(7) Which of the following minerals are used as gem minerals.
(a) Talc (b) diamond
(c) Corundom (d) None of these

(8) How much percent of total energy is produced through nuclear and hydle style power generation in Pakistan:
(a) 10.3% (b) 41.4%
(c) 43.5% (d) any other

(9) What is the total production of crude oil (daily basis) in Pakistan:
(a) 60,000 bbls (b) 1,00,000 bbls
(c) 70,000 bbls (d) any other figure

(10) Which of the following minerals are oxide of iron:
(a) Hemafite (b) Magnetite
(c) Periclase (d) Siderite
(e) None of these

(11) The dam constructed on river Jhehlum is known as:
(a) Tanda Dam (b) Warsak Dam
(c) Tarbella Dam (d) Mangla Dam
(e) None of these

(12) Which of the following rock(s) is/are ideal for the accumulation of oil:
(a) fractured limestone (b) Shale
(c) Marle (d) Sandstone
(e) None of these

(13) Landslide are commonly seen in:
(a) Murree Formation (b) Hazara Slates
(c) Abbottabad Formation (d) None of these.

(14) Raw material for cement industry include:
(a) Limestone (b) Shale
(c) Clay (d) Slate
(e) Gypsum (f) None of these

(15) Best quality emerld is reported from:
(a) Ophiolitic melange at Mingora (b) Hunza
(c) Chaagai (d) None of these

(16) Which type of Coal shows highest carbon content:
(a) Peat (b) Lignite
(c) bituminous (d) None of these

(17) Kimberlite are high Pressure ultrabic rocks and are the main source of the terrestrial:
(a) diamond (b) phlogopite
(c) Jad. Pyroxene (d) None of these

(18) Among the geophysical methods, resistivity method is most suitable for:
(a) Ground water survey (b) metallic mineral deposits
(c) Oil and gas exploration (d) None of these

(19) How much energy is produced through burning natural gas in Pakistan:
(a) 41.4% (b) 4.5% (c) any other figure.

(20) Why the O.G.D.C. is called as O.G.D.C.L. now.

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FEDERAL PUBLIC SERVICE COMMISSION

COMPETITIVE EXAMINATION FOR RECRUITMENT TO POSTS IN PBS-17, UNDER THE FEDERAL GOVERNMENT, 2003

GEOLOGY, PAPER-I

TIME ALLOWED: THREE HOURS **MAXIMUM MARKS: 100**

NOTE: Attempt **FIVE** questions in all, including **QUESTION NO.8** which is **COMPULSORY**. All questions carry **EQUAL** marks. Illustrate your answer with the help of sketches and diagrams where needed.

1. What are Sedimentary Rocks? How are these classified?
2. How Earth came into being? Briefly discuss theories about its origin.
3. What are EARTHQUAKES? How are these produced? What measures need to be adopted to mitigate the damage caused by the earthquakes?
4. What is meant by CONTINENTAL DRIFT and PLATE TECTONICS? Discuss various tectonic elements of the Earth.
5. What are FOSSILS? How are these preserved? List the most important INDEX Fossils of Pakistan.
6. What is STRATIGRAPHY? Briefly describe various stratigraphic units? Summarize the Paleozoic stratigraphy of the Salt Rage.
7. What is a MINERAL? Discuss various ROCK-FORMING MINERALS with the help of examples.

COMPULSORY QUESTION

8. Write very short notes on the following:

(1)	Foraminifers	(2)	Pseudotachylite
(3)	Trachite	(4)	Magma
(5)	Seafloor spreading	(6)	Magnetic anomalies
(7)	Transform Faults	(8)	Strike slip faults
(9)	Graben	(10)	Trench
(11)	Island Arc	(12)	Sheet Volcanic Eruption
(13)	Liquefaction	(14)	Crystal
(15)	Salt pseudomorph structure	(16)	Cross Bed
(17)	Ripple Mark	(18)	Pyrope
(19)	Amphibole	(20)	Manganese Nodule

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FEDERAL PUBLIC SERVICE COMMISSION

COMPETITIVE EXAMINATION FOR RECRUITMENT TO POSTS IN PBS-17, UNDER THE FEDERAL GOVERNMENT, 2003

GEOLOGY, PAPER-II

TIME ALLOWED: THREE HOURS **MAXIMUM MARKS: 100**

NOTE: Attempt **FIVE** questions in all, including **QUESTION NO.8** which is **COMPULSORY**. All questions carry **EQUAL** marks. Illustrate your answer with the help of sketches and diagrams where needed.

