FEDERAL PUBLIC SERVICE COMMISSION
COMPETITIVE EXAMINATION-2025 FOR RECRUITMENT TO POSTS IN BS-17 UNDER THE FEDERAL GOVERNMENT

GEOLOGY

Roll Number

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

NOTE: (i) First attempt **PART-I (MCQs)** on separate **OMR Answer Sheet** which shall be taken back after **30 minutes.**
(ii) Overwriting/cutting of the options/answers will not be given credit.
(iii) There is **no negative** marking. All MCQs must be attempted.

PART-I (MCQs)(COMPULSORY)

Q.1. (i) Select the best option/answer and fill in the appropriate Box ■ on the **OMR Answer Sheet.(20x1=20)**
(ii) Answers given anywhere else, other than OMR Answer Sheet, will not be considered.

1. **S- wave is terminated at:**
   (A) Crust—Mantle boundary (B) Lithosphere—Asthenosphere boundary
   (C) Mantle—Core boundary (D) Inner and Outer core boundary
2. **Hydrothermal deposits are mostly:**
   (A) Syngenetic (B) Epigenetic (C) Residual (D) Placer
3. **Exothermal deposits are characterized by:**
   (A) High initial temperature and pressure (B) Shallow depth of formation
   (C) Rapid cooling (D) All of these
4. **The zone of leaching in a soil is also called:**
   (A) A-horizon (B) B-horizon (C) C-horizon (D) O-horizon
5. **Altitude of a bed can be measured by:**
   (A) Finding strike and dip direction by compass and angle or dip by clinometer.
   (B) Reading the position of the magnetic needle on the outer circle.
   (C) Reading the angle by clinometer. (D) Ending strike direction by compass and dip by clinometer.
6. **The process by which atomic nuclei spontaneously decay is termed as:**
   (A) Ionization (B) Fusion (C) Nucleation (D) None of these
7. **Staining technique is used to differentiate between calcite and:**
   (A) Aragonite (B) Dolomite (C) Siderite (D) Malachite
8. **Which one of the following mountain ranges have formed where continental crusts have converged?**
   (A) Andes (B) Alps (C) Himalaya (D) None of these
9. **The apparent dip of any bed towards any direction is:**
   (A) Greater than true dip (B) Equal to the true dip
   (C) Less than the true dip (D) Above conditions depend upon the amount of dip
10. **The density of the rock with natural moisture content is:**
    (A) Bulk density (B) Dry density (C) Wet density (D) Natural density
11. **The maps which place rocks in their presume position before folding and thrusting are known as:**
    (A) Paleogeologic map (B) Paleotectonic map (C) Paleogeographic map (D) Palinspastic map.
12. **The capacity of a rock particle to withstand bending loads is termed as:**
    (A) Bending strength (B) Shear strength (C) Transverse strength (D) Lateral strength
13. **If a fault plane is inclined with an angle of 35°, then the hade will be:**
    (A) 45° (B) 55° (C) 145° (D) 125°
14. **The rate that temperature increases with increasing depth inside the earth is called:**
    (A) Geothermal gradient (B) Isothermal gradient (C) Hydrothermal gradient (D) Mesothermal gradient
15. **"Sima" is a general term used to refer to:**
    (A) Rocks of the oceanic crust (B) Rocks of the continental crust
    (C) Rocks of the terrestrial planet (D) None of these
16. **Which of the following group of fossils became extinct at the Permo-Triassic boundary?**
    (A) Graptolite (B) Trilobite (C) Ammonite (D) Ediacaran
17. **A mine excavation made along the strike of a 2 meter thick tabular ore body dipping 30° is called:**
    (A) Crosscut (B) Raise (C) Drive (D) Shaft
18. **Identify the correct sequence for the rank of coal from lowest to highest:**
    (A) Bituminous - anthracite - lignite – peat (B) Peat - lignite - bituminous - anthracite
    (C) Peat - lignite - anthracite – bituminous (D) Anthracite - bituminous - lignite – peat
19. **Which of the following is the agent of metamorphism?**
    (A) Fluid (B) Heat-Temperature (C) Pressure (D) All of these
20. **Which earthquake body waves have the greatest velocity?**
    (A) L waves (B) P waves (C) S waves (D) None of these

PART-II

NOTE: (i) **Part-II** is to be attempted on the separate **Answer Book.**
(ii) Attempt **ONLY FOUR** questions from **PART-II** by selecting **TWO** questions from **EACH SECTION**. **ALL** questions carry **EQUAL** marks.
(iii) All the parts (if any) of each Question must be attempted at one place instead of at different places.
(iv) Write Q. No. in the Answer Book in accordance with Q. No. in the Q.Paper.
(v) No Page/Space be left blank between the answers. All the blank pages of Answer Book must be crossed.
(vi) Extra attempt of any question or any part of the question will not be considered.

SECTION-A

Q. No. 2. **(a)** Discuss the interior of earth in detail. Also describe the processes involved in the formation of igneous rocks. **(10)**
(b) What are laws of superposition and faunal succession? Describe classification and nomenclature of stratigraphic units in detail. **(10)** **(20)**

Q. No. 3. **(a)** What are main types of sedimentary rocks and how are they formed? Also describe the classification scheme of these sedimentary rocks in detail. **(10)**
(b) Discuss optical properties of common rock-forming minerals in detail. **(10)** **(20)**

Q. No. 4. Write comprehensive note on the following topics. **(10 each)** **(20)**
(a) Tectonic framework of Pakistan
(b) Geothermal energy resource potentials of Pakistan

SECTION-B

Q. No. 5. **(a)** Write a detailed note on "Geophysical techniques utilized in exploration of mineral deposits, oil/gas and groundwater". **(10)**
(b) Discuss migration types in hydrocarbon exploration. Also describe secondary and enhanced oil recovery techniques in detail. **(10)** **(20)**

Q. No. 6. **(a)** What is Walther's law of superposition? Discuss concepts and significance of sequence stratigraphy. **(10)**
(b) Describe "Upper Indus basin with respect to its hydrocarbon potentials" in detail. **(10)** **(20)**

Q. No. 7. What is the role of Engineering Geology in the development of CPEC projects? Explain it with suitable examples. **(20)**

Q. No. 8. **(a)** Discuss various classification schemes of mineral deposits in detail. **(10)**
(b) Describe various metallic and non-metallic mineral deposits of Pakistan. Also discuss their significance and abundance in detail. **(10)** **(20)**

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