

SECOND SEMESTER FIVE YEAR INTEGRATED P.G. – FYIP – REGULAR EXAMINATION APRIL 2026

MATHEMATICS

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MAT2ID106(2) - Mathematics for Competitive Examinations - Part II

[2025 Admission]

Time: 1.5 Hours

Maximum Marks: 50

Section A

[Answer All. Each question carries 1 marks]

1. A and B together can complete a work in 12 days. A alone can complete it in 20 days. In how many days can B alone complete the work?

- a) 30 days b) 32 days c) 25 days d) 20 days

2. Aryan and Bhola can finish a job in 40 days and 30 days respectively. They work together for 10 days, after which Chandru joins them. The remaining work is finished in 5 days. How long would it take Chandru to complete the entire work alone?

- a) 20 days b) 30 days c) 40 days d) 24 days

3. A is 50% more efficient than B. They together start working on a project and finish it in 12 days. In how many days can A alone finish the same project?

- a) 20 days b) 30 days c) 24 days d) 18 days

4. Vipin crosses a 450 metre wide road in 9 seconds. What is his speed in km/hr?

- a) 195 km/hr b) 150 km/hr c) 210 km/hr d) 180 km/hr

5. I usually take 45 minutes to reach office. If I increase my speed by 20% today, how much time will I take to reach office?

- a) 36 minutes b) 37.5 minutes c) 35 minutes d) None of these

6. A plane departed 30 minutes later than the scheduled time and in order to reach the destination 1500 km away on time, it needed to increase the speed by 250 km/hr from the usual speed. What is its usual speed?

776595

- a) 500 km/hr b) 600 km/hr c) 700 km/hr d) 750 km/hr

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7. Two trains are running at 40 km/hour and 20 km/hour respectively in the same direction. The faster train completely passes a man sitting in the slower train in 5 seconds. Find the length of the faster train.

- a) 20.2 m b) 22.8 m c) 25.4 m d) 27.8 m

8. A train crosses an electric pole in 20 seconds and a platform of length 250 m completely in 45 seconds. The length of the train is:

- a) 160 m b) 200 m c) 220 m d) 240 m

9. What time will be taken by a boat to cover a distance of 128 km along the stream, if speed of a boat in still water is 24 km/h and speed of stream is 8 km/h?

- a) 8 km/h b) 4 km/h c) 7 km/h d) None of the above

10. The speed of a stream is 3 km/h. A boat goes 36 km downstream and returns to the starting point in 8 hours. Find the speed of the boat in still water.

- a) 12 km/h b) 9 km/h c) 15 km/h d) 18 km/h

11. If 1st January 2000 was a Saturday, what day was 1st January 2005?

- a) Thursday b) Wednesday c) Tuesday d) None of these

12. A clock is set right at 8 a.m. It gains 10 minutes in 24 hours. What will be the true time when the clock indicates 1 p.m. on the next day?

- a) 12:44 p.m. b) 12:52 p.m. c) 12:56 p.m. d) 12:48 p.m.

13. FLOWER : REWOLF :: FRUITS ? :

- a) STRUIF b) STUIRF c) STIURF d) STUIFR

14. Magazine : Editor :: Drama ? :

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- a) Director b) Player c) Manager d) Actor

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15. $63 : 21 :: 27 : ?$

- a) 6 b) 9 c) 1 d) 3

16. 0, 4, 18, 48, ?, 180

- a) 100 b) 191 c) 152 d) 110

17. 4, 11, 30, 67, 128, ?

- a) 219 b) 228 c) 231 d) 237

18. CE, GI, KM, OQ, ?

- a) TW b) TV c) SU d) RT

19. Choose the word which is different from others:

- a) MORV b) CEHL c) CENT d) JLOS

20. Choose the number which is different from others:

- a) 100 b) 121 c) 169 d) 225

21. Choose the odd term from the following numbers:

- a) 5719 b) 7415 c) 9359 d) 5735

22. If 'NEUROTIC' can be written as 'TICRONEU', then how can 'PSYCHOTIC' be written in that code?

- a) TICOCHPSY b) TICCHOPSY c) ICCOHPSYT d) TICHCOPSY

23. If 'sky' is called 'sea', 'sea' is called 'water', 'water' is called 'air', 'air' is called 'cloud' and 'cloud' is called 'river', then what do we drink when thirsty?

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- a) Sky b) Air c) Water d) Sea

24. In a class of 45 students, a boy is ranked 20th. When two boys joined, his rank was dropped by one. What is his new rank from the end?

- a) 25th b) 26th c) 27th d) 28th

25. If in a row, Rohan is 10th from left and Mukesh is 13th from right and there are four persons in between Rohan and Mukesh, then find the maximum and minimum number of persons in the row.

