

HARIKISHORE SINGH GOVERNMENT POLYTECHNIC SHEOHAR

DEPARTMENT OF COMPUTER SCIENCE& ENGINEERING

SEM-1st

Subject:- Introduction to Artificial Intelligence

Subject code:-2600100

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Unit-1: Introduction to IT System and Digital Technologies

Long Questions:

1. What is Information Technology?
2. Difference between Analog and Digital System.
3. Explain applications of IT in Education, Banking, Healthcare, Business.
4. Draw block diagram of computer and explain all parts.
5. What is CPU? Explain its 3 parts: ALU, CU, Registers with function.
6. Difference between RAM and ROM with 6 points.
7. Explain Primary and Secondary Memory with examples and differences.
8. What is Operating System? Explain functions of OS.
9. What is Mobile Operating System? Explain features of Android and iOS.
10. What is Internet? Explain services of Internet: Email, WWW, FTP, Chat.
11. What is Web Browser? Explain features of popular browsers: Chrome, Firefox, Edge.
12. What is Cloud Computing? Explain characteristics, service models: SaaS, PaaS, IaaS with examples.
13. What is Computer Network? Explain types: PAN, LAN, MAN, WAN with diagram.
14. Explain Network Topologies: Bus, Star, Ring, Mesh with advantages/disadvantages.
15. What is Cyber security? Explain importance of cybersecurity.
16. Explain Cyber security Practices: Firewall, Antivirus, Password, Encryption.
17. Explain types of Operating System: Single User, Multi User, Batch, Real Time.
18. What is Search Engine? Explain how search engine works.
19. Explain Input Devices and Output Devices with 5 examples each.
20. Compare Windows and Linux Operating System with 6 points.

Objective Questions(MCQS):

1. Full form of IT is?
a) Information Technology b) Internet Technology c) Integrated Technology d) None
2. Digital system uses?
a) 0,1 b) 0-9 c) A-Z d) All
3. Brain of computer is?
a) RAM b) CPU c) HDD d) GPU
4. Which is volatile memory?
a) ROM b) RAM c) HDD d) SSD
5. 1 KB = ?
a) 1000 Bytes b) 1024 Bytes c) 512 Bytes d) 2048 Bytes

6. Which is not an Operating System?
a) Windows b) Linux c) Chrome d) Android
7. Example of Mobile OS is?
a) Windows 10 b) iOS c) DOS d) Unix
8. Example of Search Engine is?
a) Chrome b) Firefox c) Google d) Edge
9. Firewall is used for?
a) Data Storage b) Security c) Printing d) Browsing
10. Example of Cyber threat is?
a) Virus b) Malware c) Phishing d) All of these

Unit-2: Programming Fundamentals

Long Questions:

1. What is Python? Explain features of Python.
2. Advantages and Disadvantages of Python.
3. What is Variable? Explain rules for naming variables in Python.
4. Explain 4 basic Data Types in Python: int, float, string, boolean with example.
5. Difference between input() and int(input()).
6. Explain all types of Operators in Python with example: Arithmetic, Relational, Logical, Assignment.
7. Explain Input and Output functions in Python with example. input(), print().
8. Explain if, if-else, elif and nested if with syntax and example.
9. Write program to find largest of 3 numbers using nested if.
10. Explain for loop and while loop in Python with syntax and example.
11. Explain break, continue and pass statements with example.
12. Difference between List and Array.
13. Explain List methods: append(), insert(), remove(), pop(), sort(), reverse() with example.
14. Write program to find sum and average of elements in a list.
15. Write program to print table of a number using for loop.

Objective Questions(MCQS):

1. Python was developed by?
a) James Gosling b) Guido van Rossum c) Dennis Ritchie d) Bjarne Stroustrup
2. Python is a ____ language.
a) Compiled b) Interpreted c) Both d) None
3. Which is not a data type in Python?
a) int b) float c) char d) bool
4. Type of True in Python is?
a) int b) string c) bool d) float
5. == is used for?
a) Assignment b) Comparison c) Logical d) None

6. and, or, not are ____ operators.
a) Arithmetic b) Relational c) Logical d) Assignment
7. input() always returns data as?
a) int b) float c) string d) bool
8. break statement is used to?
a) Skip iteration b) Exit loop c) Continue d) None
9. How to find length of list?
a) size() b) len() c) length() d) count()
10. To add element at end of list use?
a) add() b) append() c) insert() d) push()

Unit-3: Fundamentals of Artificial Intelligence

Long Questions:

1. What is Artificial Intelligence? Explain definition and objectives of AI.
2. Explain applications of AI in Healthcare, Education, Banking, Transportation, Chatbots, Gaming.
3. What is Machine Learning? Explain need of ML.
4. Difference between AI and ML.
5. What is Dataset? Explain importance of data in AI.
6. Explain working of AI model with Input → Process → Output diagram and example.
7. Explain role of Training Data and Testing Data in AI with example.
8. What is Pattern Recognition? Explain with real life examples: Face, Voice, Handwriting recognition.
9. Applications of Pattern Recognition in AI.
10. What are the limitations of AI systems?
11. Future of AI and ethical considerations.
12. What is Overfitting and Underfitting? How to avoid it?
13. How do AI models learn from data? Explain training process.
14. Explain basic mathematical concepts used in AI: Statistics, Probability, Linear Algebra, Calculus.
15. Explain types of Machine Learning: Supervised, Unsupervised, Reinforcement Learning with example.

