FEDERAL PUBLIC SERVICE COMMISSION

COMPETITIVE EXAMINATION FOR RECRUITMENT TO POSTS IN BS-17 UNDER THE FEDERAL GOVERNMENT, 2011

Roll Number

GEOLOGY, PAPER-I

TIME ALLOWED:	**(PART-I MCQs)**	**30 MINUTES**	**MAXIMUM MARKS: 20**
THREE HOURS	**(PART-II)**	**2 HOURS & 30 MINUTES**	**MAXIMUM MARKS: 80**

NOTE: **(i)** **First** attempt **PART-I (MCQs)** 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 MCQs) (COMPULSORY)

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

(i) Following are the members of plagioclase family:

(a) Albite, Oligoclase, Andesine **(b)** Andesine, Labradorite, Bytownite

(c) Oligoclase, Andesine, Labradorite **(d)** Labradorite, Bytownite, Anorthite **(e)** All of these

(ii) Chaman Transform Zone is characterized:

(a) Mainly by strike-slip faulting with minor subduction

(b) Mainly by dip-slip faulting with minor subduction

(c) Mainly by subduction with minor strike-slip faulting

(d) Mainly by obduction with minor strike-slip faulting **(e)** None of these

(iii) A blocky and fragmented form of lava occurring in flows with fissured and angular surfaces is known as:

(a) Ad lava **(b)** Ac lava **(c)** Ab lava **(d)** Aa lava **(e)** None of these

(iv) The following formations are known respectively as Upper, Middle and Lower Productus Limestone:

(a) Amb, Wargal and Chiddru **(b)** Chiddru, Wargal and Amb

(c) Wargal, Amb and Chiddru **(d)** Amb, Chiddru and Wargal **(e)** None of these

(v) The following mineral shows two sets rhombic cleavage:

(a) Hornblende **(b)** Grunerite **(c)** Tremolite **(d)** Actinolite **(e)** All of these

(vi) Physical weathering process in which sheets of rock are fractured and detached from an outcrop is termed as:

(a) Degeneration **(b)** Transpiration **(c)** Exfoliation **(d)** Deformation **(e)** None of these

(vii) Mohorovicic Discontinuity is the boundary between:

(a) Crust and Lithosphere **(b)** Sima and Sial

(c) Crust and Mantle **(d)** Crust and Asthenosphere **(e)** None of these

(viii) Type of foliation associated with very fine grained pelitic rocks metamorphosed to low grade is known as:

(a) Phyllitic Structure **(b)** Gneissic Structure

(c) Schistose Structure **(d)** Slaty Cleavage **(e)** None of these

(ix) Which of the following statements is true?

(a) Apatite is harder than Fluorite **(b)** Quartz is harder than Calcite

(c) Corundum is harder than Quartz **(d)** Diamond is harder than all minerals **(e)** All of these

(x) Among following which are classed as chronostratigraphic units:

(a) Era, Period, Epoch **(b)** Group, Formation, Member

(c) System, Series, Stage **(d)** Palaeozoic, Cretaceous, Miocene **(e)** None of these

(xi) Which of the following group of rocks is known as basic igneous rocks?

(a) Monzonite, Syenite, Rhyolite **(b)** Granite, Diorite, Granodiorite

(c) Trachyte, Andesite, Dacite **(d)** Gabbro, Norite, Dolerite **(e)** None of these

(xii) Antistress and stress minerals are discussed in the context of:

(a) Metamorphic rocks **(b)** Sedimentary rocks
(c) Plutonic rocks **(d)** Volcanic rocks **(e)** All of these

(xiii) Island Arc is a linear or arcuatc chain of volcanic islands at:

(a) Transform Plate Boundary **(b)** Convergent Plate Boundary
(c) Mid-Oceanic Ridge **(d)** Divergent Plate Boundary **(e)** None of these

(xiv) Axial Fold Belt is the dividing feature between two basins.

