



SAMPLE PAPER

International Olympiad Foundation

EXCELLENCE IN EDUCATION
International Olympiad Foundation

14+

OLYMPIADS

MCQ

FORMAT

0

NEGATIVE MARKS

OLYMPIAD

Cyber Olympiad

International Olympiad Foundation (IOF) · www.iof.education

CLASS / GRADE

Class 12

SUBJECT

IFCO

DURATION

60 Min

MAX MARKS

50

GENERAL INSTRUCTIONS

- All questions are Multiple Choice Questions (MCQs) with options A, B, C, D, E
- Each correct answer carries 1 mark. No negative marking for wrong answers.
- Rough work should be done separately. Do not write on question paper.

PAPER HIGHLIGHTS

• **Multiple Choice Questions (MCQ)**

Five options per question (A, B, C, D, E). Select the single most appropriate answer.

• **No Negative Marking**

1 mark per correct answer. Zero deductions — attempt every question.

• **Conducted by IOF**

International Olympiad Foundation — fostering excellence among students across India.

SUBJECTS

- Cyber English Entrepreneurship Mathematics Commerce Economics GK & Current Affairs Science Western Music
Sanskrit Indian Music Hindi Reasoning & Aptitude Spell Talent

ALL IOF OLYMPIAD PROGRAMMES

| | | | | | | |
|---|---|---|--|---|--|---|
| IFCO International Foundation Cyber Olympiad | IFEOL International Foundation English Olympiad | IFEnO International Foundation Entrepreneurship Olympiad | IFMO International Foundation Mathematics Olympiad | ICS Institute of Company Secretaries of India Commerce Olympiad | IFEcO International Foundation Economics Olympiad | IFGCO International Foundation General Knowledge & Current Affairs Olympiad |
| IFSO International Foundation Science Olympiad | IFWMuO International Foundation Western Music Olympiad | IFSaO International Foundation Sanskrit Olympiad | IFIMuO International Foundation Indian Music Olympiad | IFHO International Foundation Hindi Olympiad | IFRAO International Foundation Reasoning & Aptitude Olympiad | IFSTO International Foundation Spell Talent Olympiad |

Q1. Complete the series

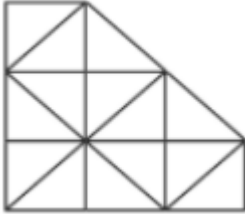
[+1]
[-0]

AYBZC, DWEXF, GUHVI, JSKTL, (?)

- A. MQORN
- B. QMONR
- C. MQNRO
- D. NQMOR
- E. None of the option is correct

Q2. What is the total number of squares in the given diagram?

[+1]
[-0]



- A. 9
- B. 10
- C. 12
- D. 14
- E. None of the option is correct

Q3. Select the option in which the numbers share the same relationship as that shared by the given pair of numbers.

[+1]
[-0]

145 : 158

- A. 187 : 201
- B. 150 : 162
- C. 190 : 204
- D. 122 : 135
- E. None of the option is correct

Q4. What will come in place of X ?

[+1]
[-0]

9, 27, 31, 155, 161, 1127, (X)

- A. 1135
- B. 1288
- C. 2254
- D. 316
- E. None of the option is correct

- Q5.** Refer to the following number and symbol series and answer the question that follows. Counting to be done from left to right only.

[+1]
[-0]

(Left) $9^{\wedge} \$ 4 2 @ \% 3 6 < 1 \Omega \equiv 5 7 * 8 \&$ (Right)

If all the symbols are dropped from the series, which of the following will be the fourth from the right?

- A. 5
 - B. 7
 - C. 1
 - D. 6
 - E. None of the option is correct
- Q6.** In a certain code language,

[+1]
[-0]

'A + B' means 'A is the sister of B',
'A - B' means 'A is the brother of B',
'A × B' means 'A is the wife of B' and
'A ÷ B' means 'A is the father of B'.
How is W related to Y if 'W + E ÷ R × T - Y'?

