



FEDERAL PUBLIC SERVICE COMMISSION
COMPETITIVE EXAMINATION-2026 FOR RECRUITMENT TO
POSTS IN BS-17 UNDER THE FEDERAL GOVERNMENT
GENERAL KNOWLEDGE-I (GENERAL SCIENCE & ABILITY)

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. (20×1=20)
(ii) Answers given anywhere else, other than OMR Answer Sheet, will not be considered.

1. **Rapid short-term weather changes are most strongly influenced by:**
(A) Earth's revolution (B) Atmospheric pressure systems
(C) Ocean salinity (D) Axial precession
2. **The primary structure of a protein is determined by its:**
(A) Amino acid sequence (B) Hydrogen bonding (C) Ionic interactions (D) Disulfide bridges
3. **In plants, lignin primarily provides:**
(A) Water storage (B) Mechanical support (C) Photosynthesis (D) Protein synthesis
4. **The Montreal Protocol focuses on the reduction of:**
(A) Carbon dioxide (B) Sulfur emissions (C) Ozone-depleting substances (D) Heavy metals
5. **A key indicator of drinking water microbiological safety is:**
(A) pH (B) Turbidity (C) Hardness (D) E. coli
6. **Bioavailability of nutrients in food refers to:**
(A) Nutrients absorbed by the body (B) Portion size (C) Chemical purity (D) Packaging type
7. **A CPU's instruction cycle primarily depends on _____ for coordination and operations.**
(A) ALU (B) Cache (C) Control Unit (D) I/O Controller
8. **The protocol responsible for mapping domain names to IP addresses in global internet architecture is:**
(A) DHCP (B) ARP (C) DNS (D) FTP
9. **Knowledge graphs enhance AI reasoning capabilities by representing data as:**
(A) Unstructured logs (B) Logical rules only
(C) Node-edge relationships (D) CPU instruction tables
10. **Wind turbines convert which form of energy directly into electricity?**
(A) Chemical (B) Nuclear (C) Thermal (D) Kinetic
11. **LEDs save energy because light is produced by:**
(A) Ion fission (B) Electron-hole recombination
(C) Plasma conduction (D) Thermal radiation
12. **The major storage lipid in animals is:**
(A) Steroid (B) Triglyceride (C) Glycogen (D) Wax
13. **The most responsible pollutant for photochemical smog is:**
(A) Ozone (B) Carbon monoxide (C) Nitrogen oxides (D) Sulfates
14. **Acid Rain primarily results from emissions of:**
(A) O₃ and N₂ (B) SO₂ and NO_x (C) CH₄ and NH₃ (D) CFCs only
15. **A major global impact of particulate matter (PM_{2.5}) is:**
(A) Respiratory illness (B) Radioactive decay (C) Soil alkalinity (D) Ocean desalination
16. **Heavy metal contamination (e.g. mercury) is most harmful because it:**
(A) Evaporates quickly (B) Biomagnifies in food chains
(C) Neutralizes nutrients (D) Decomposes rapidly
17. **Fiber optic cables support high bandwidth communication because data travels as:**
(A) Magnetic pulses (B) Electric currents
(C) Light signals with minimal attenuation (D) Sound waves
18. **Remote sensing is primarily used in environmental studies to:**
(A) Collect large-scale Earth surface data (B) Measure soil pH directly
(C) Increase crop yield (D) Measure atomic mass
19. **A Decision Support System (DSS) differs from routine MIS primarily by providing:**
(A) Predictive and unstructured problem-solving (B) Real-time broadcasting
(C) Hardware configuration guidelines (D) Only transactional storage
20. **Satellite communications signals suffer from significant latency mainly due to:**
(A) Low transmission frequency (B) High antenna sensitivity
(C) Heavy network encryption (D) Long propagation distance to orbit

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.
 - (vii) **Use of Calculator is not allowed.**

(SECTION – A)

