitudinal strain?

(f) Define anelastic deformation.

(g) What is isoclinal fold?

(h) What is crenulation cleavage?

2. Answer *any two* questions of the following: 5×2=10

(a) Briefly discuss about the mechanism of buckling.

(b) Distinguish between the following: (i) Apparent dip and True dip, (ii) Pitch and Plunge.

(c) Classify fold on the basic of interlimb angle.

(d) Write a short note on different types of strain ellipsoid.

3. Answer *any one* question from the following: 10×1=10

(a) Briefly discuss about the application of primary sedimentary and igneous structures in determination of younging direction.

(b) Describe with neat sketches about the minor structures associated with faults.

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SH-II/Geology/202/C-P4/(PR)/19

B.Sc. 2nd Semester (Honours) Practical Examination, 2019

GEOLOGY

(Structural Geology Lab.)

Paper : 202/C-P4

Course ID : 22022

Time: 2 Hours **Full Marks: 15**

The figures in the right hand side margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

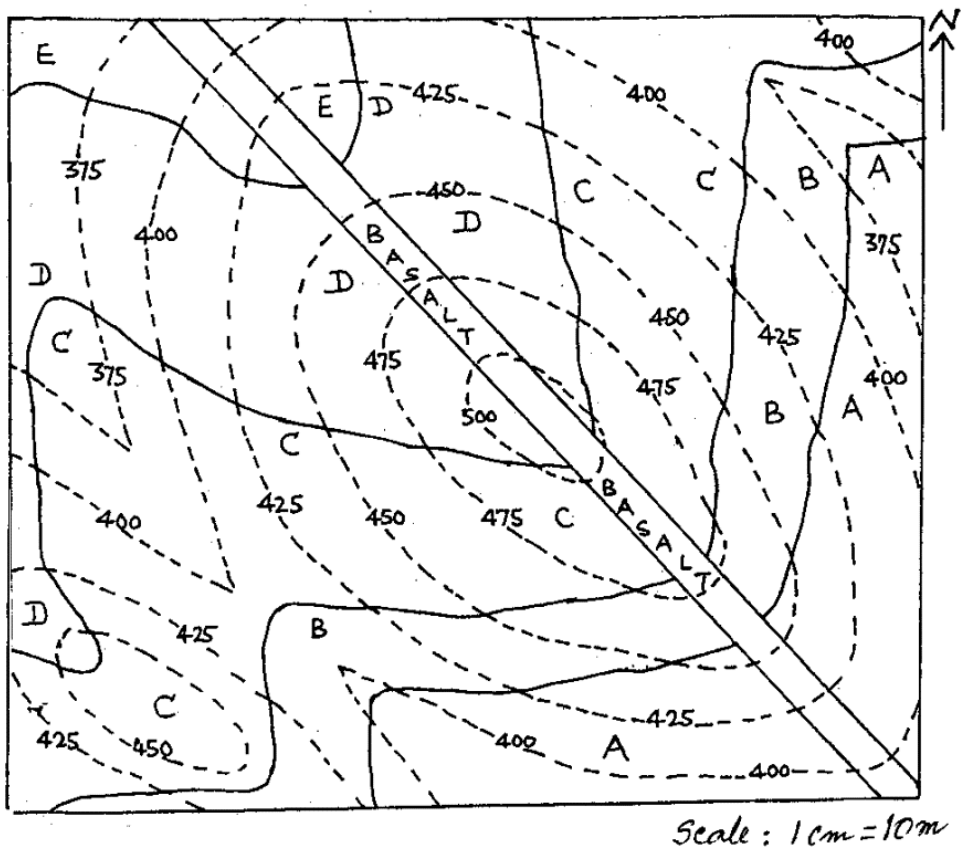
1. Study the given geological map and answer the following questions: 5+1+4=10

(a) Describe the topography.

(b) Describe the attitude of the lithological units and their relation.

(c) Draw a suitable geological section.

2. Laboratory Note Book 5



SH-IV/Geology-401/C-T8/19

B.Sc. 4th Semester (Honours) Examination, 2019

GEOLOGY

(Metamorphic Petrology)

Paper : 401/C-T8

Course ID : 42011

Time: 1 Hours 15 Minutes **Full Marks: 25**

The figures in the right hand side margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Answer *any five* questions of the following: 1×5=5

(a) Name one mineral which marks the beginning of metamorphism.

(b) What is the effect of fluid over-pressure on rocks?

(c) What is phyllonite?

(d) Name one characteristic mineral of eclogite.

(e) What do A, C and F stand for in the ACF diagram?

(f) Define S-C foliation in metamorphic rock.

(g) Define entropy (S) of a metamorphic system.

(h) Write the Gibbs Helmholtz equation.

2. Answer *any two* questions of the following: 5×2=10

(a) Briefly describe the role of temperature in metamorphism.

(b) Compare between Barrovian-type and Buchan-type of metamorphism.

(c) Write a brief note on the importance of bulk rock composition in metamorphic petrology.

(d) Write evidences in support of thermodynamic equilibrium in a metamorphic rock.

3. Answer *any one* question of the following: 10×1=10

(a) Write a classification scheme of facies showing P-T ranges in a diagram.

(b) State the mineralogical and textural changes that take place during progressive metamorphism of mafic rock from greenschist facies to granulite facies conditions.

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SH-IV/Geology/401/C-P8/19

B.Sc. 4th Semester (Honours) Practical Examination, 2019

GEOLOGY

(Metamorphic Petrology Lab.)