- A. Brother's wife's father's sister
 - B. Brother's wife's mother's mother
 - C. Brother's wife's father's mother
 - D. Brother's wife's mother's sister
 - E. None of the option is correct
- Q7.** In a code language, if RAFT is written as 180 and DON is written as 99, then how will SHOWER be written in the same language ?

[+1]
[-0]

- A. 428
- B. 448
- C. 528
- D. 225
- E. None of the option is correct

- Q8.** Mr. Oli starts from Point A and drives 19 km towards the south. He then takes a left turn, drives 6 km, turns left and drives 29 km. He then takes a left turn and drives 23 km. He takes a final left turn, drives 10 km and stops at Point P. How far (shortest distance) and towards which direction should he drive in order to reach Point A again? (All turns are 90° turns only unless specified.)

[+1]
[-0]

- A. 16 km to the west
- B. 17 km to the south
- C. 17 km to the east
- D. 16 km to the north
- E. None of the option is correct

Q9. Seven people, A, B, G, H, O, P and S, are sitting around a circular table facing the centre. O sits fourth to the left of B. Only two people sit between P and A, when counted from the left of P. S sits third to the left of H. G is an immediate neighbour of H and A. Who sits third to the right of G?

[+1]
[-0]

- A. B
- B. A
- C. S
- D. P
- E. None of the option is correct

Q10. In a certain code RELATED is written as EFUBKDQ. How is RETAINS written in that code ?

[+1]
[-0]

- A. SDQBTOJ
- B. JOTBBQD
- C. JOTBS0Q
- D. TOJBSDQ
- E. None of the option is correct

Q11. From the given answer figures, select the one in which the question figure is hidden / embedded.

[+1]
[-0]

Question Figure



Answer Figures



(a) (b) (c) (d)

- A. (b)
- B. (c)
- C. (d)
- D. (a)
- E. None of the option is correct

Q12. Take the given statements as true and decide which of the conclusion logically follows from the statements.

[+1]
[-0]

Statements

Some teachers are students
All students are girls

Conclusions

- I. All teachers are girls
- II. Some girls are teachers
- III. Some girls are students
- IV. All students are teachers

- A. Only (I) follows
- B. Only (I), (II), and (III) follow
- C. Only (II) and (III) follow
- D. All Follows
- E. None of the option is correct

Q13. In a certain code language the value of IND is 92 and that of NEP is 304. What will be the value of USA in that code language?

[+1]
[-0]

- A. 252
- B. 40
- C. 420
- D. 20
- E. None of the option is correct

Q14. Study the Venn Diagram which show different status of youth in a village. find how many youths are educated but poor?

[+1]
[-0]



- A. 10
- B. 3
- C. 14
- D. 20
- E. None of the option is correct

- Q15.** It was Sunday on Jan 2, 2006, what was the day of the week on Jan 1, 2010 ? [+1]
[-0]
- A. Sunday
 - B. Thursday
 - C. Friday
 - D. Saturday
 - E. None of the option is correct
- Q16.** Which organization developed the SQL programming language? [+1]
[-0]
- A. Microsoft
 - B. IBM
 - C. Oracle
 - D. Google
 - E. None of the option is correct
- Q17.** Why is the hexadecimal number system often used in computing? [+1]
[-0]
- A. It is easier for humans to read than binary
 - B. It has a smaller base than binary
 - C. It is faster for computers to process
 - D. It uses fewer digits than decimal
 - E. None of the option is correct
- Q18.** Which organization developed the Summit supercomputer? [+1]
[-0]
- A. Microsoft
 - B. Google
 - C. IBM
 - D. Intel
 - E. None of the option is correct
- Q19.** Global variable are created in: [+1]
[-0]
- A. ROM
 - B. RAM
 - C. Hard Disk
 - D. Cache
 - E. None of the option is correct
- Q20.** When a function is called in a program, which of the following steps takes place ? [+1]
[-0]
- A. Control transfers to the called function
 - B. All statements in the function body are executed
 - C. The control returns back to the calling funciton
 - D. All of the above
 - E. None of the option is correct

Q21. What is the output of the code shown below?

