

**GEOLOGY, PAPER-I**



**FEDERAL PUBLIC SERVICE COMMISSION  
COMPETITIVE EXAMINATION FOR  
RECRUITMENT TO POSTS IN BPS-17 UNDER  
THE FEDERAL GOVERNMENT, 2009**

**GEOLOGY, PAPER-I**

S.No.	
R.No.	

<b>TIME ALLOWED:</b>	<b>(PART-I) 30 MINUTES</b>	<b>MAXIMUM MARKS:20</b>
	<b>(PART-II) 2 HOURS &amp; 30 MINUTES</b>	<b>MAXIMUM MARKS:80</b>

**NOTE:** (i) First attempt **PART-I (MCQ)** on separate **Answer Sheet** which shall be taken back after **30 minutes**.  
(ii) **Overwriting/cutting of the options/answers will not be given credit.**

**PART – I (MCQ)**  
**(COMPULSORY)**

**Q.1. Select the best option/answer and fill in the appropriate box on the Answer Sheet. (20)**

- (i) Which of the following is a part of the definition of a mineral?
  - (a) a liquid that may become solid
  - (b) man-made
  - (c) definite chemical composition
  - (d) unorganized structure
  - (e) All of these
- (ii) Which of the following minerals are arranged in order of *increasing hardness*?
  - (a) talc, apatite, corundum, diamond
  - (b) topaz, quartz, fluorite, corundum
  - (c) talc, quartz, calcite, diamond
  - (d) quartz, topaz, diamond, fluorite
  - (e) fluorite, calcite, gypsum, talc
- (iii) How do the crystal structures of micas and feldspars differ from each other?
  - (a) feldspars are framework silicates, micas are double chain silicates
  - (b) feldspars are double chain silicates, micas are sheet silicates
  - (c) micas and feldspars have the same crystalline structure
  - (d) feldspars are single chain silicates, micas are double chain silicates
  - (e) micas are sheet silicates, feldspars are framework silicates
- (iv) “Sima” is a general term used to refer to:
  - (a) rocks of the ocean basins
  - (b) rocks of the continents
  - (c) None of these
  - (d) all rocks that compose Earth’s crust
  - (e) rocks that compose the crust of terrestrial planets
- (v) Which of the following parameters influences the viscosity of magma?:
  - (a) temperature of the magma
  - (b) oxygen content of the magma
  - (c) depth of the magma beneath Earth’s surface
  - (d) quantity of minerals in the magma
  - (e) all of these
- (vi) The Continuous Series of Bowen’s Reaction Series is composed of minerals.
  - (a) with different chemical compositions but the same mineral structures
  - (b) with different chemical compositions and different mineral structures
  - (c) with similar chemical compositions and different mineral structures
  - (d) with similar chemical compositions and similar mineral structures
  - (e) None of these
- (vii) Plutonic igneous rocks always have:
  - (a) olivine, calcium feldspar, pyroxene
  - (b) amphibole, sodium feldspar, biotite
  - (c) quartz, muscovite, potassium feldspar
  - (d) phaneritic texture
  - (e) None of these
- (viii) Weathering processes:
  - (a) only affect igneous rocks
  - (b) only affect sedimentary rocks
  - (c) affect all rocks at Earth’s surface
  - (d) do not adversely affect rocks
  - (e) cannot be observed directly at Earth’s surface.

