(8 Pages)

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ANMA 41

U.G. (CBCS) DEGREE EXAMINATION, APRIL 2022

Fourth Semester

Mathematics

Non Major Elective — MATHEMATICS FOR
COMPETITIVE EXAMINATIONS — II

(For those who joined in July 2017 onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The money borrowed for a certain period is called
_____

   (a) principal   (b) simple interest

   (c) amount   (d) interest

2. How much simple interest will Rs. 2000 earn in 18 months at 6% p.a.?

   (a) Rs. 120   (b) Rs. 180

   (c) Rs. 216   (d) Rs. 240

3. If A's 1 day work $= \dfrac{1}{n}$, then A can finish the work in _____ days.

   (a) 1   (b) 10

   (c) n (d) $-n$

4. If A's 1 day work is $\dfrac{1}{8}$ and B's 1 day work is $\dfrac{1}{10}$, then $(A+B)$'s 1 day work is _____

   (a) 8   (b) 10

   (c) $\dfrac{40}{9}$ (d) $\dfrac{9}{40}$

5. x Km/hr = _____ m/sec.

   (a) $x \times \dfrac{18}{5}$ (b) $x \times 18$

   (c) $x \times \dfrac{5}{18}$ (d) $x \times 5$

6. A train is moving with a speed of 180 km/hr. Its speed is

(a) 5 m/sec   (b) 30 m/sec

(c) 40 m/sec   (d) 50 m/sec

7. If 15 dolls cost Rs. 35, what do 39 dolls cost?

(a) Rs. 90   (b) Rs. 91

(c) Rs. 89   (d) Rs. 80

8. The method of finding the 4th proportion when the other three are given is called ———— proportion.

(a) simple   (b) compound

(c) direct   (d) indirect

9. A pipe connected with a reservoir, emptying it is known as ————

(a) inlet   (b) outlet

(c) full   (d) partly full

10. If a pipe can fill a tank in x hours, then part filled in 1 hr = ————

(a) x (b) 0

(c) $\dfrac{1}{x}$ (d) n

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) At what rate percent per annum will a sum of money double in 8 years?

Or

(b) Find compound interest on Rs. 10000 at 10% p.a. for 2 years and 3 months, compounded annually.

12. (a) A can build a wall in 30 days, while B alone can built it in 40 days. If they build it together and get a payment of Rs. 7000, what is B's share?

Or

(b) A and B together can complete a piece of work in 12 days, B and C can do it in 20 days and C and A can do it in 15 days. A, B and C together can complete it in how many days?

13. (a) Walking at 7/8 of its usual speed, a train is 10 minutes too late. Find its usual time to cover the journey.

Or

(b) Tow trains approach each other at 30 km/hr and 27 km/hr from two places 342 km apart. After how many hours will they meet?

14. (a) If 20 men can build a wall 112m long in 6 days, what length of a similar wall can be built by 25 men in 3 days?

Or

(b) 5 men or 9 women can do a piece of work in 19 days. In how many days will 3 men and 6 women do it?

15. (a) Two pipes A and B can fill a tank in 24 hours and 30 hours respectively. If both the pipes are opened simultaneously in the empty tank, how much time will be taken by them to fill it.

Or

(b) A pipe can empty a tank in 40 minutes. A second pipe with diameter twice as much as that of the first is also attached with the tank to empty it. The two together can empty the tank in how much time?

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) What annual instalment will discharge a debt of Rs. 4600 due in 4 years at 10% p.a. simple interest?

Or

(b) The difference between compound interest and simple interest on a certain sum at 8% p.a. for 2 years is Rs. 240. Find the sum.

17. (a) A and B can do a piece of work in 12 days; B and C can do it in 15 days while C and A can do it in 20 days. In how many days will they finish it working together? Also, in how many days can A alone do it?

Or

(b) A can do a piece of work in 10 days while B alone can do it in15 days. They work together for 5 days and the rest of the work is done by C in 2 days and the rest of the work is done by C in 2 days. If they get Rs. 4500 for the whole work, how should they divide the money?

18. (a) A and B are two stations 390 km apart. A train starts form A at 10 a.m. and travels towards B at 65 kmph. Another train starts from B at 11 a.m. and travels towards A at 35 kmph. At what time do they meet?

Or

(b) A train traveled distances of 10 km, 20 km and 30 km. At speeds of 50 km/hr, 60 km/hr and 90 km/hr respectively. What is the average speed of the train?

19. (a) If 8 men working 9 hours a day can build a wall 18 m long 2 m broad and 12 m high in 10 days, how many men will be required to build a wall 32 m long, 3 m broad and 9 m high by working 6 hours a day, in 8 days.

Or

(b) 8 women can complete a work in 10 days and 10 children take 16 days to complete the same work. How many days will 10 women and 12 children take to complete the work?

20. (a) A tap can fill the tank in 6 hrs. After half the tank is filled, three more similar taps are opened. What is the total time taken to filled the tank completely?

Or

(b) Two pipes can fill a cistern in 14 hours and 16 hours respectively. The pipes are opened simultaneously and it is found that due to leakage in the bottom it took 32 minute more to fill the cistern When the cistern is full, in what time will the leak empty it?

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