Objective Questions(MCQS):

1. Father of AI is?
a) Alan Turing b) John McCarthy c) Charles Babbage d) Guido van Rossum
2. AI is used in?
a) Chatbot b) Self-driving car c) Face Recognition d) All of these
3. ML stands for?
a) Machine Learning b) Manual Learning c) Main Learning d) None
4. Which is not a type of ML?
a) Supervised b) Unsupervised c) Reinforced d) Semi-compiled

5. AI model learns from?
 - a) Data b) Code c) Hardware d) None
6. Basic cycle of AI model is?
 - a) Input → Output → Process b) Input → Process → Output
 - c) Process → Input → Output d) None
7. Face detection in phone is example of?
 - a) NLP b) Pattern Recognition c) Robotics d) None
8. AI cannot do?
 - a) Calculation b) Human emotions c) Pattern detection d) Sorting
9. AI uses which math concept most?
 - a) Statistics b) Probability c) Linear Algebra d) All of these
10. ML stands for?
 - a) Machine Learning b) Manual Learning c) Main Learning d) None

Unit-4: AI Applications(Vision and Language)

Long Questions:

1. What is Computer Vision? Explain objectives and applications of Computer Vision
2. Difference between Human Vision and Computer Vision.
3. What is Object Detection? Explain with example.
4. Difference between Object Detection and Object Identification.
5. What is Image Processing?
6. What is OCR? Explain working of OCR with diagram.
7. What is Natural Language Processing? Explain importance of NLP.
8. What is Machine Translation? Explain how it works.
9. Types of Machine Translation: Rule-based, Statistical, Neural MT with example.
10. What is Context Understanding in AI? Why is it important?
11. What is Ambiguity in Language? Explain with 2 examples and how AI solves it.
12. What is Error Analysis in AI?
13. Applications of Machine Translation like Google Translate, Meta AI Translate.
14. What is Image Segmentation? Explain types and uses with example.
15. Applications of OCR in Banking, Education, Google Lens, Document scanning.

Objective Questions(MCQS):

1. Computer Vision is a part of?
 - a) NLP b) AI c) DBMS d) OS
2. Main goal of Computer Vision is?
 - a) Process text b) Understand images and videos c) Store data d) None
3. Face detection in mobile is an example of?
 - a) OCR b) Object Detection c) Machine Translation d) None
4. Dividing image into parts is called?
 - a) OCR b) Segmentation c) Translation d) Compression

5. Full form of OCR is?
 - a) Optical Character Reader b) Optical Character Recognition
6. OCR is used to convert?
 - a) Image to Text b) Text to Image c) Speech to Text d) None
7. ChatGPT and Siri use?
 - a) Computer Vision b) NLP c) OCR d) None
8. Google Translate is an example of?
 - a) OCR b) Machine Translation c) Object Detection d) None
9. Example of OCR application is?
 - a) Google Lens b) WhatsApp c) Instagram d) None
10. . NLP stands for?
 - a) Natural Language Processing b) New Language Program c) Neural Learning Process d) None

Unit-5: Chatbots and Generative AI

Long Questions:

1. What is Chatbot? Explain working of Chatbot with diagram.
2. Difference between Rule-based Chatbot and AI-based Chatbot.
3. Applications of Chatbots in Customer Service, Education, Healthcare.
4. What is Prompt? Explain importance of prompt in Generative AI.
5. What is Next-word Prediction?
6. What is AI Hallucination?
7. Explain ethical issues in AI: Bias, Privacy, Misinformation, Job loss.
8. Difference between AI and Generative AI with examples.
9. Importance of Human-in-the-loop for evaluating AI outputs.
10. What are the guidelines for Responsible use of AI?

Objective Questions(MCQS):

1. Chatbot is used for?
 - a) Image editing b) Conversation with human c) Data storage d) None
2. Example of Chatbot is?
 - a) ChatGPT b) Siri c) Google Assistant d) All of these
3. Chatbots are used for?
 - a) Q&A b) Idea Generation c) Summarization d) All of these
4. A good prompt should be?
 - a) Vague b) Clear and specific c) Very short d) None
5. Next-word prediction is used in?
 - a) OCR b) Generative AI c) Segmentation d) None
6. When AI gives false information it is called?
 - a) Error b) Hallucination c) Bias d) Bug
7. Limitation of Generative AI is?
 - a) Incorrect output b) No real understanding c) Bias d) All of these

8. Generative AI is used for?

a) Text generation b) Image generation c) Code generation d) All of these

9. Example of Generative AI tool is?

a) ChatGPT b) DALL-E c) Midjourney d) All of these

10. Ethical issue in AI is?

a) Bias b) Fake news c) Privacy d) All of these