



Dezyne École College
Bachelor of Computer Application (B.C.A.)
Third Year-5th Semester
Subject - Python

Set 1

Section A (2 Marks × 10 = 20 Marks)

1. Define **keywords and identifiers** in Python with examples.
2. Explain **indentation** and its importance in Python.
3. What is **dynamic typing**? Give an example.
4. Differentiate between **mutable and immutable data types**.
5. Explain **comparison operators** with examples.
6. What is the use of the **range() function**?
7. Define **string formatting** with an example.
8. What is a **list**? How is it different from a tuple?
9. Explain the **add() and remove() methods in sets**.
10. What is a **dictionary**? How are keys accessed?

Section B (10 Marks × 10 = 100 Marks)

1. Explain Python basic syntax including **keywords, identifiers, indentation, and input/output functions** with examples.
2. Discuss all **types of operators in Python** with suitable programs.
3. Explain **control statements** (if, if-else, nested if, loops) with examples.
4. Describe **array operations**: creation, insertion, deletion, searching, and updating.
5. Explain **string operations and built-in functions** with examples.
6. Discuss **list operations and methods**, including stack and queue implementation.
7. Explain **set operations** such as union, intersection, and difference with examples.
8. Describe **dictionary methods**, looping, and nested dictionaries.
9. Explain **functions in Python**, including types of arguments and recursion.
10. Write a detailed note on **file handling in Python** with examples.

Python Programming Language – Question Paper Set 2

Section A (2 Marks × 10 = 20 Marks)

1. Define **variables in Python**.
2. What are **logical operators**? Give examples.
3. Explain **identity operators**.
4. What is the use of **break and continue statements**?
5. What is **string slicing**?
6. Define **tuple and its immutability**.
7. What is a **regular expression**?
8. Explain **set difference operation**.
9. What are **global and local variables**?
10. What is an **exception in Python**?

Section B (10 Marks × 10 = 100 Marks)

1. Explain **Python data types** and built-in conversion methods.
2. Discuss all **looping statements** with examples including nested loops.
3. Explain **string methods** such as upper(), lower(), find(), count().
4. Describe **list manipulation techniques** with examples.
5. Explain **tuple operations and their use cases**.
6. Discuss **set methods and operations** with real-life examples.
7. Explain **dictionary operations** including update, delete, and traversal.
8. Write a detailed note on **modules and packages in Python**.
9. Explain **exception handling mechanisms** with try, except, finally.
10. Discuss **file input-output operations** with examples.

Python Programming Language – Question Paper Set 3

Section A (2 Marks × 10 = 20 Marks)

1. What is **input()** and **print()** function?
2. Define **membership operators** with examples.
3. What is **nested if statement**?
4. What is **loop control statement (pass)**?
5. What is **string concatenation**?
6. Explain **append()** and **insert()** in lists.
7. What is **set union operation**?
8. Define **nested dictionary**.
9. What is a **lambda function**?
10. What is **file mode in Python**?

Section B (10 Marks × 10 = 100 Marks)

1. Explain **Python syntax and variable handling** with examples.
2. Discuss **all categories of operators** in detail.
3. Explain **decision-making statements and loops** with flow-based examples.
4. Describe **array handling and operations in Python**.
5. Explain **string manipulation techniques** with programs.
6. Discuss **list and tuple operations** including indexing and slicing.
7. Explain **set theory operations** with Python examples.
8. Describe **dictionary structure and nested dictionaries** with examples.
9. Explain **functions including lambda and recursion**.
10. Write a detailed note on **file handling and exception handling together** with examples.



Dezyne École College
Bachelor of Computer Application (B.C.A.)
Third Year-5th Semester
Subject – Internet Of Things

Section A (2 Marks Each)

1. Define Internet of Things (IoT).
2. What is an IoT sensor node?
3. Differentiate between Edge computing and Cloud computing.
4. What is MQTT?
5. Define Publish–Subscribe model.
6. What is CoAP protocol?
7. Name any two wireless technologies used in IoT.
8. What is Big Data in IoT context?
9. What is lightweight cryptography?
10. Define Smart City in IoT.

Section B (10 Marks Each)

1. Explain IoT architecture with a neat diagram.
2. Discuss MQTT protocol and its working with broker architecture.
3. Compare HTTP, MQTT and CoAP protocols in IoT.
4. Explain IoT communication patterns with examples.
5. Compare wireless technologies: Zigbee, WiFi, BLE and LoRa.
6. Explain the role of Cloud Computing in IoT.
7. Discuss Big Data analytics and Hadoop in IoT.
8. Explain IoT security challenges and need for encryption.
9. Describe IoT-A Trust Model with threat analysis.
10. Explain IoT applications in Smart Cities with case study.

Internet Of Things – Question Paper Set 2

Section A (2 Marks Each)

1. List components of IoT infrastructure.
2. What is a single board computer?
3. Define UDP in IoT.
4. What is an MQTT broker?
5. Define XMPP protocol.
6. What is 6LoWPAN?
7. Define IoT communication pattern.
8. What is cloud dashboard?
9. What is IoT security?
10. Define Industry 4.0.

