



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

Roll Number

Geology

TIME ALLOWED: THREE HOURS	PART-I (MCQS)	MAXIMUM MARKS = 20
PART-I(MCQS): MAXIMUM 30 MINUTES	PART-II	MAXIMUM MARKS = 80
NOTE: (i) First attempted Part-I (MCQS) on the separate OMR Answer Book 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. (20 × 1 = 20)**
(ii) Answers given anywhere else, other than the OMR Answer Sheet, will not be considered.

1. Statistics deals with:

- (A) Individuals
- (B) Particular facts
- (C) Isolated Items
- (D) Aggregative facts

2. The branch of Statistics that deals with procedure and methodology for obtaining valid conclusion is called:

- (A) Descriptive
- (B) Advance
- (C) Inferential
- (D) All of these

3. Sum of the absolute deviation is least when deviation is taken from:

- (A) Mean
- (B) Median
- (C) Mode
- (D) Geometric Mean

4. In t-distribution, which one is true?

- (A) Mean = Median = Mode
- (B) Mean > Median > Mode

- (C) $\text{Mean} < \text{Median} < \text{Mode}$
 - (D) All of these
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5. What is the probability of a sure event?

- (A) 1
 - (B) 0
 - (C) 0.5
 - (D) 0.2
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10. The types of estimates are:

- (A) Point estimate
- (B) Interval estimates
- (C) Estimation of confidence region
- (D) All of these

11. Ranking scale also includes the properties of _____ scale.

- (A) Nominal
- (B) Interval
- (C) Ratio
- (D) All of these

12. The difference between a statistic and the parameter is called:

- (A) Sampling error
- (B) Random error
- (C) Non-random error
- (D) Probability

13. The standard deviation of any sampling distribution is called:

- (A) Standard error
- (B) Non-sampling error
- (C) Type-I error
- (D) Type-II error

14. A survey conducted by a sampling design is called:

- (A) Sample survey
- (B) Population survey
- (C) Systematic survey
- (D) None of these

15. The sum of the frequencies of the frequency distribution of a statistic is equal to:

- (A) Sample size
- (B) Population size
- (C) Possible samples
- (D) Sum of X values

16. Sampling error can be reduced by:

- (A) Non-probability sampling
- (B) Increasing the population
- (C) Decreasing the sample size
- (D) Increasing the sample size

17. The range of test statistic t is:

- (A) 0 to ∞
- (B) 0 to 1
- (C) $-\infty$ to $+\infty$
- (D) -1 to +1

18. The probability associated with committing a Type-I error is:

- (A) β
- (B) α
- (C) $1 - \beta$
- (D) $1 - \alpha$

19. The degree of freedom for paired t-test based on n pairs of observations is:

- (A) $2n - 1$
- (B) $n - 2$
- (C) $2(n - 1)$
- (D) $n - 1$

20. Experimental error is due to:

- (A) Experimenter's mistakes
- (B) Extraneous factors
- (C) Variation in treatment effects
- (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**. **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.
- (vii) **Use of calculator is allowed.**

SECTION-A

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| Q2. | a) Discuss the interior of the earth in detail. Also, describe the processes involved in the formation of igneous rocks. | (10) |
| | b) What are the laws of superposition and faunal succession? Describe the classification and nomenclature of stratigraphic units in detail. | (10) (20) |
| | | |
| Q3. | a) What are the main types of sedimentary rocks and how are they formed? also, describe the classification scheme of these sedimentary rocks in detail. | (10) |
| | b) Discuss the optical properties of common rock-forming minerals in detail. | (10) (20) |

- Q4.** Write comprehensive notes on the following topics. **(10) (20)**
- a)** Tectonic framework of Pakistan
 - b)** Geothermal energy resource potentials of Pakistan

SECTION-B

- Q5.** **a)** Write a detailed note on “geophysical techniques utilized in the 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)**
- Q6.** **a)** What is Walther’s law of superposition? Discuss concepts and significance of sequence stratigraphy. **(10)**
- b)** Describe the “upper Indus basin with respect to its hydrocarbon potentials” in detail. **(10) (20)**
- Q7.** What is the role of Engineering Geology in the development of CPEC projects? Explain it with suitable examples. **(20)**
- Q8.** **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)**