

GENERAL SCIENCE AND ABILITY – CSS

PAST PAPERS ANALYSIS FOR CSS 2023

PART – I (GENERAL SCIENCE)

I. Physical Sciences

A. Constituents and Structure (Universe, Galaxy, Light Year, Solar System, Sun, Earth, Astronomical System of Units)

1. Describe different methods to estimate the age of the Universe. (CSS 2018)

B. Process of Nature (Solar and Lunar Eclipses, Rotation and Revolution, Weather Variables (Global Temperature, Pressure, Circulation, Precipitation, Humidity) and Weather Variations)

1. (A) Differentiate between the occurrence of Lunar and Solar Eclipse? (B) Briefly explain what effects are produced due to Rotation & Revolution of Earth? (CSS 2017)
2. Explain the formation of Lunar Eclipse. (CSS 2018)
3. What do you understand by Global Wind and Pressure patterns? Also explain wind and pressure features at higher altitude. (CSS 2020)

C. Natural Hazards and Disasters (Earth Quake, Volcanic Eruption, Tsunami, Floods, Avalanche, Travelling Cyclone (Tropical Cyclone, Middle Latitude Cyclone and Tornadoes), Drought, Wildfire, Urban Fire. Disaster Risk Management)

1. What is tsunami? How the tsunamis generated and what are their characteristics? (b) What is an earth quake? Discuss Richter Scale in this context. What was the intensity of the earth quake in Pakistan dated 26 October 2015 and where was the locus? (CSS 2016)
2. Describe different causes of 'Tsunami'. Is there any difference between a Tsunami and a tidal wave? Name the worst Tsunami ever recorded. (CSS 2018)
3. What is the most dangerous part of a hurricane and how do cyclones affect humans? (CSS 2019)
4. On 7th April 2012 an Avalanche hit a Pakistan military base in Gayari sector trapping 140 soldiers and civilians under deep snow. What is Avalanche; describe its four types with focus on most dangerous type? (CSS 2020)
5. World largest earthquake was assigned a magnitude of 9.5 by the United States Geological Survey on 22 May 1960 in southern Chile Valdivia. What do you know about earthquake? Also explain shallow-focus and deep focus earthquakes. (CSS 2020)
6. Differentiate between Middle Latitude Cyclones and Tornadoes. (CSS 2020)

D. Energy Resources (Sources of Energy (Renewable i.e. LED Energy, Solar Energy, Wind Energy and Non-Renewable Energy conservation and its sustainable use)

1. Differentiate between the Renewable and Non-Renewable sources of energy giving examples of each one of them. (CSS 2019)
2. Differentiate between the renewable and non-renewable energy sources. Briefly explain Geothermal Energy and Hydro Electricity. (CSS 2020)

E. Atomic Structure, Chemical Bonding, Electromagnetic Radiations.

1. Why do atoms form bonds? Name three major types of chemical bonds. (CSS 2019)

F. Modern Materials/Chemicals (Ceramics, Plastics, Semiconductors. Antibiotics, Vaccines, Fertilizers, Pesticides).

1. What are vaccines? Classify these and discuss DNA vaccines in detail. (CSS 2016)
2. Why the excessive use of chemical fertilizers should be avoided? (CSS 2019)
3. What's the difference between vaccines and antibiotics? How do antibiotics and vaccines contribute to health? (CSS 2019)
4. Why an indiscriminate/casual use of Antibiotics may prove dangerous? (CSS 2019)
5. What are Pesticides? Explain their different types; why persistent pesticides are more lethal for mankind? (CSS 2020)

II. Biological Sciences

A. The Basis of Life (Cell Structures and Functions (Subcellular Organelles such as Nucleus, Mitochondria and Ribosomes).

B. Biomolecules (Proteins, Lipids, Carbohydrates and Enzymes)

1. What are carbohydrates? Classify and give detail of each class along with examples. (CSS 2020)

C. Plant and Animal Kingdom (A brief survey of plant and animal kingdom to pinpoint similarities and diversities in nature).