- a) 27, 18 b) 27, 17 c) 30, 15 d) 30, 19

26. X introduces Y saying, "He is the husband of the granddaughter of the father of my father." How is Y related to X?

- a) Brother b) Son c) Brother-in-law d) Son-in-law

w.

27. $P + Q$ means P is the brother of Q;

$P \times Q$ means P is the father of Q;

$P - Q$ means P is the sister of Q.

Which of the following relations shows that I is the niece of K?

- a) $K + Y + Z - I$ b) $K + Y \times I - Z$ c) $Z - I \times Y + K$ d) $K \times Y + I - Z$

28. Introducing a man, a girl said, "He is the only son of my mother's mother." How is the girl related to that man?

- a) Sister b) Niece c) Daughter d) Cousin

29. P is the father of Q. Q is the sister of R. R is the son of S. T is the mother of P. How is S related to T?

- a) Daughter-in-law b) Daughter c) Wife d) Cannot be determined

30. I am facing east; I turn 100° in the clockwise direction and then 145° in the anti-clockwise direction. Which direction am I facing now?

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- a) East b) North-east c) North d) South-west

31. Rajat starts from his home towards West. After walking 30 m, he turns right and walks 20 m. Then he turns left and walks 10 m. Again he turns left and walks 40 m. He now turns left and walks 5 m. Finally he turns left. In which direction is he walking now?

- a) North b) South c) East d) South-west

32. Munu went 15 km West from her house, then turned left and walked 20 km. She then turned East and walked 25 km and finally turning left covered 20 km. How far was she from her house?

- a) 5 km b) 10 km c) 40 km d) 80 km

33. I am facing South now. I take two right turns walking, walk 20 m and 10 m respectively. Then I turn left and walk 10 m and then turning right walk 20 m. Then I turn right again and walk 60 m. In which direction am I from the starting point?

- a) North b) North-west c) East d) North-east

34. Statements: Some books are novels. All novels are interesting.

Conclusions:

- (a) Some books are interesting.
(b) All interesting things are novels.

- a) Only I b) Only II c) Both d) None

35. Statements: Some students are athletes. All athletes are disciplined.

Conclusions:

- (a) Some students are disciplined.
(b) Some disciplined persons are athletes.

- a) Only I b) Only II c) Both d) None

36. Statements: All poets are dreamers. Some dreamers are writers.

Conclusions:

- (a) Some poets are writers.
(b) Some writers are dreamers.

- a) Only I follows b) Only II follows c) Both I and II follow d) Neither I nor II follows

37. Statements:

- Some teachers are writers.
- All writers are thinkers.
- No thinker is lazy.

Conclusions:

- (a) Some teachers are not lazy.
 (b) No writer is lazy.

- a) Only I b) Only II c) Both d) None

38. Choose the correct Venn diagram for the relationship among Fruits, Mangoes, and Apples.



39. There is a cube in which one pair of adjacent faces is painted black; the second pair of adjacent faces is painted blue and the third pair of adjacent faces is painted green. This cube is now cut into 216 smaller and identical cubes.

How many small cubes will be there with no black paint at all?

- a) 144 b) 150 c) 125 d) None of these

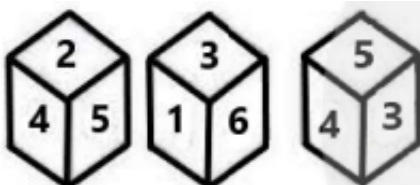
40. Three different faces of a cube are coloured in three different colours—black, green and blue. This cube is now cut into 216 smaller but identical cubes.

What is the least number of the smaller cubes that will have exactly three faces coloured?

