

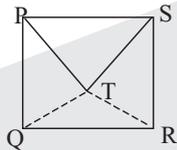
MCA Sample Paper

Sample Test Paper (MH-MCA-CET)

1. The cost of the diamond varies directly as the square of its weight. If a diamond costing Rs.75, 000 is broken into two pieces, weighing in the ratio of 3:2, then find the loss in its cost price.

- (a) Rs.0
 (b) Rs.36,000
 (c) Rs.30,000
 (d) None of these

2. In the given figure $\square PQRS$ is a square and $\triangle PTS$ is equilateral. Find the measure of $\angle QTR$.



- (a) 60°
 (b) $\tan^{-1}(1+\sqrt{3})$
 (c) $2\tan^{-1}(2+\sqrt{3})$
 (d) None of these.

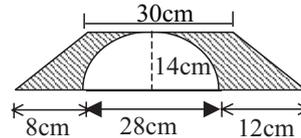
3. If $A = \{\phi, \{\phi\}\}$, then the power set of A is:

- (a) A
 (b) $\{\phi, \{\phi\}, A\}$
 (c) $\{\phi, \{\phi\}, \{\{\phi\}\}, A\}$
 (d) None of these.

4. A horse and a donkey, both carrying heavy loads, were walking side by side. The horse complained of its heavy load. "What are you complaining for?" asked the donkey and said. "If I take one sack off your back, my load will be come twice as heavy as yours. But if you remove one sack from my back, your load will be the same as mine". How many sacks was the donkey carrying?

- (a) 7
 (b) 6
 (c) 5
 (d) None of these.

5. Find the area of the shaded portion in the figure with the help of the given information in it.



- (a) 502 sq.cm
 (b) 546 sq.cm
 (c) 238 sq.cm
 (d) None of these.

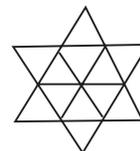
6. A passenger train, running on parallel rails, in the same direction as a goods train, overtakes the goods train in 1 minute and 24 seconds. Their speeds are 70 km/hr and 55 km/hr respectively. If their length's are in the ratio of 2:3. Find the length of the passenger train.

- (a) 210 meters
 (b) 140 meters
 (c) 130 meters
 (d) None of these.

7. The range of the function $f(x) = \cos[x]$, $-\pi/4 < x < \pi/4$, where $[x]$ denotes the greatest integer $< x$, is:

- (a) $\{1, \cos 1\}$
 (b) $\{0, -\cos 1\}$
 (c) $\{0\}$
 (d) $\{0, -1\}$

8. How many triangles of any size are there in this star?



- (a) 14
 (b) 20
 (c) 22
 (d) None of these

R e l i c A c a d e m y

9. Seven different lecturers are to deliver lectures in seven periods of a class on a particular day. X, Y and Z are three of the lectures. The number of ways in which a routine for the day can be made such that X delivers his lecture before Y and Y before Z, is:

- (a) 420
- (b) 120
- (c) 210
- (d) None of these.

10. Ramlal engaged the services of Shiva at a salary of Rs.240 a month consisting of 30 days. However, he set a condition that the would forfeit Rs.10 for each day that he idled. Shiva accepted the job. At the end of the month it was found that neither owed the other anything. For how many days Shiva worked?

- (a) 24 days
- (b) 20 days
- (c) 18 days
- (d) None of these.

11. In the figure, the regular hexagon and the equilateral triangle have the same perimeter. Find the ratio of the area of hexagon to the area of triangle.



- (a) 1
- (b) $\frac{1}{2}$
- (c) $\frac{3}{2}$
- (d) $\frac{2}{3}$

12. Of the three clocks, the time shown by one of them is wrongly 3 minutes, by 1 minute in the second and by 7 minutes in the third. The times shown by the three clocks not necessarily in the same order are six minutes to twelve, 2 minutes past twelve and 8 minutes to twelve. What is the correct time?

- (a) 12:00
- (b) 11:52
- (c) 11:55
- (d) 11:57.

13. In the sequence 1,2,2,3,3,3,4,4,4,4,....., where n consecutive terms have the value n, the 150th term is:

- (a) 17
- (b) 16
- (c) 18
- (d) None of these.

14. x and y are natural numbers such that $385x = y(y+1)$. Determine the least value of y.

- (a) 12
- (b) 25
- (c) 30
- (d) 55.

15. Which largest number will leave equal remainders when 2718, 3875 and 4486 are divided by it? And what is the common remainder?

- (a) 11, 1
- (b) 12, 6
- (c) 13, 1
- (d) 29, 21.

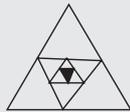
16. If x is positive, the first negative term in the expansion of $(1+X)^{27/5}$ is:

- (a) 5th term
- (b) 8th term
- (c) 6th term
- (d) 7th term

17. A glass contains some water. Another glass contains milk of the same volume of water in the first glass. Some water from the first glass is transferred to the second glass and the mixture is stirred well. Then the same quantity of mixture is transferred from second glass to the first glass. What is the quantity of milk in the first glass as compared to the quantity of water in second glass?