[+1]
[-0]

```
A = [[1, 2, 3], [4, 5, 6], [7, 8, 9]]  
print([A[i][i] for i in range(len(A))])
```

- A. [1, 5, 9]
- B. [3, 5, 7]
- C. [4, 5, 6]
- D. [2, 5, 8]
- E. None of the option is correct

Q22. Which of the following best defines Machine Learning?

[+1]
[-0]

- A. The process of explicitly programming computers to perform specific tasks.
- B. The study of computer algorithms that improve automatically through experience.
- C. The use of computers to simulate human intelligence.
- D. The science of collecting, organizing, and analyzing large sets of data.
- E. None of the option is correct

Q23. What is General Artificial Intelligence (AGI)?

[+1]
[-0]

- A. An AI system with human-level intelligence across a wide range of domains
- B. An AI system that can learn from small amounts of data
- C. An AI system designed to perform a specific task
- D. An AI system that can explain its reasoning and decisions
- E. None of the option is correct

Q24. What is the primary purpose of an index in a database?

[+1]
[-0]

- A. To enforce data integrity
- B. To speed up data retrieval
- C. To reduce data redundancy
- D. To define relationships between tables
- E. None of the option is correct

Q25. What is the difference between DELETE and TRUNCATE statements in SQL?

[+1]
[-0]

- A. DELETE removes rows based on a condition, while TRUNCATE removes all rows from a table.
- B. TRUNCATE is faster than DELETE.
- C. TRUNCATE cannot be rolled back, while DELETE can.
- D. All of the above.
- E. None of the option is correct

Q26. What is the main difference between a DoS and a DDoS attack?

[+1]
[-0]

- A. A DoS attack uses a single source, while a DDoS attack uses multiple sources.
- B. A DoS attack is more powerful than a DDoS attack.
- C. A DoS attack targets websites, while a DDoS attack targets networks.
- D. There is no difference between a DoS and a DDoS attack.
- E. None of the option is correct

- Q27.** What does rendering mean in the context of multimedia graphics? [+1]
[-0]
- A. Compressing an image
 - B. Converting 3D models into 2D images
 - C. Editing text in image
 - D. Resizing a video
 - E. None of the option is correct
- Q28.** Which programming language is widely used for developing Android applications? [+1]
[-0]
- A. Python
 - B. Java
 - C. C++
 - D. Swift
 - E. None of the option is correct
- Q29.** What will be the output of the following Python code? [+1]
[-0]
- ```
def modify_list(lst):
 lst.append(4)
 lst = [5, 6, 7]
 return lst

my_list = [1, 2, 3]
result = modify_list(my_list)
print(my_list, result)
```
- A. [1, 2, 3, 4] [5, 6, 7]
  - B. [1, 2, 3] [5, 6, 7]
  - C. [1, 2, 3, 4] [1, 2, 3, 4]
  - D. [5, 6, 7] [5, 6, 7]
  - E. None of the option is correct
- Q30.** An element with position: absolute; z-index: -1 is placed inside a div that has transform: scale(1.1). What happens to the absolute child's stacking behavior ? [+1]  
[-0]
- A. It remains behind its parent as expected .
  - B. It is now in a new stacking context and may appear on top of everything .
  - C. It creates a new stacking context but still respects the negative z-index .
  - D. The negative z-index is ignored completely .
  - E. None of the option is correct
- Q31.** \_\_\_\_\_ is a virtual table that draws its data from the result of an SQL SELECT statement . [+1]  
[-0]
- A. View
  - B. Synonym
  - C. Sequence
  - D. Transaction
  - E. None of the option is correct