Section B (10 Marks Each)

1. Explain characteristics of IoT sensor nodes.
2. Describe Edge computing, Cloud computing and Peripheral cloud.
3. Explain Publish–Subscribe model in MQTT with diagram.
4. Discuss IoT protocol architecture and its layers.
5. Explain selection criteria for IoT wireless technologies.
6. Discuss commercial cloud platforms and their features.
7. Explain open-source IoT platforms with examples.
8. Discuss encryption techniques used in IoT security.
9. Explain Cloud security issues in IoT.
10. Write a detailed note on Industrial IoT and Industry 4.0.

Internet Of Things – Question Paper Set 3

Section A (2 Marks Each)

1. Define IoT ecosystem.
2. What is Arduino?
3. What is HTTP protocol?
4. Define gateway protocols.
5. What is NFC?
6. Define LoRa technology.
7. What is Hadoop?
8. What is M2M communication?
9. Define Web of Things (WoT).
10. What are IoT standards?

Section B (10 Marks Each)

1. Explain IoT infrastructure with real-world examples.
2. Compare TCP and UDP protocols in IoT.
3. Explain CoAP protocol and its features.
4. Discuss different IoT communication technologies.
5. Compare BLE, Zigbee, WiFi and NFC.
6. Explain evolution of Cloud Computing in IoT.
7. Discuss role of Big Data analytics in IoT applications.
8. Explain lightweight cryptography and its importance in IoT.
9. Discuss IoT applications in Healthcare and Agriculture.
10. Differentiate between M2M, IoT and Web of Things.



Dezyne École College
Bachelor of Computer Application (B.C.A.)
Second Year-5th Semester
Computer Graphics

Computer Graphics SET – 1

Section A (2 Marks × 10 = 20 Marks)

1. Define Interactive Graphics.
2. What is Passive Graphics?
3. State any two advantages of Interactive Graphics.
4. What is DDA algorithm used for?
5. Define Bresenham's Line Algorithm.
6. What is clipping in computer graphics?
7. Define Translation in 2D transformation.
8. What is Scaling?
9. Define Parallel Projection.
10. What is Perspective Projection?

Section B (10 Marks × 10 = 100 Marks)

1. Explain DDA Line Drawing Algorithm with example.
2. Using Bresenham's line algorithm, draw a line from (2, 3) to (10, 8). Show all steps and decision parameters.
3. Apply Cohen-Sutherland line clipping for a line from (-5, 5) to (15, 15) with clipping window (0, 0) to (10, 10). Show region codes and final line. Explain Circle Generating Algorithm with suitable example.
4. Explain 2D transformations with matrix representation
5. Perform composite transformation:
First translate (2,3), then rotate 90°. Find final coordinates of point (1,1).
6. Derive and explain General Pivot Point Rotation.
7. Explain Reflection and Shearing with examples.
8. Explain Parallel and Perspective Projection with diagrams.
9. A point (2,3,4) is scaled by factors (2,2,2). Find the new coordinates.
10. Explain composite 3D transformations and transformation functions.

Computer Graphics Question Paper Set – 2

Section A (2 Marks × 10 = 20 Marks)

1. Define application of computer graphics.
2. What is a line in computer graphics?
3. Define Circle Drawing Algorithm.
4. What is Point Clipping?
5. Define Rotation.
6. What is Composite Transformation?
7. Define Shearing.
8. What is Affine Transformation?
9. Define 3D Transformation.
10. What is Projection?

Section B (10 Marks × 10 = 100 Marks)

1. Compare DDA and Bresenham's Line Algorithms.
2. Explain Bresenham's Circle Drawing Algorithm with example.
3. Explain Line Clipping and Point Clipping in detail.
4. Explain Polynomial and Spline Curves.
5. Explain Translation, Rotation and Scaling with matrix form.
6. Explain General Fixed Point Scaling with derivation.
7. Explain Affine Transformation and its properties.
8. Explain Composite Transformation with example.
9. Explain Parallel Projection in detail.
10. Explain Perspective Projection with types and diagrams.

Computer Graphics Question Paper Set – 3

Section A (2 Marks × 10 = 20 Marks)

1. Define Interactive Graphics system.
2. What is Edge in computer graphics?
3. Define Bresenham Algorithm.
4. What is Clipping Window?
5. Define Scaling transformation.
6. What is Reflection?
7. Define Transformation Function.
8. What is 3D Rotation?
9. Define Projection Plane.
10. What is Perspective Depth?

Section B (10 Marks × 10 = 100 Marks)

1. Explain DDA Algorithm with advantages and disadvantages.
2. Explain Bresenham's Line Algorithm with numerical example.
3. Explain Cohen-Sutherland Line Clipping Algorithm with region codes.
4. Using Bresenham's Circle Drawing Algorithm, draw a circle with center (0,0) and radius $r = 5$.
 - Calculate the decision parameter at each step
 - Find the points in the first octant
 - Generate the complete circle using symmetry
 - Draw the final circle
5. Perform rotation of triangle
A(1,1), B(2,1), C(1,3) by 90° about origin.
6. Explain Rotation about arbitrary point.
7. Explain Scaling about fixed point.
8. Explain Reflection and Shearing transformations.
9. Apply 3D translation to cube vertices.
10. Explain difference between Parallel and Perspective Projection.