- (a) milk is greater than water.
- (b) water is greater than milk.
- (c) both are same.
- (d) It is impossible to determine

18. Every triangle in the accompanying figure is equilateral. If the area of the shaded equilateral is 1 sq. cm. What is the sum of the areas of all equilateral triangles in the figure?



- (a) 64 sq.cm
- (b) 148 sq.cm
- (c) 128 sq.cm
- (d) None of these

19. The function $f(\theta) = \frac{d}{d\theta} \int_0^\theta \frac{dx}{1 - \cos\theta \cos x}$, satisfies the differential equation:

- (a) $\frac{df}{d\theta} - 2f(\theta) \cot(\theta) = 0$
- (b) $\frac{df}{d\theta} + 2f(\theta) \cot(\theta) = 0$
- (c) $\frac{df}{d\theta} - 2f(\theta) = 0$
- (d) None of these.

20. Amit can do a piece of work in 12 days while Mandar does that work in 8 days only. Amit and Mandar start doing that piece of work together, but Mandar leaves the work and goes away after the first four days. In how many days will Amit complete the work?

- (a) 2 days
- (b) 3 days
- (c) 4 days
- (d) None of these.

21. A ray of light incident at the point (-2, -1) gets reflected from the tangent at (0, -1) to the circle $x^2 + y^2 = 1$. Then reflected ray touches the circle. The equation of the line along which the incident ray moved is:

- (a) $3x + 4y + 11 = 0$
- (b) $3x + 4y - 11 = 0$
- (c) $4x + 3y + 11 = 0$
- (d) $4x - 3y + 11 = 0$

22. Simplify

$$(ab^2 - cd^2)(c^2d^4 + ad^2.cb^2 + b^4a^2)$$

- (a) $a^4b^5 + c^3d^5 - a^2b^2c^2d^2$
- (b) $a^3b^6 - c^3d^6$
- (c) $a^2b^4cd^2 + ab^4c^4d^2 - ad^2c^4 + b^4ac^2d^2$
- (d) None of these.

23. The A.M. of n observations is M. If the sum of n-4 observations is a, then the mean of remaining 4 observations is:

- (a) $\frac{nM - a}{4}$
- (b) $\frac{nM + a}{4}$
- (c) $\frac{nM - a}{2}$
- (d) $nM + a$.

24. Read the following passage carefully and answer the question given below. The desire to explore and experiment, so essential to the scientific temperament, characterises America from its very beginning. But during its early history, America's contributions to the sciences were negligible. America did not have the social organisations, educational institutions, intellectual sophistication needed for mature scientific research. There were few men in the American colonies to compare with Europe's men of science. A shortage of labour was an incentive to invent, yet the inventions in Colonial America were neither many nor important. A lack of mechanical industry made America dependent upon handicrafts; yet colonial craftsmanship was far inferior to that of Europe. The trouble was Americans tended to be "Jacks-of-all-trades".

The connection between mechanised industry and cottage industry may be stated as the following.

- (a) Mechanised industry adversely affects the growth of cottage industry.
- (b) Mechanised industry encourages cottage industry.
- (c) Mechanised industry has no impact on the growth of cottage industry.
- (d) Mechanised industry suffers when cottage industry grows.

25. Choose the word which is most OPPOSITE in meaning.

UPHOLD

- (a) Lessen
- (b) Sharpen
- (c) Abandon
- (d) Weaken

Do Not Start Part B In First 60 Minutes

PART B - COMPUTER CONCEPTS

26. At compilation stage which of the following error message can be expected

- (a) Arithmetic overflow
- (b) Defined variable not used
- (c) Incomplete statement
- (d) Both (b) and (c)

27. Find the output of the following program

```
# include <stdio.h>
void main()
{ int *pi, i;
  pi = &i;
  for(i=0;i<10;++i)
  printf("%d\n", *pi);
}
```

- (a) 1 2 3 ... 10
- (b) 0 1 2 ... 9
- (c) Compilation error
- (d) Run time error

28. Divide Hexadecimal no- 58CDE by Octal no- 255 and give the answer in Decimal

- (a) 2100
- (b) 2103
- (c) 2101
- (d) 2102

29. Which gate gives output as 1 when only one of the input is 0

- (a) NAND
- (b) NOR
- (c) AND
- (d) Both (a) and (b)

30. Real time computing is possible because of the following characteristic of computer

- (a) High speed
- (b) Accuracy
- (c) Storage capacity
- (d) Automatic in execution

31. Floating numbers in a computer are represented using and 10 bit mantissa (including a sign bit) and 6 bit exponent (including a sign bit). What is the approximate value of the maximum number that can be represented? (Assume that mantissa is stored in normalized form)

- (a) 2^{128}
- (b) 2^{63}
- (c) 2^{127}
- (d) 2^{31}

32. Whenever the main memory is being accessed for reading/writing the minimum size of data transferred is

- (a) 1 byte
- (b) 4 bits
- (c) 16 bits
- (d) 1 word

33. Give the output of the following...

```
# include <stdio.h>
message ( )

{
    printf("Execution of the function");
    getch ( );
}
void main ( )
{
    message ( );
    message ( );
}
```

