



Estd. 1861

BOYS' HIGH SCHOOL AND COLLEGE

FIRST TERM EXAMINATION (2025-26)

CLASS - IX

ROBOTICS AND ARTIFICIAL INTELLIGENCE

TIME: 2HRS

MM:100

This paper is divided into two sections. Attempt all questions from Section A and any four questions from Section B.

SECTION A

(Attempt all questions from this section)

Question 1:

[20]

Choose the correct answer and write the correct option:

- (i) Robot is derived from the Czech word

(a) Robota	(c) Ribota
(b) Rabota	(d) Rebota
- (ii) What is printed by the following statements:
`S = "python IDLE"`
`print(s[5:10:2])`

(a) nIL	(c) n ID
(b) on ID	(d) DLE
- (iii) Aircraft that uses the principle of aerodynamics

(a) Gliders	(c) Quadcopters
(b) ROVs	(d) Teleoperated Robots
- (iv) _____ is an Indian, small, self-flying UAV used for surveillance and reconnaissance missions.

(a) Netra	(c) Daksh
(b) Cozmo	(d) Nishant
- (v) Which of the following is not a feature of mobile robots

(a) High Accuracy	(c) Stationary operation
(b) Ability to learn on their own	(d) High Speed
- (vi) What type of loop is used when you know how many times you want to repeat something?

(a) WHILE Loop	(c) IF Block
(b) ELSE Block	(d) FOR Loop
- (vii) _____ is the first robot to use Artificial Intelligence.

(a) Sophia	(c) ASIMO
(b) Unimate	(d) Shakey
- (viii) How a function is declared in Python?

(a) <code>def function_name():</code>	(c) <code>declare function_name():</code>
(b) <code>def function function_name():</code>	(d) <code>function_name()</code>
- (ix) Which escape sequence is used to insert a new line?

(a) <code>/n</code>	(c) <code>\t</code>
(b) <code>\\n</code>	(d) <code>\n</code>
- (x) Which among the following was the first Industrial Robot?

(a) Elektro	(c) Shakey
(b) Unimate	(d) WABOT-1
- (xi) Emotech Olly comes under which category of robots?

(a) Industrial Robots	(c) Entertainment Robots
(b) Medical Robots	(d) Agricultural Robots
- (xii) Which arithmetic operator cannot be used with strings?

(a) +	(c) -
(b) *	(d) All of the mentioned
- (xiii) The _____ acts as the brain of the robot, directing its movement and behavior.

(a) Sensor	(c) Actuator
(b) Controller	(d) Power Source
- (xiv) What is the output of the below program?

```
def min(a, b):
    if a<b:
        print (a, "is minimum")
    elif a==b:
        print (a,"is equal to",b)
```

else:

print(b,"is minimum")

print(min(9,11))

(a) 9

(c) 11 is minimum

(b) 9 is minimum

(d) Error

(xv) Explicit type conversion is also called _____.

(a) Typecasting

(c) Typecast

(b) Down cast

(d) Up cast

(xvi) _____ robotic locomotion is about learning concepts from nature and applying them to the design of real-world engineering systems.

(a) Aerial Robots

(c) Wheeled Robots

(b) Legged Robots

(d) Bio-inspired Robots

(xvii) What is the answer to this expression 40 % 6?

(a) 1

(c) 2

(b) 4

(d) 3

(xviii) Which of the following are identity operators?

(a) in , not in

(c) and, or, not

(b) is, is not

(d) >>, <<, ==, >, <

(xix) Laws of Robotics were proposed by

(a) George Devol

(c) Isaac Asimov

(b) Karel Capek

(d) Joseph Engelberger

(xx) What is the value of result in the following code

a = 10

b = 20

c = [10,30,50]

result = (a<b) and (a in c) or (a is not b) and (b not in c)

print(result)

(a) True

(c) False

(b) None

(d) Error

Question 2:

(i) What is cybernetics, who introduced it and in which year?

[02]

(ii) What are the characteristics of robots?

[02]

(iii) What are identifiers and keywords?

[02]

(iv) What are the laws of Robotics?

[02]

(v) What are the design aspects of aerial robots?

[02]

(vi) What is the type of ABB YuMi. Describe?

[02]

(vii) Identify the errors in the following codes:

[02]

(a) i=1

while i<=5

print("Hello")

i+=1

(b) for i in range[1,4]:

print(i)

(viii) What are domestic and defence robots. Give two examples of each?

[02]

(ix) Write the code to print five-row right angled triangle using while loop?

[02]

(x) Classify the robots based on mode of control in short?

[02]

SECTION B

(Answer any four questions from this section)

Question 3: Evaluate the following Python expressions and write the output:

[15]

a) a = 7

b = [5,6,7]

print(a in b and a != 6)

b) print(10 > 5 + 2 and 4 * 2 == 8)

c) print((4 + 3) * 2 == 12 and 5 is 5.0)

d) a=5

b=3

print(a>b and a != b)

e) print((10-3) * 2 == 14 or 5 is not 5)

Question 4: Write a python program that prints the following patterns

a) using a while loop:

[08]

* * * * *

* * * *

* * *

* * 2

* 1

b) Print this pattern using for loop

[07]

* * * * *

* * * *

* * *

* *

*

Question 5: Write a Python program that:

[15]

a) Takes a number from the user.

b) Checks and prints whether it is:

i. Even or Odd

ii. Positive or negative

iii. Divisible by 3 and 5 or not

Question 6: Write a Python program that:

[15]

a) Asks the user to enter a password.

b) If the password is "python123", print "Access Granted".

c) Otherwise, print "Wrong Password" and ask again(maximum 3 attempts using while loop).

Question 7: Write a Python program that:

a) Table Printer

[07]

i. Ask the user to enter a number

ii. Prints the multiplication table of that number up to 10 using a for loop.

b) Write a python program using while loop to print the following pattern:

[08]

1 2 3 4 5

1 2 3 4

1 2 3

1 2

1

Question 8: Write a Python program that:

a) Savings Analyzer

[07]

i. Takes monthly income and expenditure from the user.

ii. Calculate savings (savings = income – expenditure)

iii. If savings > ₹5000, print "Smart Saver"

If savings between ₹1000-5000, print "Tight but Tidy"

If savings < ₹1000, print "High Spending Alert"

b) Write a python program using functions to calculate the Curved Surface Area (CSA) and Total Surface Area (TSA) of a Cylinder.

[08]

i. Define two separate functions for CSA and TSA

ii. Accept radius and height as inputs from the user.

iii. Calculate both functions and display the result

iv. Use the formula:

$CSA = 2\pi rh$

$TSA = 2\pi r(r + h)$

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