

Printed Page:-

Subject Code:- BMCA0206

Roll. No:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA  
(An Autonomous Institute Affiliated to AKTU, Lucknow)

MCA

SEM: II - THEORY EXAMINATION (20.....- 20.....)

Subject: Cognitive Ability

Time: 2 Hours

Max. Marks: 50

**General Instructions:**

**IMP:** Verify that you have received the question paper with the correct course, code, branch etc.

1. This Question paper comprises of **three Sections -A, B, & C**. It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.
2. Maximum marks for each question are indicated on right -hand side of each question.
3. Illustrate your answers with neat sketches wherever necessary.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.
6. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

**SECTION-A**

15

1. Attempt all parts:-

1-a. Simplify:  $25 + 36 \div 6 \times 2$  (CO1, K3)

1

- (a) 37
- (b) 39
- (c) 49
- (d) 61

1-b. A can do a piece of work in 10 days while B can do it in 15 days. A and B can together complete the work in .....(CO2, K3)

1

- (a) 6 days
- (b) 11 days
- (c) 90 days
- (d) 45 days

1-c. The value of  $\sin^2 45^\circ + \cos^2 45^\circ$  is: (CO3, K2)

1

- (a) 0
- (b) 1
- (c) 2
- (d)  $1/2$

1-d. If CAT = XZG, then the DOG is: (CO4, K2)

1

- (a) WLT
- (b) WPL

- (c) XPL
- (d) XQL

- 1-e. If a line chart shows a consistent rise over time, then it indicates: (CO5, K2) 1
- (a) Decline
  - (b) No change
  - (c) Increase
  - (d) Fluctuation

2. Attempt all parts:-

- 2.a. Find the least number which when divided by 12, 16, and 24 leaves a remainder 4 in each case. (CO1, K3) 2
- 2.b. Divide Rs. 672 in the ratio 5:3. (CO2, K3) 2
- 2.c. If the height of a pole is  $2\sqrt{3}$  metres and the length of its shadow is 2 metres, find the angle of elevation of the sun. (CO3, K3) 2
- 2.d. Find the next number in the series: 2, 6, 12, 20, \_\_ (CO4, K2) 2
- 2.e. If 20 students like Math, 15 like Science, and 10 like both. How many like only Math? (CO5, K3) 2

**SECTION-B** 15

3. Answer any three of the following:-

- 3-a. The average of 10 numbers is 55. The average of the first five numbers is 52 and of the last four is 57. Find the 6th number. (CO1, K3) 5
- 3-b. A sum of money doubles itself at compound interest in 15 years. In how many years will it become eight times? (CO2, K3) 5
- 3-c. Pipe A can fill a tank in 6 hours, and pipe B in 8 hours. Pipe C can empty it in 12 hours. If all three are opened together, in how much time will the tank be full? (CO3, K3) 5
- 3-d. A person walks 12 km north, then turns east and walks 5 km. Then turns right and walks 12 km. How far and in which direction is he from the starting point? (CO4, K2) 5
- 3.e. A school has six classes (A–F) with a total of 600 students. The percentage of students in each class and the ratio of boys to girls is given in the table below: (CO5, K3) 5

| Class | % Students | Ratio Boys : Girls |
|-------|------------|--------------------|
| A     | 20%        | 03:02              |
| B     | 12%        | 03:01              |
| C     | 16%        | 05:03              |
| D     | 15%        | 08:07              |
| E     | 21%        | 04:03              |
| F     | 16%        | 01:01              |

Calculate (i) the number of boys and girls in class E .

(ii) the difference between the number of boys in class A and class C.