- Q32.** In data structures, which principle is followed by queue ? [+1]  
[-0]
- A. Last In, First Out (LIFO)
  - B. First In, First Out (FIFO)
  - C. Random Access
  - D. Hierarchical order
  - E. None of the option is correct
- Q33.** Which of the following best describes the relationship between the Internet and World Wide Web (WWW)? [+1]  
[-0]
- A. The Internet and WWW are the same thing.
  - B. WWW is a regional subset of the Internet.
  - C. The Internet is a collection of websites, while WWW is the technology that enables data transfer over the Internet.
  - D. The Internet is a global network infrastructure, while WWW is a system of interlinked hypertext documents accessed via the Internet.
  - E. None of the option is correct
- Q34.** Which protocol is responsible for error reporting and network diagnostics in IP networks? [+1]  
[-0]
- A. ICMP
  - B. UDP
  - C. TCP
  - D. IGMP
  - E. None of the option is correct
- Q35.** How do MAC addresses and IP addresses interact in a network? [+1]  
[-0]
- A. MAC addresses replace IP addresses for all communication
  - B. IP addresses are used for routing between networks, while MAC addresses handle local device communication
  - C. Both are used interchangeably without any difference
  - D. MAC addresses are only used in wireless networks, while IP addresses are used in wired networks
  - E. None of the option is correct
- Q36.** Given a CSV file with columns Name, Age, and Score, what Python code will calculate the average score? [+1]  
[-0]
- A. `df['Score'].mean()`
  - B. `df.mean('Score')`
  - C. `df['Score'].average()`
  - D. `df.sum('Score') / len(df)`
  - A. A
  - B. B
  - C. C
  - D. D
  - E. None of the option is correct

**Q37.** What is the purpose of the `__init__` method in a Python class?

[+1]  
[-0]

- A. To delete an object
- B. To initialize object attributes when an object is created
- C. To define a new class
- D. To call a superclass method
- E. None of the option is correct

**Q38.** A file is opened in binary mode with `f = open("data.txt", "rb")`. If `f.tell()` returns 5 after reading some data, what does this indicate?

[+1]  
[-0]

- A. The file pointer is at byte position 5
- B. 5 characters have been written
- C. The file size is 5 bytes
- D. The file has 5 lines
- E. None of the option is correct

**Q39.** In Python What will be the output of the following ?

[+1]  
[-0]

```
text = ["hi", "hello", "hey"]
result = [x.upper() for x in text if len(x) > 2]
print(result)
```

- A. ['HELLO']
- B. ['HI', 'HEY']
- C. ['HI', 'HELLO', 'HEY']
- D. ['HELLO', 'HEY']
- E. None of the option is correct

**Q40.** Which of the following statements correctly distinguishes binary files from CSV files?

[+1]  
[-0]

- A. Binary files use delimiters like commas, while CSV files store raw bytes
- B. CSV files are processed faster than binary files due to their text format
- C. Binary files preserve the data type and structure, while CSV files require parsing to interpret data types
- D. Both file types require the CSV module for reading and writing
- E. None of the option is correct

**Q41.** In a network with both static and dynamic IP assignments, what is a key advantage of using DHCP for dynamic IPs?

[+1]  
[-0]

- A. It requires manual configuration for each device
- B. It reduces the risk of IP address conflicts
- C. It increases the need for physical hardware
- D. It limits the number of devices on the network
- E. None of the option is correct

Q42. Choose the correct option.

[+1]  
[-0]

**Assertion (A):** In Python, tuples are faster than lists for iteration.

**Reason (R):** Tuples are immutable, which allows Python to optimize their memory usage.

- A. Both A and R are true, and R is the correct explanation of A.
- B. Both A and R are true, but R is not the correct explanation of A.
- C. A is true, but R is false.
- D. A is false, but R is true.
- E. None of the option is correct

Q43. In a Pandas DataFrame, which attribute is used to get the number of rows and columns as a tuple?

[+1]  
[-0]

- A. .axes
- B. .size
- C. .shape
- D. Ndim
- E. None of the option is correct

Q44. Scenario: Karan is writing a tuple tup2 = (100, 200) and a list lst = [300, 400] to a binary file mixed.bin. Consider the code:

[+1]  
[-0]

```
import pickle
tup2 = (100, 200)
lst = [300, 400]
file = open("mixed.bin", "wb")
_____ #Statement 1
file.close()
```

Identify the missing code in Statement 1 to write both objects:

- A. pickle.dump(tup2, lst, file)
- B. pickle.dump(tup2, file); pickle.dump(lst, file)
- C. pickle.load(tup2, lst, file)
- D. file.write(tup2, lst)
- E. None of the option is correct

Q45. What is the primary characteristic of a **series** in the Pandas library?