1. Discuss METALLIC MINERAL RESOURCES of Pakistan? Suggest economically viable, mineral-based industries for various deposits?
2. What are the major COALFIELDS of Pakistan? Discuss their Rank and Quality, and propose their suitable industrial applications.
3. Briefly describe ORIGIN, MIGRATION AND OCCURRENCES of hydrocarbons. Discuss HYDROCARBON PROVINCES of Pakistan.
4. What are the important RADIOACTIVE MINERALS? Discuss their host rocks and occurrences in Pakistan.
5. What are LANDSLIDES? Discuss various hazards associate with them. Describe measures to control landslides.
6. Write any essay on the WATER RESOURCES OF PAKISTAN. Suggest measures to control water-logging and salinity.
7. Discuss GEOPHYSICAL PROSPECTING TECHNIQUES employed for the exploration of metals, water and hydrocarbons.

COMPULSORY QUESTION

8. Write Very Brief NOTES on the followings:
   (1) Confined and unconfined aquifer
   (2) Monocline
   (3) Orocline
   (4) Gemstones
   (5) Geochemical Exploration
   (6) Soils.
   (7) Any two engineering properties of Soils
   (8) Reservoir Rocks
   (9) Salt Dome
   (10) Porosity
   (11) Permeability
   (12) Rockslide
   (13) Any two properties of building stones
   (14) Avalanche
   (15) Point source of pollution
   (16) BOD
   (17) Bentonite
   (18) Wire line logs
   (19) Kerogen
   (20) Trace elements

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FEDERAL PUBLIC SERVICE COMMISSION

COMPETITIVE EXAMINATION FOR RECRUITMENT TO POSTS IN BPS-17, UNDER THE FEDERAL GOVERNMENT, 2004

GEOLOGY, PAPER-I

TIME ALLOWED: THREE HOURS MAXIMUM MARKS: 100

NOTE: Attempt **FIVE** questions in all, including **Question No. 8** which is **COMPULSORY**. All questions carry **EQUAL** marks. Illustrate your answer with sketches where needed.

1. What methods are available to determine the age of the Earth? Describe its internal structure.

2. Discuss the origin of MAGMA in relation to plate tectonics. How different types of igneous rocks are formed from a single magma?

3. What is the significance of physical properties of minerals? Describe the PYROXENE group of minerals.

4. Define FORMATION. Describe the Tertiary sequence of strata in Sindh.

5. How do you classify FAULTS? Discuss the importance of CHAMAN FAULT in the geology of Pakistan.

6. How do you locate the epicenter of an earthquake? What measures are necessary for those areas of Pakistan which are seismically active?

7. Describe the morphology of CEPHALOPODS. What is their significance in the stratigraphy of Pakistan?

COMPULSORY QUESTION

8. Write very short notes on the following:

(1)	Turbidites	(2)	Asthenosphere
(3)	Pillow lava	(4)	Cross bedding
(5)	Continental Slope	(6)	Index fossil
(7)	Arkose	(8)	Enfoliation
(9)	Submarine fan	(10)	Kaolinite
(11)	Braided river	(12)	Main Mantle Thrust
(13)	Eclogite	(14)	Centre of symmetry
(15)	Marker bed	(16)	Syenite
(17)	Bireferengence	(18)	Globogerina
(19)	Phyllosilicate	(20)	Chert

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FEDERAL PUBLIC SERVICE COMMISSION

COMPETITIVE EXAMINATION FOR RECRUITMENT TO POSTS IN BPS-17, UNDER THE FEDERAL GOVERNMENT, 2004

GEOLOGY, PAPER-II

TIME ALLOWED: THREE HOURS MAXIMUM MARKS: 100

NOTE: Attempt **FIVE** questions in all, including **Question No. 8** which is **COMPULSORY**. All questions carry **EQUAL** marks. Illustrate your answer with sketches where needed.

