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

BCA

SEM: IV - THEORY EXAMINATION (2025 - 2026)

Subject: Cognitive Ability

Time: 3 Hours

Max. Marks: 100

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

20

1. Attempt all parts:-

- (1.1) If your face is in south and turn left, then your face will be : (CO1,K2) 1
- (a) East
- (b) West
- (c) North
- (d) South
- (1.2) If $0.04 \times X = 0.000016$ then X is: (CO1,K2) 1
- (a) 0.0004
- (b) 0.04
- (c) 4
- (d) None of these
- (1.3) Trailing zero of 10^{12} is: (CO2,K3) 1
- (a) 10
- (b) 11
- (c) 12
- (d) 13
- (1.4) Complete the series: 7, 14, 28, 56, ____, 224 (CO2,K2) 1
- (a) 102
- (b) 112
- (c) 144
- (d) 200
- (1.5) A invests ₹5000 for 1 year, B invests ₹5000 for 6 months. The ratio 1

of profits: (CO3,K3)

- (a) 1:1
(b) 2:1
(c) 3:1
(d) 4:1
- (1.6) The simplest form of the ratio 1.5 : 2.5 is(CO3,K2) 1
(a) 3:5
(b) 5:3
(c) 6:10
(d) 15:25
- (1.7) Number of odd days in a leap year:(CO4, K1) 1
(a) 1
(b) 2
(c) 3
(d) 0
- (1.8) CI on ₹1000 at 10% for 2 years is: (CO4, K3) 1
(a) 200
(b) 210
(c) 220
(d) 230
- (1.9) A boat's speed in still water is 6 km/h and stream speed is 2 km/h. The upstream speed: (CO5,K3) 1
(a) 4 km/h
(b) 6 km/h
(c) 8 km/h
(d) 10 km/h
- (1.10) The average of 8 and 10 is: (CO5,K2) 1
(a) 8
(b) 9
(c) 10
(d) 15
2. Attempt all parts:-
- (2.1) Find square root of $a^2 + b^2 + c^2 + 2ab + 2bc + 2ca$. (CO1,K3) 2
- (2.2) Find the last two digits of 55^{35} (CO2,K3) 2
- (2.3) Divide ₹600 in the ratio 2:3. (CO3,K3) 2
- (2.4) Determine: (i) Angle traced by hour hand in 12 hours (ii) Angle traced by minute hand in 60 minutes. (CO4, K2) 2
- (2.5) A cyclist covers a distance of 750 m in 2 min 30 sec. Find the speed in km/hr of the cyclist. (CO5, K3) 2

SECTION-B

30

Answer any one of the following:-

- (3.1) The product of two numbers is 0.008 and one is $\frac{1}{5}$ of the other. Find the numbers. (CO1,K3) 6
- (3.2) Ramesh walks 15 m South, then 8 m East. Find the distance of Ramesh from the starting point. (CO1,K3) 6

Answer any one of the following:-

- (3.3) Identify the relationship of the man to Raj if Raj says, "His mother is the only daughter of my mother." (CO2,K2) 6
- (3.4) Find the remainder when $f(x) = 3x^4 - 5x^3 + 2x^2 - 7x + 9$ is divided by $x - 2$. (CO2,K3) 6

Answer any one of the following:-

- (3.5) Find the next term: Z1, X4, U9, Q16, ____ (CO3,K3) 6
- (3.6) The price of a product increases by 20% and then decreases by 10%. Find the net percentage change. (CO3,K3) 6

Answer any one of the following:-

- (3.7) Determine the compound interest on ₹10000 at 12% per annum for 2 years, compounded half yearly. (CO4, K3) 6
- (3.8) Determine the time required for a sum to become four times itself at 5% simple interest per annum. (CO4, K3) 6

Answer any one of the following:-

- (3.9) Peter can cover a certain distance in 1 hour 24 minutes by covering two-third of the distance at 4 km/h and the rest at 5 km/h. Find the total distance. (CO5, K3) 6
- (3.10) There are six numbers 30, 72, 53, 68, x and 87. The average of the numbers is 60. Find the value of x. (CO5, K3) 6

SECTION-C 50

4. Answer any one of the following:-

- (4.1) Evaluate: (CO1,K3) 10
- (i) $0.5 \times 5.6 \div 0.5 \times 12$
- (ii) $25 \times 3.25 + 50.4 \div 24$
- (iii) $0.01 \times 0.1 - 0.001 \div 10 + 0.01$
- (iv) $12.28 \times 1.5 - 36 \div 2.4$
- (4.2) The traffic lights at three different crossings change after 20 seconds, 25 seconds and 30 seconds respectively. If they change together at 8:00 a.m., Find the time at which the traffic lights will change together again. (CO1,K3) 10

5. Answer any one of the following:-

- (5.1) Find k if $f(x) = x^3 - kx^2 + 4x - 8$ leaves remainder 6 when divided by $x - 2$. (CO2,K3) 10
- (5.2) Find unit digit of $(49)^{30} + (25)^{36} + (460)^{135}$. (CO2,K3) 10

6. Answer any one of the following:-

- (6.1) Alfred started a business investing Rs. 45000. After 3 months, Peter joined him with a capital of Rs. 60000. After another 6 months, Ronald joined them with a capital of Rs. 90000. At the end of the year, they made a profit of Rs. 16500. Find each share 10

of profit. (CO3,K3)

- (6.2) A bag contains one-rupee, 50-paise and 25-paise coins in the ratio 5 : 6 : 8. If the total amount is ₹210, find the number of coins of each kind. (CO3,K3) 10

7. Answer any one of the following:-

- (7.1) A clock is set right at 5 a.m. The clock loses 16 minutes in 24 hours. Find the true time when the clock indicates 10 p.m. on 4th day.(CO4, K3) 10

- (7.2) A man bought a cycle for ₹250. Determine selling price to gain 10%. (CO4, K3) 10

8. Answer any one of the following:-

- (8.1) A man can row 30 km upstream and 44 km downstream in 10 hours. Also, he can row 40 km upstream and 55 km downstream in 13 hours. Find the rate of the current and the speed of the man in still water. (CO5, K3) 10

- (8.2) A pipe can fill a tank in 12 minutes and another pipe in 15 minutes, but a third pipe can empty it in 6 minutes. The first two pipes are kept open for 5 minutes in the beginning and then the third pipe is also opened. Determine the total time required to empty the cistern. (CO5, K3) 10