(a) Indus and Kakar Khurasan **(b)** Lower and Upper Indus
(c) Southern and Central Indus **(d)** Indus and Balochistan **(e)** None of these

(xv) Current ripples are used to indicate:

(a) Velocity of flow **(b)** Direction of flow
(c) Line of flow **(d)** Gradient of flow **(e)** All of these

(xvi) Floating invertebrates are known as:

(a) Benthos **(b)** Nektons **(c)** Zooplanktons **(d)** Phytoplanktons **(e)** None of these

(xvii) Zaluch Nala is situated in:

(a) Eastern Salt Range **(b)** Western Salt Range
(c) Surghar Range **(d)** Central Salt Range **(e)** None of these

(xviii) Expression of the septum on the wall surface of Ammonoids is known as:

(a) Growth lines **(b)** Suture **(c)** Ribs **(d)** Umbilicus **(e)** None of these

(xix) Blue Schist is comprised of:

(a) Smectite and Quartz **(b)** Glaucophane, Lawsonite and Quartz
(c) Epidote and Albite **(d)** Marble and Quartzite **(e)** None of these

(xx) The hinge line of a doubly plunging syncline is:

(a) Curvilinear **(b)** Rectilinear **(c)** Horizontal **(d)** Vertical **(e)** None of these

PART-II

NOTE: **(i)** **PART-II** is to be attempted on separate Answer Book.
(ii) **Attempt ONLY FOUR questions from PART-II. All questions carry EQUAL marks.**
(iii) **Extra attempt of any question or any part of the attempted question will not be considered.**

Q.2. Define fossil, discuss various modes of fossilizations. Describe main morphological features of class Trilobita of Phylum Arthropoda. **(20)**

Q.3. What are faults, how they are recognized in field? Give the classification of faults based on Slip types. **(20)**

Q.4. Describe the morphological and structural characters of Salt Range. Discuss its importance in geology of Pakistan. Give the lithological characteristics of Salt Range Formation. **(20)**

Q.5. In the context of earthquake, define epicentre and focus. Using P and S waves how the epicentre of an earthquake is located? **(20)**

Q.6. How rock-forming minerals are classified on the basis of silicate structure? Give example of each class. Write down the physical properties of mica group. **(20)**

Q.7. With examples, discuss the geological parameters which control the landforms of an area. Describe the landforms resulted by sedimentation through ice and meltwater. **(20)**

Q.8. Write notes on the following: **(5+5+5+5 = 20)**

(a) Magmatic Differentiation **(b)** Diagenesis
(c) Dolomitization **(d)** Metasomatism

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Roll Number

GEOLOGY, PAPER-II

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NOTE: **(i)** **First** attempt **PART-I (MCQs)** on separate Answer Sheet which shall be taken back after 30 minutes.

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(PART-I MCQs) (COMPULSORY)

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

(i) The quality of coal of Thar coal deposits is:
(a) Anthracitic **(b)** Bituminous **(c)** Lignitic **(d)** Sub-bituminous **(e)** All of these

(ii) Liptinite type of maceral group, after maturation is capable to generate:
(a) Condensate **(b)** Oil **(c)** Gas **(d)** Coal **(e)** None of these

(iii) Dolomite deposits of Jhampir (Sindh) occur in:
(a) Laki Formation **(b)** Nari Formation
(c) Dungan Formation **(d)** Kirthar Formation **(e)** All of these

(iv) The heavy minerals, Zircon, Rutile and Apatite are found in:
(a) Sand and Sandstone **(b)** Chalk and Limestone
(c) Kaolinite and Claystone **(d)** Chlorite and Claystone **(e)** None of these

(v) During geological mapping the following can be used as base map:
(a) Toposheet **(b)** Aerial Photograph
(c) Satellite Image **(d)** Habitation map **(e)** All of these

(vi) Hemimorphite, Franklinite and Smithsonite are ores of:
(a) Cu **(b)** Ti **(c)** Cr **(d)** Zn **(e)** None of these

(vii) Following is a very well proven reservoir rock in Lower Indus Basin:
(a) Gaj Formation **(b)** Nari Formation **(c)** Goru Formation
(d) Parh Limestone **(e)** None of these