D. A Brief Account of Human Physiology

1. Comment, "liver is the chief chemist in human body". (CSS 2016)
2. (A) Explain in detail the common causes of Heart Attack (C) Draw the structure of human ear and briefly explain its functions (CSS 2017)
3. People suffering from cardiovascular diseases have a high level of cholesterol in their blood. This often leads to a build up of fats on the internal arterial walls. Suggest how this might be harmful to the heart. (CSS 2019)

E. Common Diseases and Epidemics (Polio, Diarrhea, Malaria, Hepatitis, Dengue their Causes and Prevention)

1. What are causative organism and vector for dengue, enlist possible ways of prevention from dengue. (CSS 2016)
2. Describe different causes and preventions of 'Polio' (CSS 2018)
3. What do you know about Hepatitis? Describe its types and write down preventive measures. (CSS 2020)

F. New Model Concept of Producing BIO Fuel Method

1. Define the term 'Bio-Fuel'. How is it helpful to promote clean energy? (CSS 2018)

III. Environmental Science

A. Environment (The Atmosphere (Layered Structure and Composition), Hydrosphere (Water Cycle, Major Water Compartments), Biosphere (Major Biomes) and Lithosphere (Minerals and Rocks, Rock Types, Plate Tectonics).

1. What is hydrological cycle? Discuss its importance. (CSS 2016)
2. What are the factors responsible for environmental pollution? (CSS 2017)
3. Briefly describe the various segments of atmosphere. How these segments are maintaining the Earth Radiation Balance? (CSS 2020)
4. How the organic particulate matter enters in the atmosphere. Also describe the sources? (CSS 2020)

B. Atmospheric Pollution (Types, Sources, Causes and effects of major air pollutants (CO_x, Particulate Matter, NO_x, SO_x, Tropospheric Ozone, Volatile Organic Compounds, Dioxins). Regional and Global air pollution issues (Acid- rain, Ozone Depletion, Greenhouse Effect and Global Warming). International agreements on air pollution control (Montreal Protocol and Kyoto Protocol).

1. What were the main objectives of Clean Development Mechanism? Also explain the reasons for the criticism on Koyoto Protocol by the developed countries. (CSS 2016)
2. Comment, Green House Effect is a blessing Also discuss Enhanced Green House Effect and its relation with global warming. (CSS 2016)
3. What do you mean by Ozone depletion and how we can prevent its depletion? (CSS 2017)
4. What is an Acid Rain and how it is produced. Briefly describe the dangers associated with it? (CSS 2017)
5. What is 'Acid Rain'. Describe its causes and how it can be prevented? (CSS 2018)
6. Write a comprehensive note on 'Smog'. (CSS 2018)
7. Why are scientists worried about the increase of Carbon Dioxide in the atmosphere? (CSS 2019)
8. What does Ozone depletion mean and how can we protect the ozone layer? (CSS 2019)

C. Water Pollution (Types, sources, causes and effects of major water pollutants (Synthetic Organic Chemicals, Oxygen Demanding Wastes, Plant Nutrients, Thermal Pollution, Infectious Agents, Sediments, Radioactivity, Heavy Metals and Acids). Drinking water quality and standards.)

1. What is 'Water Pollution'. Discuss its causes and measurement methods. Name the countries with the highest and lowest percentage of it. (CSS 2018)
2. What is natural radioactivity? How it is different from the artificial radioactivity? (CSS 2020)

D. Land Pollution (Solid waste management and disposal)

1. Differentiate between Sanitary and Industrial Landfills, also describe the land selection criteria for Landfills. (CSS 2016)

E. Role of Remote Sensing and GIS in Environmental Science.

1. What do you know about the Remote Sensing Techniques? Explain resolution and write down the names of its various types? (CSS 2016)

F. Population Planning.

IV. Food Science

A. Concept of Balance Diet (Vitamins, Carbohydrates, Protein, Fats and oil, Minerals, Fiber).

1. What is Cholesterol? Discuss its importance, normal blood level and dangers of elevated levels with reference to the health and disease in humans. (CSS 2016)
2. What is the significance of Vitamins? Describe the sources, uses and deficiency symptoms of fat soluble vitamins. (CSS 2017)
3. Define 'Carbohydrates'. Describe different steps to digest these in the human body. (CSS 2018)
4. Write a comprehensive note on 'Balanced Diet'. (CSS 2018)
5. Deficiency of vitamins causes different human diseases some of which are given in the table below. Choose the correct type of vitamin from the box and write in front of each disease: Vit. A, Vit. B1, Vit. C, Vit. D, Vit.E, Vit.K.