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- (ix) Mud cracks preserved in sedimentary rocks:
  - (a) are indicative of arid environments characterized by occasional rain
  - (b) occur only in rain forests
  - (c) occur whenever plants germinate in rocks
  - (d) have never been observed in nature
- (x) Which of the following lists is arranged in order from lowest to highest grade of metamorphic rock?
  - (a) gneiss, slate, schist, phyllite
  - (b) gneiss, schist, phyllite, slate
  - (c) slate, gneiss, phyllite, schist
  - (d) slate, phyllite, schist, gneiss
  - (e) phyllite, gneiss, slate, schist
- (xi) The asthenosphere is:
  - (a) that portion of Earth where rocks behave as brittle solids
  - (b) that portion of Earth where rocks behave as plastic solids
  - (c) that portion of Earth where rocks behave as fluids
  - (d) that portion of Earth where rocks can be found
  - (e) None of these
- (xii) Which of the following is associated with continent-continent convergent plate boundaries?
  - (a) explosive volcanism
  - (b) andesite volcanism
  - (c) large, damaging earthquakes
  - (d) volcanic mountain chain
  - (e) All of these
- (xiii) An example of a convergent plate boundary is:
  - (a) the Ouachita Mountains
  - (b) the Appalachian Mountains
  - (c) the Himalaya Mountains
  - (d) the Cascade Mountains
  - (e) All of these
- (xiv) The strike of a layer is:
  - (a) the angle at which that layer intercepts a horizontal surface
  - (b) the degree to which the layer has compressed during mountain building
  - (c) a line formed by the intersection of the layer with the Earth's surface
- (xv) An anticline is a structure in which:
  - (a) the oldest rock layers are located at the top of the structure
  - (b) the rock layers dip away from the axis of the structure
  - (c) rock layers are down warped
  - (d) All of these
- (xvi) The V-shaped outcrop pattern of a plunging syncline will:
  - (a) be tilted
  - (b) close in the direction of plunge
  - (c) open in the direction of plunge
  - (d) not be observed
  - (e) point toward the axis
- (xvii) Which of the following is not a feature of an anticline?
  - (a) youngest rocks on the flanks
  - (b) oldest rocks near the axis
  - (c) layers dip toward the axis
  - (d) upwarped rock layers
  - (e) All of these
- (xviii) Which of the following is not a principle used in relative dating?
  - (a) the Principle of Superposition
  - (b) the Principle of Original Horizontality
  - (c) the Principle of Faunal Succession
  - (d) the Principle of Cross-Cutting Relationships
  - (e) The Theory of Evolution
- (xix) What is the half-life of a radioactive element?
  - (a) the time required for one-half of a given quantity of the element to decay to its daughter element
  - (b) the time required for all of the radioactive element to decay to its daughter element
  - (c) half of the time required for a given quantity of the element to decay to its daughter element
  - (d) the time required for the radioactive element to decay half of the time
  - (e) if you observe a radioactive element, half the time it decays, half the time it doesn't
- (xx) The Principle of Faunal Succession states that:
  - (a) fossils preserved in rock layers are less complex in older rocks
  - (b) the Theory of Evolution is proven by the succession of fossils observed in rocks
  - (c) the fossil record of life proves that life has succeeded on Earth
  - (d) it is unlikely that life could have succeeded on other planets
  - (e) None of these

<b>NOTE:</b>	<p>(i) <b>PART-II</b> is to be attempted on the separate <b>Answer Book</b>. (ii) Attempt <b>ONLY FOUR</b> questions from <b>PART-II</b>. All questions carry <b>EQUAL</b> marks. (iii) Extra attempt of any question or any part of the attempted question will not be considered.</p>
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- Q.2.** How many Tectonic Plate Boundaries are found? Describe them briefly with emphasis to Indian Plate. (20)
- Q.3.** Describe Volcanic processes in detail with emphasis to volcanic activity in Indus and Balochistan Basins. (20)
- Q.4.** What do you understand with rock failure theory? Describe various features result due tectonic forces. (20)
- Q.5.** What importance has micro fossils in stratigraphy? Give the Classification of Phylum Sarcodina up to Family level. (20)
- Q.6.** Describe the succession (Various Formations) of Mesozoic Era from Salt Range. (20)
- Q.7.** Describe principal types of metamorphic rocks in details. (20)
- Q.8.** Define/describe briefly the following terms: (20)
- |                            |                               |          |
|----------------------------|-------------------------------|----------|
| (i) Horst and Graben Fault | (ii) Range Fossils            | (1 each) |
| (iii) Law of superposition | (iv) Lithosphere              |          |
| (v) Type section           | (vi) Continental Rise         |          |
| (vii) Disconformity        | (viii) Jhlum Group            |          |
| (ix) Alluvial Fan          | (x) Jasper                    |          |
| (xi) Moh's Scale           | (xii) Differential Weathering |          |
| (xiii) Primary structures  | (xiv) Meandering Stream       |          |
| (xv) Detritus Rocks        | (xvi) Geosyncline             |          |
| (xvii) Petrification       | (xviii) Panel Diagram         |          |
| (xix) Transform Fault      | (xx) Graded Bedding           |          |

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