### **SECTION-C**

20

4. Answer any one of the following:-

4-a. Find the square root of 1471369. (CO1, K3)

4

4-b. The sum of the ages of a father and his son is 60 years. After 5 years, father will be 3 times as old as the son. Find their present ages. (CO1, K3)

4

5. Answer any one of the following:-

5-a. A problem is given to three persons P, Q, R whose respective chances of solving it are  $\frac{2}{7}$ ,  $\frac{4}{7}$ ,  $\frac{4}{9}$  respectively. What is the probability that the problem is solved. (CO2, K3)

4

5-b. A man bought a horse and a carriage for Rs 3000. He sold the horse at a gain of 20% and the carriage at a loss of 10%, thereby gaining 2% on the whole. Find the cost of the horse. (CO2, K3)

4

6. Answer any one of the following:-

6-a. Two trains, one 120 m long and the other 150 m long, are running in opposite directions on parallel tracks. If their speeds are 60 km/h and 90 km/h respectively, how long will they take to cross each other? (CO3, K3)

4

6-b. Three workers A, B and C are given a job to paint a room. At the end of each day, they are given Rs. 800 collectively as wages. If A worked alone, the work would be completed in 6 days. If B worked alone, the work would be completed in 8 days. If C worked alone, the work would be completed in 24 days. Find their individual daily wages. (CO3, K3)

4

7. Answer any one of the following:-

7-a. P is the mother of Q. Q is the sister of R. R is the father of S. How is P related to S? (CO4, K2)

4

7-b. How many times do the hands of a clock overlap in a day and why? (CO4, K3)

4

8. Answer any one of the following:-

8-a. Study the following table and answer the questions based on it.

4

(Expenditures of a Company (in Lakh Rupees) per Annum Over the given Years). (CO5, K3)

| Year | Item of Expenditure |                    |       |                   |       |
|------|---------------------|--------------------|-------|-------------------|-------|
|      | Salary              | Fuel and Transport | Bonus | Interest on Loans | Taxes |
| 1998 | 288                 | 98                 | 3.00  | 23.4              | 83    |
| 1999 | 342                 | 112                | 2.52  | 32.5              | 108   |
| 2000 | 324                 | 101                | 3.84  | 41.6              | 74    |
| 2001 | 336                 | 133                | 3.68  | 36.4              | 88    |
| 2002 | 420                 | 142                | 3.96  | 49.4              | 98    |

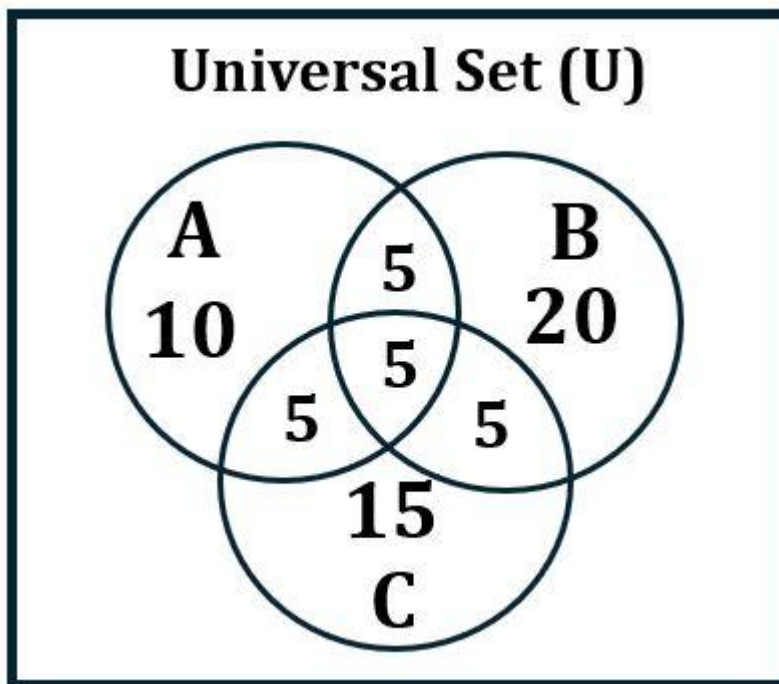
(a) What is the average amount of interest per year which the company had to pay during this period?

(b) The total amount of bonus paid by the company during the given period is approximately what percent of the total amount of salary paid during this period?

8-b.

4

Below Venn diagram has all the sufficient information required to show the data of all the sets possible. Observe the diagram carefully then answer the following: (CO5, K2)



- What is the value of  $n(A \cap B \cap C)$ ?
- What is the value of  $n(C)$ ?
- What is the value of  $n(B \cap A)$ ?
- What is the value of  $n(A \cup B \cup C)$ ?