Disease caused due to lack of which vitamin:

1. Poor night Vision
2. Bleeding Gums
3. Rickets in Children
4. Beri-Beri
5. Anaemia

B. Quality of Food (Bioavailability of Nutrients, Appearance, Texture, Flavor, Quality of Packed and Frozen Food, Food Additives, Preservatives and Antioxidants)

1. Discuss importance of preservatives and antioxidants in food. (CSS 2016)

C. Food Deterioration and its Control (Causes of Food Deterioration, Adulteration, Food Preservation).

1. Discuss different methods of Food preservation. (CSS 2020)

V. Information Technology

A. Computer (Hardware & Software Fundamentals); (I/O Processing and data storage, Networking & Internet Standards, Application and business Software, Social Media Websites. Information Systems. Fundamentals of artificial intelligence)

1. Write a short note on artificial intelligence. (CSS 2016)
2. (A) Differentiate between RAM and ROM (B) Name three basic buses employed in a computer and explain what each is used for. (C) Draw a basic computer block diagram and briefly explain the function of each part. (D) Describe various types of computers classified on the basis of size, memory, capacity and speed. (CSS 2017)
3. Write a note, how data is stored on a 'Hard Disk'. (CSS 2018)
4. What is 'Artificial Intelligence'? How is it helpful for humanity? (CSS 2018)
5. What are the different types of a network? Explain each briefly. (CSS 2019)

6. What is Open System Interconnections (OSI) and describe its layers? (CSS 2020)

B. Telecommunications (Basics of Wireless Communication (Mobile, Satellite, Surveillance and GPS and Fiber Optic etc).

1. Write short notes on: (i) Four optics (ii) Global Positioning System (CSS 2016)
2. How an 'Optical Fiber' is constructed? How is it helpful in transmitting the electromagnetic radiations? (CSS 2018)
3. Give a brief account of Optic Fibres. What is their importance in present day telecom system? (CSS 2019)
4. Where and how Fiber Optics are used? Also write down their advantages and disadvantages. (CSS 2020)
5. What is GPS? How does it work? (CSS 2020)

PART – II (GENERAL ABILITY)

VI. Quantitative Ability/Reasoning (Basic Mathematical Skills. Concepts and ability to reason quantitatively and solve problems in a quantitative setting. Basic Arithmetic, Algebra and Geometry (Average, Ratios, Rates, Percentage, Angles, Triangles, Sets, Remainders, Equations, Symbols, Rounding of Numbers Random Sampling)

1. Define and draw the following: (i) Right Angle triangles (ii) Equilateral triangles (CSS 2016)
2. There are nine students in a group having ages 15, 15, 16, 16, 17, 17, 18, 19. Calculate mean, medium, mode and range of their ages also define the above mentioned terms. (CSS 2016)
3. A distribution company provides households to departmental stores within a 50 kilometers radius. The table below shows how far each departmental store is from the godown of the distribution company.

Distance from the godown of the distribution company	Number of Stores
10 Kilometers or less	03
11 to 20 Kilometers	15
21 to 30 Kilometers	26
31 to 40 Kilometers	20
41 to 50 Kilometers	16

4. (i) How many stores does the distribution company serve? (ii) What is the most common distance of stores from the company's godown? (iii) How many stores are 35 Km or more from the godown? (iv) What percentage of stores are 31 Km or more from the godown? (CSS 2016)

5. Read the following carefully and answer the following questions: Ahmed , Ali, Akbar, Nasir and Shehbaz are students of a college having different heights and weights. Ahmad weighs thrice as much as Ali and Ali weighs 5 times as much as Akbar. Akbar weighs half as much as Nasir and Nasir weighs half as much as Shehbaz. (i) Who is the heaviest in weight? (ii) Who is the lightest in weight? (iii) Shehbaz is lighter in weight than which of the two students? (iv) Shehbaz is heavier than which of the two students? (v) Show the descending order of weights of the students. (CSS 2016)
6. $Y = mX + C$ is an equation of straight line. Draw a graph showing relationship between X and Y and relate the equation to the slope and intercept on the graph. (CSS 2016)
7. (A) Differentiate with examples between a "Pictogram" and "Histogram". (B) The teachers of a certain school were asked to indicate the average number of hours they spend on marking students assignments each day. The following set of data was obtained (C) How many teachers responded to the survey? (D) What the longest number of hours and most common number of hours are spent? (CSS 2017)

