Seat No: _____ Enrollment No: _____

PARUL UNIVERSITY

FACULTY OF APPLIED SCIENCE

M.Sc., Winter 2018-19 Examination

Semester: 1 **Date: 07/12/2018**
Subject Code: 11211104 **Time: 10:30 am to 1:00 pm**
Subject Name: Metamorphic Petrology **Total Marks: 60**

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1. A) Essay type/ Brief note (4x2) (Each of 04 marks) **(08)**
(a) Describe the agents of metamorphism in detail.
(b) Discuss the regional metamorphism of Scottish highlands.

Q.1. B) Answer the following questions (Any two)
(a) Short note/ Brief note (2x2)/ Schematically label the figures (2x2) (Each of 02 marks) **(04)**
1. What are migmatites? How are they formed?
2. What is pro grade metamorphism?

(b) Write a short note on limits of metamorphism. **(04)**
(c) What is metamorphism and what changes may accompany it? **(04)**

Q.2. A) Answer the following questions.
(a) Short note/ Brief note (2x2)/ Fill in the blanks. (Each of 02 marks) **(04)**
1. Define porphyroblast with suitable example.
2. Define metamorphic grade.

(b) Write a short note on hydrothermal metamorphism. **(04)**

Q.2. B) Answer the following questions (Any two)
(a) Short note/ Multiple choice questions. (Each of 01 marks) **(03)**
1. _____ is the rock formed as product of contact metamorphism and is typically fine grained
   a) Slate b) Hornfels c) Mica schist d) Carbonatite
2. Mixture of sand and shale is known as _____.
   a) Pelites b) Psammites c) Argillite d) Mudstones
3. _____ is a non-foliated, low grade metamorphic rock.
   a) Quartzite b)Slate c) Phyllite d) Greenstone

(b) Write a short note on contact metamorphism. **(03)**
(c) What are ortho and para protoliths? **(03)**

Q.3. A) Essay type/ Brief note (4x2) (Each of 04 marks) **(08)**
(a) Write a short note on Barrovian zone.
(b) Write a short note on High P/T facies.

Q.3. B) Answer the following questions (Any two)
(a) Short note/ Brief note (2x2)/ Schematically label the figures (2x2) (Each of 02 marks) **(04)**
1. Brief note on types of protoliths.
2. Brief note on Foliated rocks.

(b) Write a short note on Pyrometamorphism. **(04)**
(c) Write a short note on Metamorphic facies. **(04)**

Q.4. A) Answer the following questions.
(a) Short note/ Brief note (2x2)/ Fill in the blanks. (Each of 02 marks) **(04)**
1. Blueschist facies is characterized by the presence of _____.
2. _____ is an ultramafic rock metamorphosed at low grade and mostly has serpentine.

(b) Short note on schistosity and gneissosity. **(04)**

Q.4. B) Answer the following questions (Any two)
(a) Short note/ Multiple choice questions. (Each of 01 marks) **(03)**
1. __is the calcsilica metasomatized rock formed by contact metamorphism of carbonate rock
   a) Granofels b) Amphibolite c) Skarn d) Migmatite
2. _____ is the medium P/T facies.
   a) Amphibolite b) Greenschist c) Eclogite d) Zeolite
3. Franciscan orogeny is an example of _____ metamorphism.
   a) High P Low T b) High T Low P c) High P High T d) Low P High T

(b) Short note on Foliation and Lineation. **(03)**
(c) Short note on Recrsytallization. **(03)**