(28)

FEDERAL PUBLIC SERVICE COMMISSION

COMPETITIVE EXAMINATION FOR RECRUITMENT TO POSTS IN BPS-17, UNDER THE FEDERAL GOVERNMENT, 2002.

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.

1. Define bedding and stratification. Discuss various types of bedding. Which features are employed to check whether the beds are right-side-up or over turned?

2. What are unconformities? Discuss various stages involved in their development and describe with the help of diagrams various types of unconformities.

3. What is the basis of division of crystals into Systems and Classes? What are the peculiarities of the "NORMAL CLASS' of a system? Describe the symmetry of the normal class of the Hexagonal System.

4. What are FELDSPARS? Keeping in view the Al/Si distribution over the non-equivalent tetrahedral sites in the structure of feldspar. What is a disordered feldspar?

5. Write an essay on the Foraminifera with special reference to their distribution in Pakistan.

6. What is incongruent melting? Draw Phase diagram of the binary system-Leucite-Silica. Describe the characteristic features of this system.

7. Discuss the differences in the Petrography; chemistry and occurrence of the alkali basalt and tholeiitic basalt.

COMPULSORY QUESTION

8. (A) What is the difference between the following pairs (answer only in one or two lines).
   - (1) Orthoclase and Sanidine
   - (2) Microcline and Maximum Microline
   - (3) Biotite and phlogopite
   - (4) Octahedral and Six-fold Coordination
   - (5) Normal and reverse fold
   - (6) Stalactite and stalagmite
   - (7) Gabbro and granite.

   (B) What is wrong with the following sentences:
   - (8) There is no difference between a fault and a joint.
   - (9) Forsterite is formed by the thermal metamorphism of sandstone
   - (10) In the thermal metamorphism of impure Mg-limestone, a series of reaction are involved with progressive elimination of O_2 from the system.
   - (11) Essential minerals within Granite and Gabbro are quartz, alkali feldspar and biotite.

(12) M.K.T separates the Indo-Pak Plate from the Kohistan Island arc.
(13) Hardness of quartz is 4 in the Hohs Scale of hardness.
(14) Kyanite and sillimanite are polymorphs of Al_2O_3.

(C) Write only the correct answer in the Answer Book. Do not reproduce the question.

(15) Mg occupies the octahedral/tetrahedral coordinated positions in the silicate structure.

(16) The average thickness of oceanic crust is:
(a) 5 km (b) 35 km (c) 40 km
(d) None of these.

(17) Eclogite is the high pressure equivalent of:
(a) Gabbro (b) Diorite (c) Sandstone
(d) None of these.

(18) The basalt-andesite – dacite-rhyolite series of rocks occur in:
(a) Island arc environment
(b) Continental marginal area
(c) Orogenic belts.
(d) None of these.

(19) On the A.F.M. diagram, the tholeiitic series exhibit:
(a) a non-iron enrichment trend
(b) a high-iron enrichment trend
(c) a moderate iron enrichment trend
(d) None of these.

(20) When there are two generations of crystals in the igneous rocks, the texture is described as:
(a) Porphyritic
(b) Porphyroblastic
(c) Aphyric
(d) None of these.

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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.

1. What are Salt domes? Discuss their evolution and economic significance.
2. Discuss mineral deposits of Hydrothermal Origin.
3. Make a diagram of a modern drilling rig, label its various parts and discuss the function of the water-based and oil-based drilling muds in Oil well drilling.
4. Briefly discuss the geological factors, which should be taken into consideration while selecting a suitable site for the construction of dams.
5. Give an account of the geological materials used as building stones.
6. What geophysical technique(s) is/are recommended for the prospection of iron-ore deposits? Give details of the techniques and instrument(s) used for this type of survey.
7. Write notes on the following:
   (a) lag time or bottom-up figure (b) coal and its varieties
   (c) Marble deposits in Pakistan.

COMPULSORY QUESTION

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

   (1) Ax type carbonate minerals are:
   (a) Calcite (b) dolomite (c) Magnesite
   (d) Siderite (e) None of these

   (2) Economic deposits of chromite occur at:
   (a) Muslim bagh Baluchistan (b) Chillas.....Kohistan
   (c) Dargai.....Malakand (d) Hazara Kohistan
   (e) None of these

   (3) Barite in the drilling mud is used for increasing:
   (a) mud weight (b) viscosity (c) None of these.

   (4) Beside marble, which of the following rock(s) is/are used for making tiles (after cutting and polishing):
   (a) dolerite (b) serpentinite
   (c) Granite (d) Sandstone
   (e) None of these

   (5) Is it true that a rock may be porous but not permeable:
   (a) Yes (b) No

   (6) Which of the following minerals are used in the glass industry:
   (a) Silica minerals (b) feldspar
   (c) Olioine (d) garnet
   (e) None of these

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(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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