6	4	3	1	2	2	3	1	4
1	2	5	3	4	5	2	2	3
	3	1	2	2	3	1	4	2

8. It takes 3 liters of paint to cover an area of 24 square meters. What percentage increase in the quantity of paint would be required to cover an area of 50.4 square meters? (CSS 2018)
9. An automobile travels 3 km towards south, 4 km towards west, 5 km towards north and 2 km towards south-east. How far is it from its starting position? (CSS 2018)
10. Tahir started a business with a capital of Rs. 15,000. After 5 months Umar also joined him with an investment of Rs. 30,000. At the start of 9th month, Usman joined them by investing Rs. 45,000. At the end of the year they earned a profit of Rs. 406,000. Find the share of each one. (CSS 2018)
11. A man left his property of Rs. 640,000. A debt of Rs. 40,000 was due to him and Rs. 5,000 was spent on his burial. Distribute the amount between his widow, one daughter and two sons according to the Islamic Law. (CSS 2018)
12. Police officers are in pursuit of a stolen vehicle. Officer Baker is directly behind the stolen car. Officer Lopez is behind Baker; Officer O'Malley is behind Lopez. Officer Reinhart is ahead of the stolen car and coming from the opposite direction. Officer Reinhart makes a U-turn and joins the pursuit. He pulls in behind Officer Lopez. Officer Baker pulls up on the driver's side of the stolen vehicle and Officer Lopez pulls up on the other side. Which officer is directly behind the vehicle? (CSS 2018)
13. Define a Histogram. How is it constructed? What information may be deduced from it? (CSS 2018)
14. Look at this series: F2, __, D8, C16, B32, What number should fill the blank? (CSS 2018)
15. In a certain code language LANDMINE is written as PYRBQGRC. How will HOMEMADE be written in that code language? (CSS 2018)

16. Tariq can do a tailoring job in 6 hours. Sajid does the same job in 4 hours. Irfan does it in 8 hours. Tariq and Sajid start doing the work. Sajid leaves after two hours and Irfan replaces him. How long would it take to complete the work? (CSS 2020)
17. Find the missing number to complete each sum (CSS 2020).

- (a) $9 + 8 - 5 = 2 \times \underline{\hspace{2cm}}$
- (b) $3 \times 9 - 14 = 24 - \underline{\hspace{2cm}}$
- (c) $15 \div 3 \times 12 = 41 + \underline{\hspace{2cm}}$
- (d) $24 \div 4 + 5 = 66 \div \underline{\hspace{2cm}}$
- (e) $8 \times 6 - 13 + 3 = 7 \times 6 - \underline{\hspace{2cm}}$

18. There are seven students in a group having ages 17,17,18,18,18,19,19. Calculate mean, median, mode and range of their ages. Also define these mentioned terms. (CSS 2020)
19. How does mental ability scales differ from IQ test? (CSS 2020)

VII. Logical Reasoning and Analytical Reasoning/ Ability

1. Classification of blood groups is based on the presence or absence of inherited antigenic substances on the surface of red blood cells in a survey of British population the blood group distribution among 1000 people was as follows: 300 had blood group A, 325 had blood group B, 250 had O and 125 AB. Out of this group a person was selected at random, calculate his probability of having blood group AB. (CSS 2016)
2. Five friends Ahmad, Ali, Akbar, Nasir and Shehbaz went on summer vacation to five cities namely V, W, X, Y and Z by five different modes of transport, that is by bus, train, aeroplane, car and boat from point A. Akbar went to Y by car and Ali went to X by air. Nasir travelled by boat whereas Shehbaz went by train. For X and W, there is no bus service. The person who went to X did not use boat to travel. Now answer the following questions. (i) How did Ahmad travel and where did he go? (ii) Which mode of transport was used by the person who travelled to X city? (CSS 2016)
3. Differentiate between primary and secondary mental abilities. How the general mental ability scales differ from IQ test. (CSS 2016)
4. Divide Rs.500 between Arham, Mariam and Sarim so that Arham gets $\frac{2}{3}$ of what Mariam gets and Mariam gets $\frac{1}{4}$ of what Sarim gets. Find the share of each. (CSS 2018)
5. A school has enough provision of food for 52 days. After 20 days a group of 400 students arrives and the food would have last for 24 days only. How many students are there in the school actually? (CSS 2018)
6. A man walks 2km towards North. Then he turns to East and walks 10km. After this he turns to North and walks 3km. Again he turns towards East and walks 2km. How far is he from the starting point? (CSS 2018)
7. In a certain code language COMPUTER is written as RFUVQNPC. How will MEDICINE be written in that code language? (CSS 2018)
8. Moiz was trying to sleep at one night but there was too much noise around him. His clock ticked every 5 second: a tap was dipping every 7 second and a pet dog snored every 12second.