(viii) F. H. Lahee and R. R. Compton are the authors of the famous books on the subject:
(a) Geomorphology **(b)** Field Geology
(c) Stuctural Geology **(d)** Engineering Geology **(e)** None of these

(ix) Khas Kheli oil field in lower Sindh was discovered in:
(a) 1991 **(b)** 1981 **(c)** 1971 **(d)** 1961 **(e)** None of these

(x) Warsak dam is built on:
(a) Kabul River **(b)** Kurram River **(c)** Gomal River **(d)** Swat River **(e)** None of these

(xi) Alpine-type Chromite deposits occur at:
(a) Chagai **(b)** Kohistan **(c)** Raskoh **(d)** Muslimbagh **(e)** All of these

(xii) Which of the following prospecting method is most suitable for locating Asbestos, Pyrrhotite and Manganese?
(a) Air-born magnetic survey **(b)** Ground magnetic survey
(c) Seismic method **(d)** Electrical Resistivity method **(e)** All of these

(xiii) To obtain information about magnetic minerals from Stereogram/Stereopair following instrument is used:

(a) Stereometer **(b)** Magnetometer **(c)** Resistivitymeter
(d) Seismometer **(e)** None of these

(xiv) Following rocks are not suitable as construction materials due to ASR and ACR hazards respectively:

(a) Granite and Diorite **(b)** Dolomite and Calcite
(c) Andesite and Dolomite **(d)** Basalt and Gabbro **(e)** None of these

(xv) Presence of Pegmatite is especially an indicator of possible occurrence of:

(a) Base-metals **(b)** Radioactive minerals
(c) Magnetic minerals **(d)** Non-metals **(e)** All of these

(xvi) For exploration and determination of underground water quality most suitable method is:

(a) Seismic **(b)** Magnetic **(c)** Geochemical **(d)** Resistivity **(e)** None of these

(xvii) If a map shows distribution of rocks and other geological materials (features also) of different ages over the Earth's surface or below, it is known as:

(a) Topographic Map **(b)** Geological Map
(c) Physiographic Map **(d)** Mine-Survey Map **(e)** None of these

(xviii) A map which shows the surface contours on an imaginary surface to which water would rise in a drilled well is termed as:

(a) Piezometric Contour Map **(b)** Groundwater Contour Map
(c) Water Table Contour Map **(d)** Sonometric Contour Map **(e)** All of these

(xix) Following is the term describes the Iron-Oxide rich zone which lies above a Sulphide bearing ore deposit:

(a) Greisen **(b)** Genesis **(c)** Gossan **(d)** Gneiss **(e)** None of these

(xx) Oil seepages in the Sulaiman Range are from the rocks of the following ages:

(a) Triassic and Jurassic **(b)** Jurassic and Cretaceous
(c) Cretaceous and Paleocene **(d)** Paleocene and Eocene **(e)** All of these

PART-II

NOTE: **(i)** **PART-II** is to be attempted on separate Answer Book.
(ii) **Attempt ONLY FOUR questions from PART-II. All questions carry EQUAL marks.**
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Q.2. Name various geochemical prospecting methods for minerals. Describe any one of them in detail with examples. **(20)**

Q.3. What geological considerations are essential before selecting a site for and during construction of a tunnel? Discuss in detail. **(20)**

Q.4. Elaborate Hydrologic Cycle. How the water-flow budget of an hydrologic basin is calculated? **(20)**

Q.5. What are Kimberlites? Discuss their distribution in space and time, geological setting and petrography. **(20)**

Q.6. **(a)** Give the criteria for lithological interpretation on an aerial photograph. **(10)**

(b) Briefly discuss the merits and demerits of Aerial Photography and Satellite Remote Sensing over each other. **(10)**

Q.7. Write about the tectonic setting and metallogenic province of RecoDiK Copper – Gold Belt of Balochistan. Discuss the genesis and petrography of the deposit. **(20)**

Q.8. Give the occurrence of coal deposits in the Kirthar Province of Lower Indus Basin. Describe their stratigraphic association, coal varieties and reserves. **(20)**

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