

RAMAKRISHNA MISSION VIDYAMANDIRA

Belur Math, Howrah – 711 202

ADMISSION TEST – 2019

COMPUTER SCIENCE (Honours)

Date : 20-06-2019

Full Marks : 50

Time: 01.00 p.m. – 2.00 p.m.

Instructions for the candidate

Answer all the questions given below. Tick (✓) the correct option on the **OMR SHEET**. Each correct answer carries **2 marks**. For every wrong answer **1 mark** will be deducted. **Calculator is not allowed**.

1. $\lim_{x \rightarrow 0} \frac{e^{ax} - 1}{x} = ?$

- (a) 0 (b) 1 (c) a (d) 1/a

2. $\frac{d}{dx} (\sin^{-1}x + \sin^{-1}\sqrt{1-x^2}) = ?$

- (a) 0 (b) 1 (c) $\pi/2$ (d) ∞

3. If $x^a y^b = (x+y)^{a+b}$, then find $\frac{dy}{dx}$.

- (a) a/b (b) b/a (c) x/y (d) y/x

4. If $r = 2(1 - \cos \theta)$, then find $\int_0^\pi \sqrt{r^2 + \left(\frac{dr}{d\theta}\right)^2} d\theta$.

- (a) 0 (b) 8 (c) 1/8 (d) ∞

5. If $A = \{x, y, z\}$, then (i) $\{x\} \in A$, (ii) $y \in A$, (iii) $\{z\} \subset A$, (iv) $x \subseteq A$, (v) $\{z\} \in P(A)$. State which of the following combinations is completely correct.

- (a) i,iii,v (b) i,ii,iii (c) iii,iv,v (d) ii,iii,v

6. $\sqrt{0.\dot{4}} = x$, then x is given by:

- (a) $(2/3)^{1/2}$ (b) 0.6 (c) $0.\dot{6}$ (d) 4/9

7. In a factory, production of cycles rose to 48,400 from 40,000 in 2 years. The rate of growth per annum is:

- (a) 10.5% (b) 9% (c) 8% (d) 10%

8. Prakash lends a part of Rs. 20,000 at 8% simple interest and remaining at $\frac{4}{3}$ % simple interest. His total income after a year was Rs. 800. Find the sum lent at 8%.

- (a) Rs. 8000 (b) Rs. 12000 (c) Rs. 6000 (d) Rs. 10000

9. If $(a+b) : (b+c) : (c+a) = 6:7:8$ and $(a+b+c) = 14$, then value of c is:

- (a) 6 (b) 7 (c) 8 (d) 14

10. If $(x^{24} + 1) / x^{12} = 7$ then the value of $(x^{72} + 1) / x^{36}$ is:

- (a) 343 (b) 433 (c) 432 (d) 322

11. If a clock started at 12 noon, then the angle turned by hour hand at 3:45 PM is:

- (a) $104\frac{1}{2}^\circ$ (b) $97\frac{1}{2}^\circ$ (c) $112\frac{1}{2}^\circ$ (d) $117\frac{1}{2}^\circ$

12. On what dates of April, 2001 did Wednesday fall?

- (a) 2nd, 9th, 16th, 23rd (b) 4th, 11th, 18th, 25th
(c) 3rd, 10th, 17th, 24th (d) 1st, 8th, 15th, 22nd, 29th

13. If $47.2506 = 4 \times A + 7/B + 2 \times C + 5/D + 6 \times E$, then the value of $5 \times A + 3 \times B + 6 \times C + D + 3 \times E$ is:

- (a) 55.6003 (b) 53.603 (c) 153.6003 (d) 213.003

14. A group of students decided to collect as many paise from each member of group as is the number of members. If the total collection amounts to Rs. 59.29, the number of the member in the group is:

- (a) 57 (b) 67 (c) 77 (d) 87

15. If $\sqrt{18225} = 13$, then the value of $\sqrt{182.25} + \sqrt{1.8225} + \sqrt{0.018225} + \sqrt{0.00018225}$ is:

- (a) 1.49985 (b) 14.9985 (c) 149.985 (d) 1499.85

16. Find out the area of a white sheet required to prepare a cone with a height of 21 cm and the radius of 20 cm.

- (a) 3080 cm^2 (b) 2300 cm^2 (c) 3460 cm^2 (d) 3600 cm^2

17. At what time between 2 and 3 o'clock will the hands of a clock in opposite directions?

- (a) $43\frac{9}{11}$ min. past 2 (b) $43\frac{7}{11}$ min. past 2
(c) 43 min. past 2 (d) $43\frac{5}{11}$ min. past 2

18. The number 311311311311311311311 is:

- (a) divisible by 3 but not by 11 (b) divisible by 11 but not by 3
(c) divisible by both 3 and 11 (d) neither divisible by 3 nor by 11.

19. Pointing to Manju, Raju said, "The son of her only brother is the brother of my wife". How is Manju related to Raju?

- (a) Mother's sister (b) Grandmother (c) Mother-in-law (d) Sister of father-in-law

20. The Pacific yew is an evergreen tree that grows in the Pacific Northwest. The Pacific yew has a fleshy, poisonous fruit. Recently, taxol, a substance found in the bark of the Pacific yew, was discovered to be a promising new anticancer drug.

- (a) Taxol is poisonous when taken by healthy people.
- (b) Taxol has cured people from various diseases.
- (c) People should not eat the fruit of the Pacific yew.
- (d) The Pacific yew was considered worthless until taxol was discovered.

21. Complete the series 95, 115.5, 138, ..., 189

- (a) 160.5
- (b) 162.5
- (c) 164.5
- (d) 166.5

22. A man in a train notices that he can count 21 telephone posts in one minute. If they are known to be 50 meters apart, at what speed is the train travelling?

- (a) 61 km/h
- (b) 56 km/hr
- (c) 60km/hr
- (d) 63km/hr

23. How many three letter words can be formed from the letters {a,b,y,z} if repeated letters are allowed?

- (a) 64
- (b) 16
- (c) 72
- (d) 12

24. Tickets numbered 1 to 20 are mixed up and then a ticket is drawn at random. What is the probability that the ticket drawn has a number which is a multiple of 3 or 5?

- (a) $\frac{1}{2}$
- (b) $\frac{9}{20}$
- (c) $\frac{1}{20}$
- (d) None of the options

25. In how many different ways can the letters of the word 'CORPORATION' be arranged so that the vowels always come together?

- (a) 810
- (b) 1440
- (c) 50400
- (d) 2880

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