

Question 1: In robotics, a sensor that detects distance using ultrasonic waves works on the principle of:

- a) Reflection of light
- b) Reflection of sound
- c) Refraction of waves
- d) Transmission of current

Question 2: Which of the following is a non-renewable source of energy?

- a) Solar energy
- b) Wind energy
- c) Coal
- d) Tidal energy

Question 3: In prototyping, a 3D printer is most useful for:

- a) Writing computer code
- b) Making physical models quickly
- c) Measuring voltage in circuits
- d) Designing only software

Question 4: If a simple circuit has a battery of 6V and a bulb of resistance 3Ω , what is the current flowing through it?

- a) 0.5 A
- b) 2 A
- c) 18 A
- d) 6 A

Question 5: Which of these is the main step in the Engineering Design Process?

- a) Ignoring failed attempts
- b) Brainstorming and creating prototypes
- c) Copying existing models
- d) Skipping testing

Question 6: Which of these robots is best suited for exploring Mars?

- a) Industrial robotic arm
- b) Humanoid robot
- c) Rover
- d) Drone

Question 7: In scientific research, the term hypothesis refers to:

- a) A final conclusion
- b) An experiment setup
- c) An assumption that can be tested
- d) A mathematical calculation

Question 8: What does a parallel circuit ensure if one bulb fuses?

- a) All other bulbs stop working
- b) Current becomes zero
- c) Other bulbs continue to glow
- d) Voltage reduces to zero

Question 9: Which of the following is an example of green engineering?

- a) Building coal-based power plants
- b) Plastic-based road construction
- c) Designing biodegradable packaging
- d) Constructing more nuclear plants

Question 10: In programming, a loop is mainly used to:

- a) Stop execution
- b) Repeat a set of instructions
- c) Randomly skip steps
- d) Delete memory

Question 11: Which of these innovations transformed communication the most in the 21st century?

- a) Steam engines
- b) Smartphones
- c) Typewriters
- d) Telegraph

Question 12: The component in circuits that stores charge is:

- a) Resistor
- b) Capacitor
- c) Inductor
- d) Transformer

Question 13: Which is the best example of renewable electricity generation?

- a) Burning coal
- b) Nuclear fission
- c) Hydroelectric dam
- d) Diesel generator

Question 14: In robotics, which type of AI is used in self-driving cars?

- a) Weak AI for limited tasks
- b) Strong AI with full human-like intelligence
- c) AI only for entertainment
- d) AI without sensors

Question 15: The main reason for creating multiple prototypes in engineering design is:

- a) To waste time
- b) To test different solutions and improve
- c) To confuse engineers
- d) To avoid teamwork

Question 16: In scientific inquiry, what is the role of a control variable?

- a) It is changed every time
- b) It is kept constant for fair testing
- c) It determines the final conclusion
- d) It is the measurement tool

Question 17: Which circuit arrangement saves more electricity?

- a) Short circuit
- b) Parallel connection
- c) Open circuit
- d) Overloaded circuit

Question 18: The innovation of cloud computing mainly helps in:

- a) Storing and accessing data online
- b) Growing crops faster
- c) Making solar panels
- d) Producing more electricity

Question 19: Which part of a robot is equivalent to the human brain?

- a) Motor
- b) Sensor
- c) Microcontroller
- d) Wheel

Question 20: Sustainable development means:

- a) Using resources endlessly without care
- b) Meeting present needs without harming the future
- c) Ignoring environment for fast growth
- d) Increasing pollution for industries

Question 21: Which programming structure is most useful for making robots follow a line?

- a) Random function
- b) Conditional statements (if-else)
- c) Infinite loop without sensors
- d) Break command

Question 22: In engineering design, iteration means:

- a) Copying from others
- b) Repeating and improving designs
- c) Ignoring feedback
- d) Skipping tests

Question 23: The SI unit of electrical power is:

- a) Volt
- b) Ampere
- c) Watt
- d) Ohm

Question 24: Which of the following is an emerging technology in transportation?

- a) Horse carts
- b) Bullet trains
- c) Electric vehicles
- d) Gasoline scooters

Question 25: In robotics, actuators are mainly used to:

- a) Sense environment
- b) Process information
- c) Provide movement or action
- d) Store energy

Question 26: The first step in scientific inquiry is usually:

- a) Collecting data
- b) Forming a question or problem
- c) Drawing graphs
- d) Writing the conclusion

Question 27: What will happen if resistance in a circuit increases while voltage remains constant?

- a) Current decreases
- b) Current increases
- c) Voltage decreases
- d) Current stays the same

Question 28: Which of these is the best example of waste-to-energy technology?

- a) Compost pits
- b) Burning plastic openly
- c) Biogas production
- d) Landfilling garbage

Question 29: Which programming term describes a block of code that can be reused?