- **Q. 2.**
 - (a) Evaluate the impact of excessive fertilizer use on soil chemistry and groundwater quality. (5)
 - (b) Describe the structural organization of the solar system, including terrestrial planets, gas giants, dwarf planets. (5)
 - (c) Discuss the environmental and chemical challenges associated with polymer degradation. Evaluate the effectiveness of biodegradable plastics in addressing global plastic pollution. (5)
 - (d) Identify the major causes of food deterioration (biological, chemical, physical) and give examples for each. (5) (20)
- **Q. 3.**
 - (a) Explain the key phases of Disaster Risk Management: mitigation, preparedness, response, and recovery. (5)
 - (b) Describe the physical factors that trigger Avalanches in mountainous regions. Name the modern technologies used in avalanche prediction and monitoring. (5)
 - (c) Discuss the structural diversity of lipids. Evaluate how variations in fatty acid composition influence membrane fluidity and cell signalling mechanisms. (5)
 - (d) Describe the process of solar photovoltaic energy conversion. How do factors such as irradiance, panel orientation, and temperature influence solar power output? (5) (20)
- **Q. 4.**
 - (a) Describe the principle of hydroelectric power generation. What environmental and geographical constraints limit the widespread development of hydropower? (5)
 - (b) Describe the hydrosphere and the major components of Earth's water. How does the water cycle maintain the distribution of freshwater? (5)
 - (c) Explain the causative agent, mode of transmission, and life cycle of the dengue virus. How does the Aedes mosquito contribute to the spread of the disease? (5)
 - (d) Discuss the role of Decision Support Systems (DSS) in organizational management and strategic planning. (5) (20)
- **Q. 5.**
 - (a) Describe the working principle of cellular networks. How do mobile devices maintain connectivity while moving between cells? (5)
 - (b) Using the photoelectric effect, explain the particle nature of electromagnetic radiation. How did experimental observations challenge Classical Wave Theory and lead to the development of quantum mechanics? (5)
 - (c) List the major social media platforms used for business and communication. How do they contribute to digital marketing? Explain. (5)
 - (d) Explain how the GPS system determines the position of a receiver using satellites. (5) (20)

(SECTION – B)

- **Q. 6.**
 - (a) A population of 120 individuals contains 45 engineers, 30 teachers, and the rest are administrators. A simple random sample of 6 individuals is selected.
 - (i) What is the probability that exactly 3 engineers are included in the sample?
 - (ii) What is the probability that the sample contains no teachers? (5)
 - (b) A researcher measures the same length five times:
12.478 m, 12.463 m, 12.481 m, 12.469 m, 12.472 m (5)
Determine the absolute error between the exact average and the rounded average.

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- c) An argument claims:
“Artificial Intelligence will reduce employment because automation replaces human labor.”
Identify assumptions, evaluate the strength of the argument, and provide a logically reasoned counter-argument. (5)
- (d) A number N leaves remainder 5 when divided by 12 and remainder 4 when divided by 7. (5) (20)
Find the smallest positive integer N that satisfies these conditions. Then compute the remainder when N is divided by 9.
- Q. 7. (a) Five researchers (A, B, C, D, E) sit in a circle. (5)
• A sits second to the right of C.
• B is not a neighbour of A.
• D sits opposite C.
Construct a logically valid seating arrangement. Explain each step leading to your conclusion.
- (b) A mixture contains water and chemical X in the ratio 5 : 3. If 20 Liters of water are added, the ratio becomes 3 : 2. (5)
Determine the original amount of the mixture and the initial quantities of both components.
- (c) Four machines (X, Y, Z, W) must run in sequence with constraints: (5)
• Y cannot run before X.
• Z must run immediately after W.
• X cannot be last.
Construct all valid permutations. Explain your reasoning systematically.
- (d) A doctor uses a decision tree to diagnose a disease based on symptoms S1, S2, and S3. (5) (20)
• If S1 is present, test for S2.
• If S2 is absent, rule out the disease.
• If S3 is present with S2, confirm diagnosis.
Construct the decision tree and explain the reasoning behind each branching decision
- Q. 8. (a) Unscramble following high-level logical reasoning and research methodology terms. (5)
i) NALYLTCAIA ii) EPNRECNI iii) OCNDITUNI
iv) NRBTASACIOT v) SHTESYPHOI
- (b) Argument: (5)
“Because many successful entrepreneurs dropped out of college, formal education is unnecessary for achieving high professional success.”
Task:
(i) Identify the fallacy /faulty reasoning in the statement. Explain how it affects the credibility of the argument.
(ii) Narrate how verbal reasoning skills help detect and correct such flawed arguments.
- (c) A mechanical reasoning scale measures the ability to understand physical principles. (5)
Consider a system where two gears (Gear A and Gear B) are interlocked. Gear A has 12 teeth, and Gear B has 36 teeth.
(i) Determine the rotation direction of Gear B if Gear A rotates clockwise.
(ii) Compute how many complete rotations Gear A must make for Gear B to complete exactly 2 rotations.
(iii) Explain how mechanical reasoning scales evaluate a test-taker’s ability to generalize such mechanical principles to unfamiliar problems.
- (d) The average weight of 12 students in a group is 58 kg. When one new student joins the group, the new average becomes 60 kg. (5) (20)
Calculate the weight of the new student, showing all steps clearly.
