



## APPENDIX - A

### Model Question Paper - 1

#### Section - A

I. Answer any 4 questions. Each question carries 2 marks

(4 × 2 = 8)

1. Simplify  $\frac{(6+6+6+6) \div 6}{(4+4+4+4) \div 4}$
2. Convert the following into vulgar fractions (Common fractions)  
(a). 3.004    (b). 0.25
3. If  $\sqrt{841} = 29$  then find the value  $\sqrt{841} + \sqrt{8.41} + \sqrt{0.0841}$
4. Find the odd man out in the given series  
a. 1, 4, 9, 16, 20, 36, 49  
b. Sparrow, Swan, Parrot, Koel
5. Find the least number which is exactly divisible by 32, 36, 45, 60
6. Find the simple interest on ₹ 68,000/- at  $16^{2/3}\%$  PA for nine months

#### Section - B

II. Answer any four questions. Each question carries 5 marks

(4 × 5 = 20)

7. Rosa can eat 32 rasgoola's in 1 hr, her sister Leela needs 3 hrs to eat the same number. How much time will they take to eat 32 rasgoola's together.
8. Find two numbers such that their mean proposition is six and third propositional 20.25
9. The sum of the ages of daughter and her mother is 56 years. After 4 years the age of the mother will be three times that of the daughter. Their present ages are?
10. By selling 33 meters of cloth, one gains the selling price of 11 meters, find the gain percentage.

11. The calendar for the year 2007 will be the same for the year?  
12. At what time between 5 and 6 O' clock all the hands of the clock, 3 min apart.

Section - C

**III. Answer any 4 questions. Each carries 8 marks**

$$(4 \times 8 = 32)$$

13. a. In how many ways a committee of six members be selected from 7 men & 5 ladies consisting of 4 men and 2 ladies.

b. A train 100 mts long travelling at 60 km/hr passes another train twice as fast as this train and travelling in opposite direction in 10 sec. Find the length of the second train.

14. a. If true discount on a certain sum due six months. Hence at 15% is ₹ 120/- What is the Banker's discount on the same sum for the same time at the same rate.

b. How many kgs of wheat costing ₹ 8/- per kg must be mixed with 36 kgs of rice costing ₹ 5.40 per kg So that 20% gain may be obtained by selling the mixture at ₹ 7.20/- per kg.

15. What do you mean by hypothesis? Explain the procedure for hypothesis testing.

16. Discuss the process of writing research process.

17. Directions (Q1 – Q3): The two pie charts below show the percentage market share on value basis of the companies A to D and others in a sectorial market for 1999 and 2000

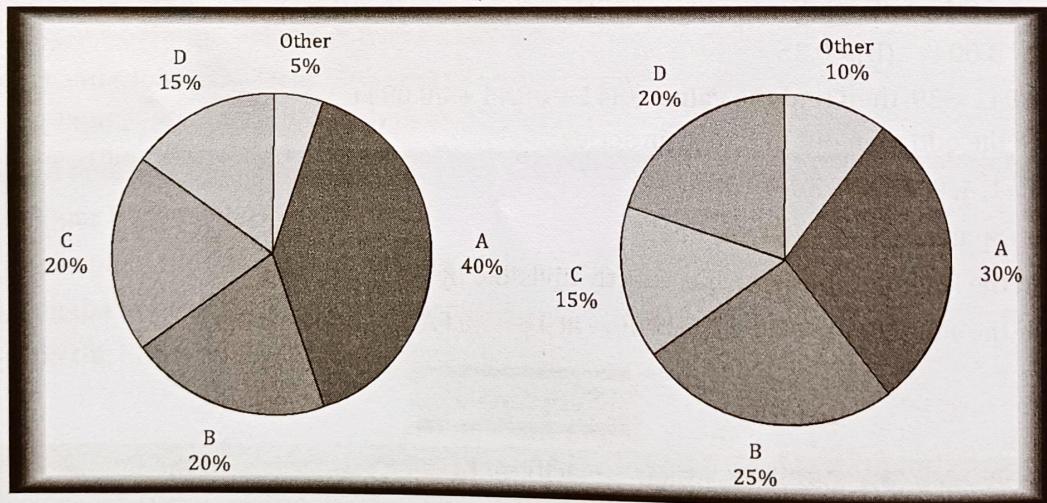


FIGURE 1: YEAR 1999

FIGURE 2: YEAR 2000

Market size 1999= 150 crore Market size 2000= 375 crore

- (i). Which company had the minimum growth in sales in these two years?  
(a). B                    (b). A                    (c). C                    (d). Others

(ii). If each company increases its sales value by 10%, then what is the percentage growth of the detergent market?

- (a). 10%      (b). 20%      (c). 30%      (d). 8%
- (iii). If the total sales of the market is doubled for 1999 and 2000, what would be the ratio of sales of D for 2000 to 1999?
- (a). 2:1      (b). 3:4      (c). 15:8      (d). 10:3
- (iv). A man's wage was reduced by 50%. Again the reduced wage was increased by 50% find the loss in terms of percentage.