- a) Function
- b) Loop
- c) Variable
- d) Condition

Question 30: Which robot type is mostly used in factories for welding and assembling cars?

- a) Rover
- b) Robotic arm
- c) Drone
- d) Humanoid robot

Question 31: During prototyping, why is low-cost material often used?

- a) To make final products
- b) To test ideas cheaply before final production
- c) To waste resources
- d) To avoid accuracy

Question 32: Which component of electricity opposes the flow of current?

- a) Resistor
- b) Capacitor
- c) Battery
- d) Motor

Question 33: Which of these innovations reduced paper usage the most?

- a) Typewriter
- b) Digital documents
- c) Fax machine
- d) Photocopier

Question 34: In robotics, feedback from sensors helps in:

- a) Random actions
- b) Decision making and corrections
- c) Storing data only
- d) Stopping permanently

Question 35: Which principle is used in hydroelectric power plants?

- a) Nuclear fission
- b) Kinetic energy of water
- c) Burning of fuels
- d) Chemical reactions

Question 36: In scientific research, data should always be:

- a) Randomly guessed
- b) Collected systematically
- c) Ignored if not useful
- d) Copied from others

Question 37: The product design cycle usually ends with:

- a) Manufacturing and testing
- b) Guesswork
- c) Skipping trials
- d) Ignoring feedback

Question 38: Which programming concept is used in video games for decision-making?

- a) If-else conditions
- b) Variables only
- c) Random delays
- d) Constant loops

Question 39: The material that does not allow electricity to pass is called:

- a) Conductor
- b) Semiconductor
- c) Insulator
- d) Superconductor

Question 40: Which innovation contributed most to global connectivity?

- a) Satellites and internet
- b) Horse-drawn carriages
- c) Coal engines
- d) Printing press

Question 41: What is the function of a gear system in robots?

- a) Sensing obstacles
- b) Controlling speed and torque
- c) Storing charge
- d) Transmitting electricity

Question 42: Which step comes just before testing in the engineering design cycle?

- a) Brainstorming
- b) Prototyping
- c) Defining the problem
- d) Publishing results

Question 43: In circuits, Ohm's Law is represented as:

- a) $V = IR$
- b) $P = VI$
- c) $E = mc^2$
- d) $F = ma$

Question 44: Which technology helps reduce air pollution in vehicles?

- a) Diesel engines
- b) Solar panels
- c) Catalytic converters
- d) Steam engines

Question 45: Which programming element is used to store changing values?

- a) Constant
- b) Loop
- c) Variable
- d) Condition

Question 46: Which energy source is both renewable and non-polluting?

- a) Natural gas
- b) Wind energy
- c) Coal
- d) Diesel

Question 47: In robotics, machine learning allows robots to:

- a) Repeat fixed actions only
- b) Learn from data and improve performance
- c) Forget instructions
- d) Work without sensors

Question 48: Which scientific skill is most needed when analysing graphs?

- a) Guessing
- b) Observation and interpretation
- c) Copying
- d) Memorization

Question 49: A short circuit is dangerous because:

- a) Current becomes too high
- b) Voltage becomes zero
- c) Resistance becomes infinite
- d) Power is lost completely

Question 50: Which of these is a sustainable engineering solution for cities?

- a) Underground coal mining
- b) Plastic dumping grounds
- c) Rainwater harvesting systems
- d) Expanding diesel transport

Question 51: In programming, the symbol “=” usually means:

- a) Assignment
- b) Equality comparison
- c) Greater than
- d) Division

Question 52: Which robotic device is used for surgeries?

- a) Industrial arm
- b) Surgical robot
- c) Drone
- d) Rover

Question 53: Which part of the design cycle ensures improvement after feedback?

- a) Iteration
- b) Ignoring results
- c) Guessing
- d) Shortcutting

Question 54: Electric current is measured using:

- a) Voltmeter
- b) Ammeter
- c) Galvanometer
- d) Ohmmeter

Question 55: Which innovation has made shopping easier worldwide?

- a) Online e-commerce platforms
- b) Typewriters
- c) Radio
- d) Telegraph

Question 56: In robotics, LIDAR sensors are mainly used for:

- a) Measuring light intensity
- b) Mapping surroundings in 3D
- c) Storing data
- d) Producing sound

Question 57: Which energy solution reduces dependence on fossil fuels?

- a) Wind farms
- b) Thermal power stations
- c) Coal mining
- d) Gas plants

Question 58: In research, a peer review ensures:

- a) Random approvals
- b) Quality and accuracy check by experts
- c) Ignoring evidence
- d) Fast publication only

Question 59: Which law explains energy conservation in electric circuits?

- a) Newton's first law
- b) Kirchhoff's law
- c) Archimedes' principle
- d) Hooke's law

Question 60: A major innovation in waste management is:

- a) Open burning
- b) Smart recycling bins
- c) Deep sea dumping
- d) Plastic incineration without filters

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