TIME ALLOWED: THREE HOURS	PART-I : (MCQS) MAXIMUM MARKS = 20
PART-I (MCQS): MAXIMUM 30 MINUTES	PART-II : MAXIMUM MARKS = 80

NOTE:
i. Part-II is to be attempted on the separate Answer Book.
ii. ii. Attempt ONLY FOUR questions from PART-II by selecting TWO questions from EACH SECTION. ALL questions carry EQUAL marks.

PART-II

SECTION-I

Q. 2.
R. **(a)** Differentiate between a **Star** and a **Planet**. Briefly describe the life cycle of a star from a Nebula to a Black Hole. (5)

(b) What are **Semiconductors**? Explain the difference between n-type and p-type semiconductors and list two of their modern applications. (5)

(c) Define **Global Warming**. Explain the mechanism of the Greenhouse Effect and list three major greenhouse gases. (5)

(d) What is a **Tsunami**? Explain the natural processes that trigger a tsunami and the potential impact on coastal areas. (5) **(20)**

Q. 3.

(a) Describe the structure and function of the **Mitochondria** and **Ribosomes** within an animal cell. Why is the mitochondria often called the "powerhouse" of the cell? (5)

(b) What are **Enzymes**? Explain the "Lock and Key" model of enzyme action and list two factors that affect enzyme activity. (5)

(c) Differentiate between **Renewable** and **Non-Renewable** energy resources. Discuss the potential of **Wind Energy** as a sustainable source for the future. (5)

(d) What is **Dengue Fever**? Describe the vector responsible for its transmission, its common symptoms, and key preventive measures. (5) **(20)**

Q. 4.

(a) Explain the **Rock Cycle**. Differentiate between Igneous, Sedimentary, and Metamorphic rocks with examples. (5)

(b) What is **Acid Rain**? Discuss the chemical reactions involved in its formation and its harmful effects on aquatic life and vegetation. (5)

(c) Discuss the role of **Remote Sensing** and **GIS** (Geographic Information Systems) in environmental monitoring and disaster management. (5)

(d) Explain the concept of **Solid Waste Management**. What are the environmental hazards associated with improper disposal of urban waste? (5) **(20)**

Q. 5.

(a) What constitutes a **Balanced Diet**? Briefly explain the functions of Carbohydrates and Proteins in the human body. (5)

(b) Define **Food Preservation**. Explain the principles behind **Pasteurization** and **Canning** as methods to control food deterioration.(5)

(c) What is the **Internet of Things (IoT)**? How is it transforming daily life and business? Give two real-world examples.(5)

(d) Differentiate between **RAM** and **ROM**. Explain the basic architecture of a computer focusing on the CPU and its components (ALU and CU). (5) **(20)**

SECTION-II

Q.6

(a) Two pipes, A and B, can fill a tank in **10 hours** and **15 hours**, respectively. A third pipe, C, can empty the full tank in **30 hours**. If all three pipes are opened simultaneously, in how much time will the tank be full? (5)

(b) The ratio of the salaries of three employees, X, Y, and Z, is **4:5:7**. If Y's salary is increased by **10\%**, and Z's salary is decreased by **25\%**, the new total of their combined salaries is **Rs. 1,69,500/-**. Find the original salary of employee X. (5)

(c) A contractor completed 3/5 of a road construction project in **60 days**. If he then hires **10 additional workers**, he finishes the remaining work in **20 days**. How many workers did the contractor originally have? (Assume all workers work at the same rate.) (5)

(d) A class has an average score of **78** on a test. If the top **5** scores (98, 95, 92, 90, 85) are removed, the average score of the remaining students drops to **75**. Calculate the total number of students in the class. (5) **(20)**

Q. 7.

(a) In a survey of **100 people**, 65 watch Cricket, 40 watch Hockey, and 20 watch neither. How many people watch **both** Cricket and Hockey? (5)

(b) A rectangular swimming pool has a length that is **4 meters more** than its width. If the **perimeter** of the pool is **72 meters**, what is the volume of water needed to fill the pool to a uniform depth of **2.5 meters**? (5)

(c) A train leaves City A at 8:00 AM traveling at **60 km/hr**. Another train leaves City B at the same time, traveling towards City A at **40 km/hr**. If the distance between City A and City B is **400 km**, at what time will the two trains meet? (5)

(d) The sum of the present ages of a father and his son is **75 years**. Ten years ago, the father's age was **four times** the son's age. What are their current ages? (5) **(20)**

Q.8.

(a) In a certain code language, if **'ROAD'** is coded as **'UQDG'**, how would **'LAKE'** be coded in the same language? Explain the rule of coding. (5)

(b) A man tells a woman, "The son of my sister's husband is the father of your son." How is the woman related to the man? (5)

(c) Find the next number in each of the following sequences and explain the pattern:

- (i) 4, 12, 6, 18, 9, 27, ___
- (ii) 1, 2, 6, 24, 120, ___ (5)

(d) Five friends (P, Q, R, S, T) have different heights.

- P is shorter than Q but taller than R.
- S is shorter than T but taller than Q.
- The shortest person is 150 cm tall, and the tallest is 180 cm tall. Who among the friends is the third tallest, and what is the maximum possible range of their heights? (5)

(20)

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Best Wishes for CSS-2026