8. Read the passage and answer the questions that follow :

Caffeine, the stimulant in coffee, has been called "the most widely used psychoactive substance on Earth." Snyder, Daly and Bruns have recently proposed that caffeine affects behavior by countering the activity in the human brain of a naturally occurring chemical called adenosine. Adenosine normally depresses neuron firing in many areas of the brain. It apparently does this by inhibiting the release of neurotransmitters, chemicals that carry nerve impulses from one neuron to the next. Like many other agents that affect neuron firing, adenosine must first bind to specific receptors on neuronal membranes. There are at least two classes of these receptors, which have been designated A1 and A2.

Snyder et al propose that caffeine, which is structurally similar to adenosine, is able to bind to both types of receptors, which prevents adenosine from attaching there and allows the neurons to fire more readily than they otherwise would.

For many years, caffeine's effects have been attributed to its inhibition of the production of phosphodiesterase, an enzyme that breaks down the chemical called cyclic AMP. A number of neurotransmitters exert their effects by first increasing cyclic AMP concentrations in target neurons. Therefore, prolonged periods at the elevated concentrations, as might be brought about by a phosphodiesterase inhibitor, could lead to a greater amount of neuron firing and, consequently, to behavioral stimulation. But Snyder et al point out that the caffeine concentrations needed to inhibit the production of phosphodiesterase in the brain are much higher than those that produce stimulation. Moreover, other compounds that block phosphodiesterase's activity are not stimulants.

To buttress their case that caffeine acts instead by preventing adenosine binding, Snyder et al compared the stimulatory effects of a series of caffeine derivatives with their ability to dislodge adenosine from its receptors in the brains of mice. "In general," they reported, "the ability of the compounds to compete at the receptors correlates with their ability to stimulate locomotion in the mouse; i.e., the higher their capacity to bind at the receptors, the higher their ability to stimulate locomotion." Theophylline, a close structural relative of caffeine and the major stimulant in tea, was one of the most effective compounds in both regards. There were some apparent exceptions to the general correlation observed between adenosine-receptor binding and stimulation. One of these was a compound called 3-isobutyl-1-methylxanthine(IBMX), which bound very well but actually depressed mouse locomotion. Snyder et al suggest that this is not a major stumbling block to their hypothesis. The problem is that the compound has mixed effects in the brain, a not unusual occurrence with psychoactive drugs. Even caffeine, which is generally known only for its stimulatory effects, displays this property, depressing mouse locomotion at very low concentrations and stimulating it at higher ones.

Based on the Passage, answer the following questions:

1. The primary purpose of the passage is to
  - (A) discuss a plan for investigation of a phenomenon that is not yet fully understood
  - (B) present two explanations of a phenomenon and reconcile the differences between them
  - (C) summarize two theories and suggest a third theory that overcomes the problems encountered in the first two
  - (D) describe an alternative hypothesis and provide evidence and arguments that support it
  - (E) challenge the validity of a theory by exposing the inconsistencies and contradictions in it
2. According to Snyder et al, caffeine differs from adenosine in that caffeine
  - (A) stimulates behavior in the mouse and in humans, whereas adenosine stimulates behavior in humans only
  - (B) has mixed effects in the brain, whereas adenosine has only a stimulatory effect
  - (C) increases cyclic AMP concentrations in target neurons, whereas adenosine decreases such concentrations
  - (D) permits release of neurotransmitters when it is bound to adenosine receptors, whereas adenosine inhibits such release
  - (E) inhibits both neuron firing and the production of phosphodiesterase when there is a sufficient concentration in the brain, whereas adenosine inhibits only neuron firing
3. In response to experimental results concerning IBMX, Snyder et al contended that it is not uncommon for psychoactive drugs to have
  - (A) mixed effects in the brain
  - (B) inhibitory effects on enzymes in the brain
  - (C) close structural relationships with caffeine
  - (D) depressive effects on mouse locomotion
  - (E) the ability to dislodge caffeine from receptors in the brain
4. According to Snyder et al, all of the following compounds can bind to specific receptors in the brain EXCEPT
  - (A) IBMX
  - (B) caffeine
  - (C) adenosine
  - (D) theophylline
  - (E) phosphodiesterase



# Model Question Paper - 2

## Section - A

### I. Answer any four

$2 \times 4 = 8$

1. Explain the divisibility Rule of 7 with example.
2. What is HCF of  $\frac{36}{75}, \frac{48}{150}, \frac{72}{135}$
3. Find the value of  $\log\left(\frac{15}{16}\right) - \log\left(\frac{27}{45}\right) + \log\left(\frac{48}{75}\right)$
4. Find r value if  ${}^5P_r = 2.6 {}^5P_{r-1}$
5. How many ways the word can be arranged containing letters of "MATHEMATICS".
6. Pointing of a boy Ramesh said  
"He is the son of the only son of my mother".  
How is Ramesh related to the boy?