[+1]  
[-0]

- A. It is a one-dimensional, mutable array-like object with an index.
- B. It is a two-dimensional, mutable data structure with labeled axes.
- C. It is a one-dimensional, immutable data structure with an index.
- D. It is a two-dimensional, immutable data structure with an index.
- E. None of the option is correct

**Q46.** What will be the output of given python code ?

[+1]  
[-0]

```
my_dict = {'a': 1, 'b': 2}
```

```
def modify_dict():
 my_dict={}
 my_dict['c']=3
 my_dict={'d': 4}
```

```
modify_dict()
print(my_dict)
```

- A. {'d': 4}
- B. {'a': 1, 'b': 2}
- C. Error
- D. {'a': 1, 'b': 2, 'c': 3, 'd': 4}
- E. None of the option is correct

**Q47.** After performing an `INSERT` or `UPDATE` operation, which method should be called on the connection object to save the changes permanently to the database?

[+1]  
[-0]

- A. commit()
- B. execute()
- C. save()
- D. rollback()
- E. None of the option is correct

**Q48.** What will be the outcome of python code given below:

[+1]  
[-0]

```
print(True or not 'IFCO' and not True and '0')
```

- A. '0'
- B. False
- C. IFCO
- D. True
- E. None of the option is correct

**Q49.** Suppose text File example.txt contain following line Python is fun!

[+1]  
[-0]

find the output produced by following code fragment?

```
f = open('example.txt', 'r')
s1 = f.read(7)
s2 = f.readline()
print(s1)
print(s2)
f.close()
```

- A. Python
- B. Python is fun!
- C. Python is fun!
- D. Python is fun!
- E. None of the option is correct

**Q50.** Predict the output of the following code .

[+1]  
[-0]

```
import random
signal= ['RED', 'YELLOW', 'GREEN']
for k in range (2, 0, -1):
 R=random.randrange(k)
 print(signal[R],end='#')
```

- A. RED # GREEN #
- B. YELLOW # RED #
- C. GREEN # RED #
- D. YELLOW # GREEN #
- E. None of the option is correct

CLASS / GRADE  
**Class 12**SUBJECT  
**IFCO**TOTAL QUESTIONS  
**50**MAX MARKS  
**50**

## ANSWER SHEET — 50 QUESTIONS

| Q01-Q10 | ANS | Q11-Q20 | ANS | Q21-Q30 | ANS | Q31-Q40 | ANS | Q41-Q50 | ANS |
|---------|-----|---------|-----|---------|-----|---------|-----|---------|-----|
| Q01     | C   | Q11     | A   | Q21     | A   | Q31     | A   | Q41     | B   |
| Q02     | A   | Q12     | C   | Q22     | B   | Q32     | B   | Q42     | A   |
| Q03     | D   | Q13     | B   | Q23     | A   | Q33     | D   | Q43     | C   |
| Q04     | A   | Q14     | C   | Q24     | B   | Q34     | A   | Q44     | B   |
| Q05     | C   | Q15     | B   | Q25     | D   | Q35     | B   | Q45     | A   |
| Q06     | A   | Q16     | B   | Q26     | A   | Q36     | A   | Q46     | B   |
| Q07     | C   | Q17     | A   | Q27     | B   | Q37     | B   | Q47     | A   |
| Q08     | C   | Q18     | C   | Q28     | B   | Q38     | A   | Q48     | D   |
| Q09     | C   | Q19     | B   | Q29     | A   | Q39     | D   | Q49     | D   |
| Q10     | D   | Q20     | D   | Q30     | B   | Q40     | C   | Q50     | B   |

## ◆ ALL IOF OLYMPIAD PROGRAMMES ◆