1. What is a PORPHYRY Copper deposit? Describe the geology of SAINDAK area.

2. Describe the ranks of Coal. What are the problems of Utilization of THAR Coal?

3. What geological factors must be considered in the selection of sites for DAMS? Discuss the silting problem in Mangla and Tarbela.

4. Explain the DARCY Law. Can groundwater exploration be an alternate to Kalabagh Dam?

5. Describe the structure and stratigraphy of SUI gas field. What are the advantages and disadvantages of an international gas pipeline to Pakistan?

6. Discuss two common geophysicas techniques employed in the exploration of oil and for groundwater.

7. What factors are responsible for LANDSLIDES? How will you stabilize a frequently sliding mass of shales and mudstones?

COMPULSORY QUESTION

8. Write very short notes on the following:

(1)	Artesian Well	(2)	Cable tool drilling
(3)	Talethermal deposits	(4)	Ceramic minerals
(5)	Tar sands	(6)	Water logging
(7)	Karez	(8)	Lapidary
(9)	Bouger anamoly	(10)	Vitrinite
(11)	Stratigraphic traps	(12)	Geophones
(13)	Sour gas	(14)	Aquitards
(15)	Formation Pressure	(16)	Pile Foundation
(17)	Onyx	(18)	Resistivity log
(19)	Compressive strength	(20)	Decorative stones

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FEDERAL PUBLIC SERVICE COMMISSION

COMPETITIVE EXAMINATION FOR RECRUITMENT TO POSTS IN BPS-17, UNDER THE FEDERAL GOVERNMENT, 2005

GEOLOGY, PAPER-I

TIME ALLOWED: THREE HOURS MAXIMUM MARKS: 100

NOTE: Attempt **FIVE** questions in all, including **QUESTION NO.8,** which is **COMPULSORY.** All questions carry **EQUAL** marks. Illustrate your answer with sketches where needed.

1. Define mineral, crystal and rock. Describe the Feldspar group of minerals.

2. How do you classify Folds? Discuss the types of Folds in the mountains of Baloshitan.

3. Discuss the process of weathering and erosion. What is the importance of these processes?

4. Describe the morphology of Brachiopods. What is their significance in the stratigraphy of Pakistan?

5. What is the difference between magnitude and intensity of an earthquake? What are earthquake resistant structures?

6. What is Stratigraphic Code of Pakistan? Describe the Paleozoic rocks of the Salt Range.

7. How do the sediments convert to sedimentary rocks? Describe a few clastic sedimentary rock.

COMPULSORY QUESTION

8. Write very short note on the following:-

(1)	Sedimentary facies	(2)	Lithosphere
(3)	Roppy lava	(4)	Flute cast
(5)	Continental shelf	(6)	Fossil fuel
(7)	Gray wack	(8)	Extension joints
(9)	Submarine Fan	(10)	Garnet
(11)	Graded river	(12)	Chevron folds
(13)	Hornfels	(14)	Axis of symmetry
(15)	Marker bed	(16)	Peridotite
(17)	Interference colors	(18)	Discocyclina
(19)	Cyclosilicate	(20)	Pyrite

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FEDERAL PUBLIC SERVICE COMMISSION

COMPETITIVE EXAMINATION FOR RECRUITMENT TO POSTS IN BPS–17, UNDER THE FEDERAL GOVERNMENT, 2005

ZOOLOGY, PAPER–II

TIME ALLOWED: THREE HOURS MAXIMUM MARKS: 100

NOTE: Attempt **FIVE** questions in all, including **QUESTION NO.8**, which is **COMPULSORY**. All questions carry **EQUAL** marks. Give diagram wherever required.

