

No. 98311

ESSAY/PRÉCIS WRITING AND DRAFT

Marks : 100

Time : 2½ hours

The figures in the margin indicate full marks for the questions

1. Write an essay within 1500 words on any of the following topics : 40
- (a) The rapid growth and influence of AI in this modern age. —A boon or bane to humanity?
 - (b) India's role as a developing superpower country
 - (c) "Life is beautiful" : Your point of view in today's world
 - (d) The New Digital Era and the Right to Privacy

2. Write a précis of the following passage and give a suitable title to it : 25+5=30

The man who is perpetually hesitating which of the two things he will do first, will do neither. The man who resolves, but suffers his resolution to be changed by the first counter-suggestions of a friend, who fluctuates from opinion to opinion, from plan to plan and veers like a weather-cock to every point of the compass, with every breath of caprice that blows can never accomplish anything great or useful. Instead of being progressive in anything, he will be at best stationary, and more probably retrograde in all. It is only the man who first consults wisely, then resolves firmly, and then executes his purpose with flexible perseverance, undismayed by those petty difficulties which daunt a weaker spirit, that can advance to eminence in any line. Take your course wisely, but firmly; and having taking it, hold upon it with heroic resolution, and the Alps and Pyrenees will sink before you.

3. As a concerned resident of your city, draft a letter to the Editor of a daily newspaper expressing your concern about the traffic congestion in your city. 30

No. **99260**

GENERAL KNOWLEDGE

Marks : 50

Time : 1½ hours

The figures in the margin indicate full marks for the questions

Each question carries **two** marks

1. Mention three types of emergencies which the Constitution makes provision for and state the corresponding articles of the Indian Constitution that deal with them.
2. Which Part and Article of the Indian Constitution deal with the Fundamental Duties?
3. What is Money Bill?
4. What are the components of a balance sheet of a company?
5. What is inflation in the economy?
6. What is the immediate cause of the Revolt of 1857?
7. What is the Assam Reorganization Act, 1969?
8. What is the Directorâte of Enforcement in India?
9. What is Artificial Intelligence (AI)?
10. Name the three types of Padma Awards instituted by the Government of India.

11. What is sustainable development?
12. What is Geographic Information System (GIS)?
13. What is the full form of ISRO? Where is the headquarters of ISRO situated?
14. What is the difference between Kharif and Rabi crops?
15. What is MSP of agricultural product?
16. What is Green Revolution?
17. What is Section 144 of the Indian Penal Code?
18. What is Concurrent List under the Seventh Schedule of the Indian Constitution?
19. Name the districts of Meghalaya that do not share international boundary.
20. What is the principle of a solar cell?
21. What is No Confidence Motion?
22. What is BS Emission Standards?
23. How many members are nominated in the Parliament?
24. What is Sukanya Samriddhi Yojana?
25. What is CPU of a computer system?

No.

10129

ARITHMETIC

Marks : 100

Time : 3 hours

The figures in the margin indicate full marks for the questions

Solve the following questions **(1-10)** which carry 2 marks each :

1. Express $16 \cdot 4\bar{3}$ in the form of $\frac{p}{q}$.
2. Simplify $2\sqrt[3]{4} + 7\sqrt[3]{32} - \sqrt[3]{500}$.
3. Given $p(x) = mx^3 + m^2x^2 + m^3x - m^4$, find $p(m)$.
4. Show that $6 + \sqrt{5}$ is irrational.
5. Find the sum and product of the zeros of the quadratic polynomial $5x^2 + 8x + 3$.
6. Find the value of k for which the system of equations $kx + 2y = 5$ and $3x - 4y = 10$ has no solution.
7. In $\triangle ABC$, AD is the bisector of $\angle A$, intersecting the side BC at D . If $AB = 5$ cm, $AC = 4 \cdot 2$ cm and $DC = 2 \cdot 1$ cm, then find BD .
8. Find the coordinate of the centroid of the triangle whose vertices are $(-3, 0)$, $(5, -2)$ and $(-8, 5)$.
9. Prove that $\frac{1}{1 + \tan^2 \theta} + \frac{1}{1 + \cot^2 \theta} = 1$.
10. An arc length of 20π cm subtends an angle 144° at the centre of the circle. Find the radius of the circle.

