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Reg. No. :

Code No. : 20595 E Sub. Code : SNMA 4 A

U.G. (CBCS) DEGREE EXAMINATION, APRIL 2021.

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 — ($10 \times 1 = 10$ marks)

Answer ALL questions.

Choose the correct answer.

1. How much simple interest will Rs. 2,000 earn in 18 months at 6% per annum?
(a) Rs. 120 (b) Rs. 180
(c) Rs. 216 (d) Rs. 240

2. The difference between compound interest and simple interest on Rs. 8,000 at 5% p.a. for 3 years is
(a) Rs. 50 (b) Rs. 60
(c) Rs. 61 (d) Rs. 600

3. A can do a piece of work in 8 hours while B alone can do it in 12 hrs. Both A and B working together can finish the work in

- (a) 10 hrs (b) 4 hrs
(c) $5\frac{1}{4}$ hrs (d) $4\frac{4}{5}$ hrs

4. If A can do a piece of work in n days, then A's 1 day work is

- (a) $\frac{1}{n}$ (b) n
(c) 1 (d) n^2

5. 54 km/hr = _____ m/sec.

- (a) 12 (b) 15
(c) 20 (d) 25

6. Distance = Speed \times _____.

- (a) time (b) work
(c) $\frac{18}{5}$ (d) $\frac{5}{18}$

7. If 15 dolls cost Rs. 35, what do 39 dolls cost?
- (a) 90 (b) 70
(c) 75 (d) 91
8. If $72 : 132 :: 48 : x$ then $x =$
- (a) 80 (b) 82
(c) 88 (d) 86
9. If a pipe can fill a tank in x hours, then part filled in 1 hr is
- (a) x (b) $\frac{1}{x}$
(c) $\frac{1}{n}$ (d) n
10. In 1 minute $\frac{3}{7}$ of a bucket is filled. The rest of the bucket can be filled in _____.
- (a) 2 minutes (b) $\frac{4}{3}$ minutes
(c) 7 minutes (d) $\frac{8}{3}$ minutes

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Find S.I. on Rs. 5,600 at $6\frac{2}{3}\%$ p.a. for 9 months.

Or

- (b) Find compound interest on Rs. 6,250 at 8% p.a. for 2 years.
12. (a) A can do a piece of work in 8 days, which B alone can do in 10 days. In how many days both working together can do it?

Or

- (b) A, B and C completed a piece of work costing Rs. 1,800. A worked for 6 days, B for 4 days and C for 9 days. If their daily wages are in the ratio 5 : 6 : 4, how much amount will be received by A.
13. (a) Anita can cover a certain distance in 1 hr 24 minutes by covering two-third of the distance at 4 km/hr and the rest at 5 km/hr. Find the total distance.

Or

- (b) Hitesh covers a certain distance by car driving at 70 km/hr and returns back to the starting point riding on a scooter at 55 km/hr. Find his average speed for the whole journey.
14. (a) If 20 men can build a wall 112 m long in 6 days, what length of a similar wall can be built by 25 men in 3 days?

Or

- (b) 16 men can reap a field in 30 days. In how many days will 20 men can reap the field?
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) Two pipes A and B can fill a tank in 24 minutes and 32 minutes respectively. If both the pipes are opened together, after how much time B should be closed so that the tank is full in 18 minutes.

PART C — ($5 \times 8 = 40$ marks)

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

16. (a) A certain sum of money amounts to Rs. 756 in 2 years and to Rs. 873 in $3\frac{1}{2}$ years. Find the sum and rate of interest.

Or

- (b) The difference between compound interest and simple interest on a certain sum at 8% per annum 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 works twice as fast as B. If both of them can together finish a piece of work in 12 days, then B alone can do it in how many days?

18. (a) The distance between two stations A and B is 450 km. A train starts at 4 p.m. from A and moves towards B at an average speed of 60 km/hr. Another train starts from B at 3:20 p.m. and moves towards A at an average speed of 80 km/hr. How far from A will the two trains meet and at what time?

Or

- (b) A farmer traveled a distance of 61 km in 9 hours. He traveled partly on foot at 4 km/hr and partly on bicycle at 9 km/hr. What is the distance traveled on foot?
19. (a) 5 men and 9 women can do a piece of work in 19 days. In how many days will 3 men and 6 women do it?

Or

- (b) If 6 engines consume 15 metric tonnes of coal when each is running 9 hours a day, how much coal will be required for 8 engines, each running 12 hours a day, it being given that 3 engines of former type consume as much as 4 engines of later type?

20. (a) 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 minutes more to fill the cistern. When the cistern is full, in what time will the leak empty it?

Or

- (b) 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?
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