1. (a) List the steps involved in the synthesis of protein starting from DNA. (9)
   (b) Give an account of morphology, chemical composition and function of Golgi Complex. (11)

2. (a) Briefly discuss the mechanism involved in transport of Oxygen from lungs to tissue. (12)
   (b) What are the different excretory products in animals? How and why these are produced in different animal groups? (8)

3. (a) Discuss the multiple allelic inheritance with reference to inheritance of ABO blood groups in man. (9)
   (b) Define epistasis. How does it differ from dominance? Give three examples of epistasis interactions. (11)

4. (a) Give a brief account of the possible origin of life on this globe. (8)
   (b) Compare Darwin's theory of natural selection with Lamarck's theory of Acquired characters. (12)

5. (a) Define an ecosystem.Discuss pond as an example of the complete ecosystem. (10)
   (b) What is biogeochemical cycle? Describe phosphorus cycle. (10)

6. (a) Discuss the role of polyploidy in development of commercial varieties in plants. (10)
   (b) Discuss the different enzymes involved in digestion in man. (10)

7. Write short notes on: (5 each)
   (a) Sex linkage (b) lysosomes
   (c) Pituitary Hormones (d) Air Pollution

COMPULSORY QUESTION

8. Write only the correct answer in the Answer Book. Do not reproduce the question.

   (1) The chemical composition of a chromosome is:
   (a) Lipoprotein (b) Oligopolysaccharid
   (c) Nucleoprotein (d) None of these

   (2) Lysosomes are responsible for:
   (a) Protein synthesis (b) ATP formation
   (c) Intracellular break down (d) None of these

   (3) Ribosomes are located on:
   (a) cell membranes (b) Rough Endoplasmic reticulum
   (c) Mitochondria (d) Nuclear membrane
   (e) None of these

   (4) The metaphase chromosomes are thick because these:
   (a) Multiply (b) Duplicate
   (c) Coiled Coiling (d) None of these

   (5) Glycolysis occurs in:
   (a) Cytoplasm (b) Mitochondria
   (c) Cell membrane (d) All of these

(6) Nerves convey the message in the form of:
(a) Physical impulse (b) Chemical impulse
(c) Electrical impulse (d) None of these

(7) Follicle stimulating hormone is produced in:
(a) Ovary (b) Pituitary
(c) Hypothalamus (d) All of these

(8) The primary excretory product is:
(a) Ammonia (b) Carbon dioxide
(c) faeces (d) None of these

(9) Pepsin is responsible for digestion of:
(a) carbohydrate (b) lipid
(c) Protein (d) All of these

(10) XXY individual in men is phenotypically:
(a) Male (b) Female
(c) Intersex (d) None of these

(11) Sex linked genes are located on (in man):
(a) Only on X chromosome (b) Only on Y chromosome
(c) Sex chromosome (d) All of these

(12) Medelian Segregation is applicable to:
(a) Gametogenesis (b) Meiosis
(c) Spore formation (d) None of these

(13) The number of the alleles of a gene in diploid individual is:
(a) Any number (b) One
(c) Two (d) Three

(14) The gene mapping is measured in:
(a) Millimeters (b) Microns
(c) Angstrom (d) Centi Morgan

(15) Genetic dominance concerns with the phenotypic expression in:
(a) Heterozygous (b) Homozygous
(c) Both (a) and (b) (d) None of these

(16) The first living organism was:
(a) Algal cell (b) Virus
(c) Bacteria (d) None of these

(17) Enzymes are chemically:
(a) carbohydrates (b) lipids
(c) lipoprotein (d) Proteins

(18) Theory of Natural Selection was initially proposed by:
(a) Darwin (b) Wallace
(c) Both Darwin and Wallace. (d) Lyll

(19) Second law of thermodynamics demand:
(a) Energy stability (b) Energy loss during transfer of energy
(c) Energy flow from one form to another (d) None of these

(20) The basic purpose of ecosystem is:
(a) Maintenance of organisms (b) Energy flow
(c) Chemical movements (d) None of these

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