Paper : 401/C-P8

Course ID : 42021

Time: 2 Hours **Full Marks: 15**

The figures in the right hand side margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Identify the minerals in the given hand specimen of metamorphic rock. Describe the physical properties of the minerals and name the rock. 3+2+1=6

2. Identify the minerals in the given thin section of metamorphic rock. Describe the optical properties of the minerals, texture and name the rock. 2+2+1+1=6

3. Laboratory Notebook 3

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SH-IV/Geology/402/C-9/19

B.Sc. 4th Semester (Honours) Examination, 2019

GEOLOGY

(Principles of Stratigraphy and Precambrian Stratigraphy of India)

Paper : 402/C-T9

Course ID : 42012

Time: 2 Hours **Full Marks: 25**

The figures in the right hand side margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Answer *any five* questions of the following: 1×5=5

(a) Name the smallest lithostratigraphic unit.

(b) Name the fundamental tool used in biostratigraphy.

(c) Which stratigraphic province of India contains Kolar gold field?

(d) What do you mean by the term 'craton'?

(e) What are the major rock types of the Eastern Ghats Mobile Belt?

(f) Name the major thrust belt associated with the Singhbhum Craton.

(g) What is the basic statement of "concept of Uniformitarianism"?

(h) Name the diamond bearing stratigraphic horizon within the Cuddapah basin.

2. Answer *any two* questions of the following: 2×5=10

(a) Write short note on Malani suite of igneous rocks.

(b) Write the generalized stratigraphic succession of the Dharwar Carton.

(c) Briefly describe the mineralization associated with the Sausar Group.

(d) Write the stratigraphic succession of the Delhi Super Group.

3. Answer *any one* question of the following: 10×1=10

(a) Write a generalized stratigraphic succession of the Singbhum Craton. Briefly discuss about the mineralization associated with the Singbhum Shear Zone. 5+5=10

(b) Briefly discuss the stratigraphy and sedimentary environment of the Vindhyan Supergroup.

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SH-IV/Geology/402/C-9/19

B.Sc. 4th Semester (Honours) Practical Examination, 2019

GEOLOGY

(Principles of Stratigraphy and Precambrian Stratigraphy of India Lab.)

Paper : 402/C-P9

Course ID : 42022

Time: 2 Hours **Full Marks: 15**

The figures in the right hand side margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

The questions are of equal value.

1. Identify the paleogeographic zones in the given map. (Map No. SEM IV-1) 5

2. Briefly describe the pattern of tectonic trends of the lineaments / belts shown in the given map. (Map No. SEM IV-2) 5

3. Laboratory Notebook 5

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SH-IV/Geology/403/C-10/19

B.Sc. 4th Semester (Honours) Examination, 2019

GEOLOGY

(Phanerozoic Stratigraphy of India)

Paper : 403/C-T10

Course ID : 42013

Time: 1 Hour 15 Minutes **Full Marks: 25**

The figures in the right hand side margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Answer *any five* questions of the following: 1×5=5

(a) Which area of Extra-peninsular India contains the Haimanta System of Cambrian age?

(b) Name the stratigraphic unit, within which the "golden oolites" (Jurassic) are found.

(c) What is the age of Muth quartzite?

(d) Which basin of India produces hydrocarbon from the Tipam Sandstone?

(e) What is the age of Talchir Formation?

(f) Which stratigraphic succession of India commonly contains fossils of primates?

(g) Name two areas from where marine sediments are reported to occur within the rocks of Gondwana age.

(h) What is the age of the Cretaceous-Tertiary boundary?

2. Answer *any two* questions of the following: 2×5=10

(a) Write down the Cretaceous stratigraphic succession of Couvery basin.

(b) Briefly discuss about the Triassic succession of Spiti.

(c) Write a short note on the Decan Trap.

(d) Furnish the generalized stratigraphy of the Bengal basin.

3. Answer *any one* question of the following: 10×1=10

(a) Briefly describe the two-fold classification of the Gondwana rocks proposed by Oldham, Cotter and Fox.

(b) Briefly describe the Cenozoic Siwalik succession with special emphasis on lithology and vertebrate fossil records.

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SH-IV/Geology/403/C-10/19

B.Sc. 4th Semester (Honours) Practical Examination, 2019

GEOLOGY

(Phanerozoic Stratigraphy of India Lab.)

Paper : 403/C-P10

Course ID : 42023

Time: 2 Hours **Full Marks: 15**

The figures in the right hand side margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Identify the outcrops shown in the given map. Write a brief note on the pattern of their distribution. 6+4=10

2. Laboratory Notebook 5

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SH-II/Geology/201/C-T3/19

B.Sc. 2nd Semester (Honours) Examination, 2019

GEOLOGY

(Elements of Geochemistry)

Paper : 201/C-T3

Course ID : 22011

Time: 1 Hours 15 Minutes **Full Marks: 25**

The figures in the right hand side margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Answer *any five* questions of the following: 1×5=5

(a) Name two minerals found in meteorites.

(b) State the basic law of radiometric dating.

(c) What are atmophile elements?

(d) Name one mineral in which ionic bond is present.

(e) Name one refectory and lithophile element.

(f) Name a method of dating applicable for sedimentary rocks.

(g) Name the most abundant element in the earth crust.

(h) What is petrographic province?

2. Answer *any two* questions of the following: 5×2=10

(a) Write a short note on chemical bonding with special emphasis on mineral composition.

(b) Briefly describe about the properties of siderophile and chalcophile elements.

(c) Write briefly the significance of distribution coefficient (K_d) in geochemistry.

(d) Write a brief note on classification of meteorites.

3. Answer *any one* question from the following : 10×1=10

(a) Briefly describe the geochemical behaviour of silicon and aluminium.

(b) What are the different types of decay of radioactive elements? Give examples. Briefly discuss about the principle of radiometric dating by Rb-Sr method. 2+2+6=10

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