Solve the following questions (11–19) which carry 3 marks each :

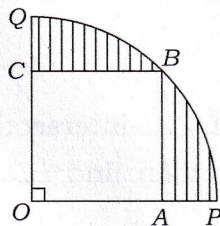
11. Find the largest positive integer which divides 615 and 963 leaving remainder 6 in each case (use Euclid's division algorithm).
12. If α and β are zeros of the polynomial $p(x) = 3x^2 - 2x - 6$, then find $\alpha^2 + \beta^2$.
13. Find the value of k for which the equation $9x^2 - 24x + k = 0$ has equal roots.
14. Find the number of all three-digit natural numbers which are divisible by 9.
15. In equilateral $\triangle ABC$, $AD \perp BC$, prove that $AD^2 = 3BD^2$.

16. Find the area of the triangle whose vertices are (3, 8), (-4, 2) and (5, -1).

17. Evaluate :

$$\frac{4}{\cot^2 30^\circ} + \frac{1}{\sin^2 60^\circ} - \cos^2 45^\circ$$

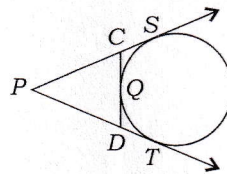
18. A race track is in the form of a ring whose outer circumference is 440 cm and the width of the track is 7 cm. Find the area of the track (Use $\pi = \frac{22}{7}$).
19. A square $OABC$ is inscribed in a quadrant $OPBQ$ of a circle as shown in the figure given below. If $OA = 14$ cm, then find the area of the shaded region (Use $\pi = \frac{22}{7}$) :



Solve the following questions (20–26) which carry 4 marks each :

20. The sum of two numbers is 35 and their difference is 13. Find the numbers.
21. Find the sum of the series : $72 + 70 + 68 + \dots + 40$.

22. $\triangle ABC$ is right angled at A and $AD \perp BC$. If $BC = 13$ cm and $AC = 5$ cm, then find the ratio of the areas of $\triangle ABC$ and $\triangle ADC$.
23. Find the ratio in which the point $P(-6, a)$ divides the joining of $A(-3, -1)$ and $B(-8, 9)$. Also, find the value of a .
24. A tower is 50 m high. Its shadow is x metres shorter when the sun's altitude is 45° than when it is 30° . Find the value of x . (Use $\sqrt{3} = 1.732$)
25. In the figure given below, PS and PT are tangents to a circle drawn from an external point P . CD is a third tangent touching the circle at Q . If $PT = 10$ cm and $CQ = 2$ cm, then find the perimeter of $\triangle PCD$:



26. A chord of a circle of radius 12 cm subtends an angle of 120° at the centre. Find the area of the corresponding segment of the circle. (Use $\pi = 3.14$ and $\sqrt{3} = 1.732$)

Solve the following questions (27–31) which carry 5 marks each :

27. Find the mode of the following frequency distribution :

Class interval	10–15	15–20	20–25	25–30	30–35	35–40
Frequency	30	45	75	35	25	15

28. A cylinder tank full of water is emptied by a pipe at the rate of 225 litres per minute. How much time will it take to empty half the tank, if the diameter of its base is 3 m and height is 3.5 m? (Use $\pi = \frac{22}{7}$)
29. A passenger train takes 2 hours for a journey of 300 km. If its speed is increased by 5 km/h from its usual speed, then find its usual speed.

30. A takes 10 days less than the time taken by B to finish a piece of work. If both A and B together finish the work in 12 days, then find the time taken by B alone to finish the work.

31. Find the median of the following distribution :

<i>Class interval</i>	0-10	10-20	20-30	30-40	40-50	50-60
<i>Frequency</i>	3	6	8	15	10	8
