PG Odd Semester (CBCS) Exam., December—2016

EARTH SCIENCE

(3rd Semester)

Course No. : ESCCC–304

Full Marks : 70
Pass Marks : 28

Time : 3 hours

The figures in the margin indicate full marks for the questions

1. *(a)* How does metamorphism relate to plate boundaries? 5

(b) What is paired metamorphic belt? Explain their formation with respect to plate tectonics. 3+6=9

OR

2. Write explanatory notes on : 7+7=14

(a) Graphical presentation of minerals on ACF and AKF diagrams

(b) Progressive metamorphism of pelitic rocks under regional metamorphic condition

3. *(a)* Define metamorphic facies. Illustrate the different facies in a P-T diagram. 3+5=8

(b) Describe the granulite facies metamorphism in terms of mineralogy and P-T conditions. 6

OR

4. Describe Blueschist facies and Eclogite facies metamorphisms in terms of mineralogy and P-T conditions. 7+7=14

5. Write short notes on the following : 5+5+4=14

(a) Chemical differentiation of earth

(b) Classification and mineralogy of meteorites

(c) Principles of ionic substitution in minerals

OR

6. *(a)* Explain the distribution coefficient of REE in plagioclase and garnet. 6

(b) Compare and contrast the trace elemental characteristics of melts produced due to low and high degrees of partial melting of normal upper mantle. 8

7. *(a)* Write a detailed account on the natural abundances and fractionation of stable isotopes of sulphur. 6

(b) Illustrate the latitudinal variation of 18_O of water over the surface of earth. 8

OR

8. Write short notes on the following : 5+4+5=14

(a) Mechanisms of isotopic fractionation

(b) Fractionation factor

(c) Use of oxygen isotopes in paleo-thermometry

9. *(a)* Discuss the fundamental concept of radiometric dating. 5

(b) Describe U-Pb zircon geochronology with suitable diagram. 9

OR

10. Write short notes on the following : 5+5+4=14

(a) Radioactive decay mechanism

(b) Isochron and discordia

(c) Radioactive decay scheme of ^{87}Rb and ^{147}Sm

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