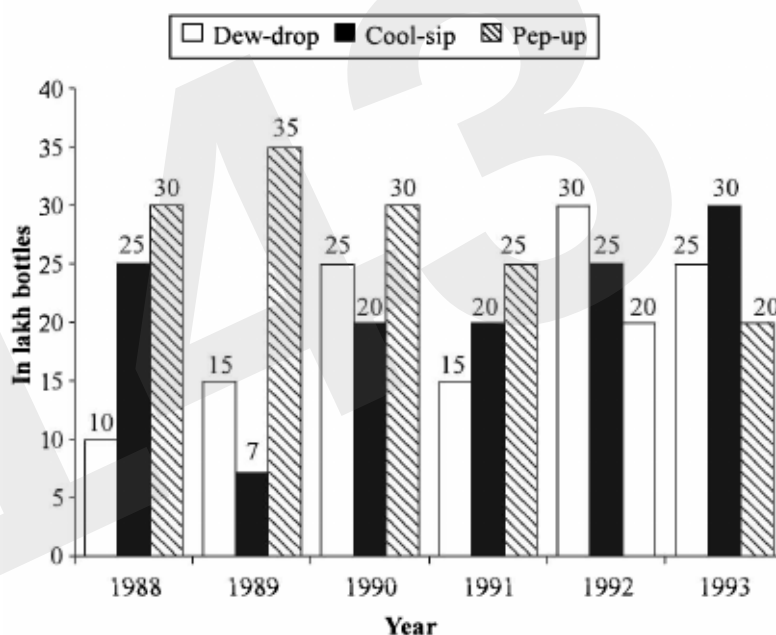
- a) 0 b) 6 c) 2 d) 12

41. Three different positions of the same dice are shown, the six faces of which are numbered from 1 to 6. Select the number that will be on the face opposite to the face showing '2'.

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- a) 4 b) 6 c) 3 d) 1
42. Find the missing number: 2, 6, 12, 20, 30, ?
- a) 36 b) 40 c) 42 d) 44
43. If $1 = 3, 2 = 6, 3 = 9$, then $6 = ?$
- a) 12 b) 15 c) 18 d) 21
44. Five friends A, B, C, D, and E are sitting in a row. A is sitting between B and C. D is sitting to the immediate left of B. Who is sitting at the extreme right?
- a) A b) B c) C d) E
45. The area of a triangle with base 10 cm and height 8 cm is
- a) 20 cm^2 b) 30 cm^2 c) 40 cm^2 d) 80 cm^2
46. The length of the diagonal of a rectangle with sides 9 cm and 12 cm is
- a) 15 b) 18 c) 21 d) 24
47. The area of an equilateral triangle with side 6 cm is
- a) $9\sqrt{3}$ b) $12\sqrt{3}$ c) $18\sqrt{3}$ d) $24\sqrt{3}$
48. Study the following graph carefully and answer the question given below.



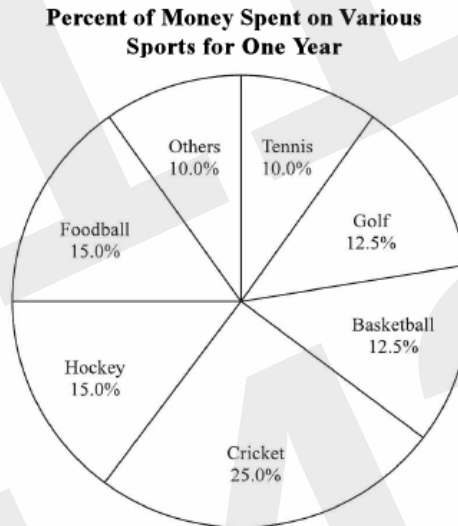
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In which year was the sale of 'Pep-up' the maximum?

- a) 1990 b) 1991 c) 1992 d) 1993
e) None of these

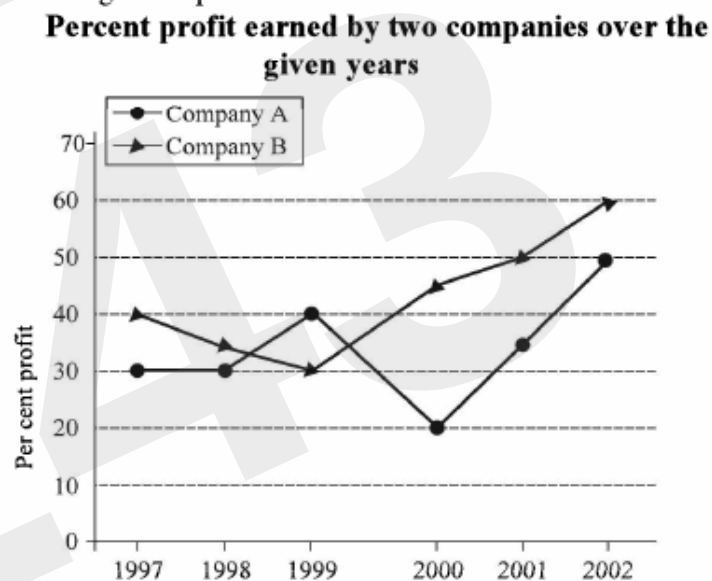
49. The circle graph given here shows the spendings of a country on various sports during a year. Study the graph carefully to answer these questions.



If the total amount spent during the year was Rs. 1,20,00,000 how much was spent on basketball?

- a) Rs. 12,50,000 b) Rs. 10,00,000 c) Rs. 12,00,000 d) Rs. 15,00,000

50. Study the following graph to answer the given questions.



776595

If the income of Company A in 2002 was Rs. 600 crore, what was its expenditure?

- a) Rs. 360 crore b) Rs. 480 crore c) Rs. 375 crore d) Cannot be determined
e) None of these

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