## Section - B

7. What greatest number divides 17, 42 and 95 and leaves the remainder 4, 3 & 15 respectively.
8. In a class, there are 15 students. During Christmas party all of them shake hands with each other only once. How many hand shake took place in the class?
9. Which day of the week was 2 May 1921?
10. At what time between 3 O' clock to 4 O' clock the hands will be together in clock?
11. Define Teaching. Explain the characteristics involved in Teaching.
12. Explain Article, Workshop, Seminar.

## Section - C

$8 \times 4 = 32$

### III. Answer any four

13. a. Explain Communication and its characteristics.  
b. Explain about effective classroom Communication.
14. a. At what date of May 1945 did Tuesday come?  
b. At what time between 7 O' clock and 8 O' clock the hands of the clock be in opposite direction.

15. a. Explain Research Aptitude and its characteristic and steps involved in Research Aptitude  
b. Define Thesis writing
16. a. A pot has 2 white, 6 black, 4 grey and 8 green balls. If one ball is picked randomly from the pot. What is the probability of it being black or green?  
b. The sum of two numbers is 40 and differences between them is 4. Find the numbers in ratio.
17. a. A and B have monthly incomes in the ratio 5 : 6 and monthly expenditures in the ratio 3 : 4. If they save ₹ 1800 & ₹ 1600 respectively. Find the monthly income of B?  
b. The marked price of a plane was ₹ 15000. The customer buys it for ₹ 9720 after three successive discounts of 20%, 10% and x % respectively on it. What is the third discount?
18. a. Two pipes A and B can fill a tank in 4 hours and 5 hours respectively. If they opened on alternate hours and if pipe B is opened first. How many hours will it take to fill the tank?  
b. A person gave 20% of his income to his elder son, 30% of the remaining to the younger son and 10% of the balance he donated to a trust. He left his ₹ 10080. What is his monthly income?



# Model Question Paper - 3

## Section - A

I. Answer any 4 questions. Each question carries 2 marks

( $4 \times 2 = 8$ )

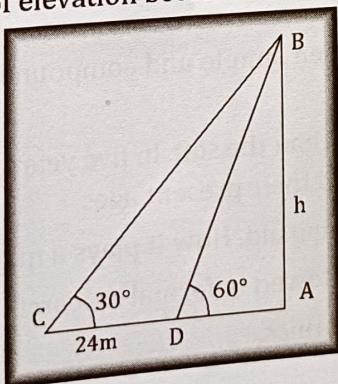
1. A number when divided by 114 leaves the remainder 21. If the same number is divided by 19, find the remainder.
2. If PAINT is coded as 74128 and EXCEL is coded as 93596. Then how would you encode ACCEPT.
3.  $13 \times 252 \div 42 + 170 = ? + 47$
4. If room is called bed, bed is called window, window is called flower, flower is called cooler, on what would a man sleep?
5. In how many different ways can the letters of the word FIGHT be arranged?
6. Define Research and mention its objectives.

## Section - B

II. Answer any four questions. Each question carries 5 marks

( $4 \times 5 = 20$ )

7. Amit said "this girl is the wife of the grandson of my mother". How is Amit related to the girl.
8. 45 men can complete a work in 16 days. 6 days after they started working, 30 more men joined them. How many days will they now take to complete the remaining work?
9. The angle of elevation of the top of tower at a point on the ground is  $30^\circ$ . On working 24m towards the tower, the angle of elevation becomes  $60^\circ$ . Find the height of the tower.



10. Explain Verbal Classification.
11. Explain in brief the stages in data processing
12. A man invested ₹ 1552 in a stock at 97 to obtain an income of 128. The dividend from the stock is.

**III. Answer any 4 questions. Each carries 8 marks**

13. a. If  $8^x \cdot 2^y = 512$  and  $3^{3x+2y} = 9^6$ , then what is the value of x and y?  
 b. Find the square root of 1471369.
14. a. Evaluate:  $75_{P_1} + 75_{C_2}$   
 b. Draw a pie chart for the following data

Item of expenditure	Amount spent (in rupees)
Food	3750
Health	1875
Clothing	1875
Education	1200

15. a. Draw the bar graphs for the population of two states over the years given below.

Year	Population in Lakhs	
	A	B
2001	48	50
2002	58	63
2003	60	60
2004	65	45
2005	49	70
2006	68	80
2007	80	100

- b. The Top of a 25 meter high tower makes an angle of elevation of  $45^\circ$  with the bottom of an electric pole and angle of elevation of  $30^\circ$  degree with the top of pole. Find the height of the electric pole.
16. a. Find the difference between simple and compound interest on ₹ 3000 in 3 years at 4% p.a.  
 b. A father is 28 years older than the son. In five years, the father's age will be 7 years more than twice that of son, find their present ages.
17. a. Explain the types of teaching aid. How it plays a major role in effective teaching?  
 b. Explain the steps to be followed in formal research
18. a. Write a note on research ethics.  
 b. Write a note on  
   i. Seminar  
   ii. Workshop  
   iii. Symposium