He noticed on his clock that all three things happened together on the stroke of mid night. Find after how many seconds all three things happened together again? (CSS 2019)

9. One pipe can fill a pool 1.25 times as fast as a second pipe. When both pipes are opened they fill the pool in five hours. How long would it take to fill the pool if only the slower pipe is used? (CSS 2019)
10. The cost for hiring a car for 2 days in 2018 was Rs 264 which was 20% more than in 2013. What was the cost of hiring a car for 2 days in 2013? (CSS 2019)
11. What do you understand by measure of central tendency? State its types. (CSS 2019)
12. Moiz and Mair share a lottery win of Rs 2000 in the ratio 1:4. Moiz then share his part between himself, his wife and their son in the ratio 4:5:1. How much more does his wife get over their son. (CSS 2019)
13. A farmer keeps hens and rabbits on his farm. One day, he counted a total of 70 heads and 196 legs. How many more hens than rabbits does he have? (CSS 2019)
14. What is polygon? Describe different types of regular polygon. (CSS 2019)
15. In a certain code, computer is written as RFUVQNPC. How will MEDICINE be written in code language? (CSS 2019)
16. Mushtaq, Pervaiz, Ehsan, Umair and Saleem are friends having different heights and weights. Mushtaq weighs four times as much as Pervaiz and Pervaiz weighs double than Ehsan, Ehsan weighs half as much as Umair and Umair weighs half as much as Saleem. (i) Who is the heaviest among five friends? (ii) Who is the second heaviest? (iii) Who has lowest weight? (iv) Who are equal in weight? (v) Mention the descending order (CSS 2020)
17. A farmer needs to build a boundary wall around his farm. If the area of farm is 484 m², what will be the total area of the wall if it is two meters high on three sides and three meters high on one side? (CSS 2020)
18. Five girls A,B,C,D,E and four boys W,X,Y,Z have to go to a trip in three cars, car-1,car-2 and car-3. The following restrictions for seating in car are to be observed: (i) Only three persons can sit in one car (ii) At least one boy and one girl must be in each car (iii) A and D should remain together (iv) Z cannot sit with B or C in the same car Distribute boys and girls in three cars. (CSS 2020)
19. What are social skills? Describe four causes of weak social skills (CSS 2020)
20. What do you understand by systematic sampling? Discuss its types. (CSS 2020)
21. Blood groups of inhabitants of a village were checked. It was found that 600 people possessed blood group A, 650 possessed blood group B, 550 had blood group AB and 200 have blood group O. Calculate the probability of having blood group B. (ii) Calculate the probability of having blood group O. (CSS 2020)
22. A group of 50 men can construct 20 kilometer road in 40 days. How long will 70 men take to complete same length of road? (CSS 2020)
23. Zahid left a property worth Rs 1750,000/-. His family had to pay off a debt of Rs 150,000/-. The rest of money was distributed between a son and a daughter. How much did each child receive if share of a son was double than that of a daughter? (CSS 2020)

VIII. Mental Abilities (Mental Abilities VIII Scales that measures specific constructs such as verbal, mechanical, numerical and social ability)

IX. Out of Syllabus

1. Explain the shape of water molecule with the help of Molecular Orbital Theory, also draw its orbital diagram. (CSS 2016)
2. What are the gamma rays? Explain their applications. (CSS 2016)
3. Briefly explain the main reasons of water-logging in Pakistan. (CSS 2017)
4. Differentiate between drug addiction and drug abuse. (CSS 2017)
5. What is a mirage? Describe in detail the creation of mirage. (CSS 2017)
6. Most of the household appliances utilize 'DC' then why we generate 'AC' at power stations? (CSS 2017)
7. Explain the terms Dark Energy and Dark Matter. (CSS 2018)
8. Define the term Black Hole. What's expected inside it? (CSS 2018)
9. Give a brief account of Biotechnology. (CSS 2019)
10. Do the mammals also lay eggs? If yes, where in the world do they live? Write the name of some of them. (CSS 2019)
11. How can the Sun have such a strong gravitational field if it's made of gases? (CSS 2019)
12. What are the Fossils? Discuss the importance of paleontology. (CSS 2020)



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