Dezyne École College

B.C.A Semester- 5th

Examination – Practice Paper

Subject: Artificial Intelligence

Section A (2 X 10 = 20)

1. What is knowledge representation in Artificial Intelligence? Give one technique.
2. Define inference rule with an example.
3. What is the difference between propositional logic and First Order Predicate Logic (FOPL)?
4. What is prior probability in Bayesian inference?
5. Define belief function in Dempster-Shafer Theory.
6. What is the role of Natural Language Processing (NLP) in AI?
7. What is weight initialization in deep learning Explain in Detail ?
8. Define vanishing gradient problem in neural networks.
9. What is the function of activation functions in neural networks?
10. What is Bidirectional Neural Network and where is it used?

Section B (10 X 5 = 50)

11. Explain Artificial Intelligence, its applications, and knowledge acquisition techniques in detail.

12.

- a) Explain syntax and semantics of propositional logic with examples.
- b) Convert the following into clausal form: $(P \rightarrow Q) \wedge (Q \rightarrow R)$

13.

- a) Discuss First Order Predicate Logic (FOPL) with syntax and semantics.
- b) Solve using inference rules: All humans are mortal, Socrates is human \rightarrow Prove Socrates is mortal.

14. Explain Bayesian probabilistic inference with formula and solve:

A disease affects 1% of people. A test detects it correctly 99% of the time but gives a false positive 5% of the time. Find the probability that a person actually has the disease if the test is positive.

15. Discuss Dempster-Shafer Theory and compare it with the Bayesian approach.

16. Explain the structure and working of an expert system with real-world examples.

17. Explain Deep Learning and Deep Neural Networks. Also describe initialization techniques and their importance.

18. Differentiate between: a) Shallow Neural Network vs Deep Neural Network

b) RNN vs Feedforward Neural Network

19. Explain Recurrent Neural Networks (RNN) and its variants:

- Long Short-Term Memory (LSTM)
- Gated Recurrent Unit (GRU)

20.

a) Explain Markov Decision Process (MDP) with components and a simple numerical example.

b) Write an algorithm and explain any one heuristic search problem:

- 8 Puzzle
- Water Jug Problem
- Missionaries and Cannibals

Artificial Intelligence Question Paper Set – 2

Section A (2 Marks *10 = 20 Marks)

1. What is an intelligent agent Explain With Example?
2. List any two characteristics of AI systems.
3. What is knowledge acquisition Explain With Example?
4. Define well-formed formula (WFF).
5. What is unification in logic?
6. Define resolution in AI Explain With Example.
7. What is posterior probability?
8. What is uncertainty in AI Explain With Example?
9. Define gradient descent.
10. What is overfitting in neural networks?

Section B (10 Marks Each)

11. Explain knowledge representation techniques and their significance in AI.
12. Describe knowledge-based systems and their components with examples.
13. Convert the following into clausal form:

$$(P \vee Q) \rightarrow (R \wedge S)$$

14. Explain Bayesian inference using Bayes' Theorem. Numerical:

A factory produces items from two machines:

1. Machine A: 70% production, defect rate = 1%
2. Machine B: 30% production, defect rate = 4%

If an item is defective, find the probability it came from
Machine B.

15. Discuss possible world representation with examples.
16. Explain Natural Language Processing (NLP) techniques and applications.
17. Describe uncertainty handling in AI systems.
18. Explain Generative Adversarial Networks (GANs) and their working.
19. Explain Hill Climbing algorithm with example.
20. Explain the Backpropagation Algorithm.

Numerical: Input $x = 2$, Weight $w = 0.3$, Target $t = 1$, Learning rate $\eta = 0.1$ Perform one iteration and calculate the updated weight.

Artificial Intelligence Question Paper Set – 3

Section A (2 Marks *10 = 20 Marks)

1. What is Inference Engine Explain With Example ?
2. Define heuristic function Explain With Example.
3. What is semantic network?
4. Define tautology.
5. What is quantifier in logic?
6. Define modus tollens Explain With Example.
7. What is likelihood in probability?
8. What is belief interval?
9. What is loss function?
10. What is epoch in neural networks?

Section B (10 Marks Each)

11. Explain applications of Artificial Intelligence in different fields.
12. Describe syntax and semantics of FOPL with examples.
13. Convert the following into clausal form: $\neg(P \leftrightarrow Q)$
14. Explain inference rules with suitable examples.
15. Explain Dempster-Shafer Theory with suitable examples.
16. Compare Bayesian approach and Dempster-Shafer Theory.
17. Explain Natural Language Processing levels.
18. Explain Word2Vec & CBOW in Detail With Suitable Example.
19. Explain Missionaries and Cannibals & Water Jug Problem Problem.
20. Explain the Backpropagation Algorithm.

Numerical: Input $x = 1$, Weight $w = 0.5$, Target $t = 0$, Learning rate $\eta = 0.2$ Calculate: Output, Error & Updated weight