- (a) Execution of the function executes the function
- (b) Execution of the function will get printed infinite times
- (c) Compilation error
- (d) None of these

34. Which is the false statement?

- (a) The same variable names can used in different functions, without any conflict
- (b) Each return statement in a function may return a different value
- (c) A function can still be useful even if you don't pass any arguments
- (d) The variables commonly used in C functions are available to all functions in a program

35. What is/are true among the following?

- (a) 12,245 is a legal string constant in 'C'
- (b) The statement #define Yes 1 would replace all the occurrences of Yes without quotes in the program, by 1
- (c) In a program, the statement #include "filename", is replaced by the contents of the file "filename", before compilation
- (d) Both (b) and (c)

36. Debug the program.

```
void main ( )
{
    try (int x, y);
    printf("calling the function :");
    try ( );
}
```

- (a) Try function is not declared properly
- (b) Call to try requires two parameters
- (c) Call to printf is wrong
- (d) (a) and (b)

37. Most of the microcomputer's operating systems are called disk operating systems because

- (a) They are permanently memory resident
- (b) They are partly in primary memory and partly on disk
- (c) They are initially stored on disk
- (d) None of these

38. The largest integer in two's complement form of the four alternative is

- (a) 111111
- (b) 100000
- (c) 100001
- (d) 000001

39. Which of the following is not true of punched cards as data-entry media?

- (a) They can be used as turn-around documents
- (b) They are inexpensive
- (c) Input is slow compared with other media
- (d) They are easily damaged

40. Which of the following is the most appropriate unit for measuring the storage capacity of a hard disk?

- (a) byte
- (b) megabyte
- (c) bit
- (d) terabyte

41. During execution of a program the instruction control must do the following to the instructions in a correct order.

- (A) Initiate the control functions in the central processing unit
- (B) Fetch them from main memory.
- (C) Convert them into the corresponding control signals
- (D) Decode them

- (a) B, D, C, A
- (b) A, B, C, D
- (c) A, B, D, C
- (d) B, D, A, C

42. The hamming code is used in the digital computer to

- (a) detect error
- (b) correct error
- (c) either detect or correct the error
- (d) Both detect or correct error

43. The basic instruction that can be interpreted by a computer generally has

- (a) an instruction register and an address register
- (b) a decoder and an accumulator
- (c) an operand and an address
- (d) all of the above

44. Pick up the wrong statement

- (a) a program that operates a computer to initiate another computer is called Emulator Program.
- (b) a Supervisor program that controls the traffic within the computer system is called Executive Program.
- (c) an executive program to control traffic within the computer system is called Supervisor program.
- (d) a program written to operate a CPU manually is called Manual program.

45. An instruction is selected by the register, read into the Register, and interpreted by the

- (a) sequence, instruction, decoder
- (b) sequence, accumulator, decoder
- (c) decoder, sequence, instruction
- (d) instruction, sequence, decoder

46. Which of the binary subtraction is incorrect?

- (a) $11011.01 - 1001.11 = 1001.11$
- (b) $11001.1 - 1011.01 = 1110.1$
- (c) $11000101 - 1000101 = 10000000$
- (d) $10.1011 - 0.1101 = 1.1110$

SOLUTIONS

47. Suppose a system has been evolved, called the ternary system, by creatures having only 3 fingers. Numbers in this system are written down, using the digits 0, 1, and 2, with $2 > 1 > 0$. What will be the binary equivalent of 222 in this system?

- (a) 101010
- (b) 11000
- (c) 10110
- (d) 11010

48. Real Time systems

- (a) are effective in process control
- (b) process transactions by means of direct access devices.
- (c) process data in a manner similar to batch processing systems
- (d) corresponds to fifth generation computers

49. In a full adder

- (1) The sum is 1 when there are an odd number of 1's input.
- (2) The sum is 1 when there are an even number of 1's input.
- (3) The carry is 1 when there are an odd number of 1's input.
- (4) The carry is 1 when there are an even number of 1's input.

50. ASCII stands for American Standard Code for Information Interchange. If the English alphabet "M" is equivalent to binary "1001101" What is the binary equivalent of English alphabet "P"?

- (a) 80
- (b) 1010000
- (c) 1010001
- (d) 1010010

Part - A (General Aptitude)		Part - B (Computer Concepts)	
Question No.	Answer	Question No.	Answer
1	b	26	d
2	c	27	b
3	c	28	d
4	a	29	a
5	c	30	a
6	b	31	b
7	a	32	a
8	b	33	a
9	d	34	d
10	d	35	d
11	c	36	d
12	c	37	c
13	a	38	d
14	d	39	b
15	c	40	b
16	b	41	a
17	c	42	a
18	b	43	c
19	b	44	d
20	a	45	a
21	c	46	a
22	b	47	d
23	a	48	a
24	a	49	a
25	d	50	b