Year Nine Design Technology Quiz

Topic: Year 9 CAD/CAM
1. What is aerodynamics primarily concerned with studying?
A) How heavy objects are B) How air moves around objects and forces acting on moving bodies C) How fast electronics can send data D) How gears mesh together

2. In a mechanical system, what is the main job of a "Cam and Follower"?
A) To change rotary motion (spinning) into linear motion (up and down) B) To stop a machine from overheating C) To cut through thick pieces of timber D) To connect a 2D design to a 3D printer

3. Which mechanism consists of a rigid bar that pivots around a fixed point called a fulcrum?
A) A cam B) A follower C) A lever D) A pulley

4. If a Year 9 student wants to quickly turn a 2D mechanism layout into a 3D model to see how it looks from all angles, which software should they switch to?
A) Techsoft Design B) Tinkercad C) Microsoft Word D) Adobe Photoshop

5. If a cam is shaped like an offset eccentric circle (not pivoted in the exact center), what kind of movement will the follower experience?
A) A smooth, continuous rise and fall B) It will stay perfectly still C) A sudden drop and long pause D) It will spin around in a circle

6. Why do engineers study aerodynamics when designing vehicles or moving parts?
A) To make them look as bright as possible on screen B) To reduce drag (air resistance) and improve efficiency or speed C) To make the vehicle heavier so it stays on the ground D) Because the laser cutter requires aerodynamic shapes

7. What is a "mechanism"?
A) A type of material used in 3D printing B) An assembly of moving parts connected together to control forces and motion C) The password to log onto Techsoft Design D) A completely stationary structure like a bridge

8. When working on advanced projects in Year 9, how can Techsoft Design and Tinkercad be used together?
A) They can't—they are completely incompatible. B) You can use Techsoft Design for flat 2D parts/profiles and Tinkercad to build or visualize 3D elements. C) Tinkercad is used to change the laser cutter colors from red to black. D) Techsoft Design automatically turns everything into a 3D Mars habitat.

9. What are the three essential components of a lever system?
A) Cam, Follower, and Crank B) Black, Blue, and Red lines C) Effort, Load, and Fulcrum (Pivot) D) Speed, Drag, and Aerodynamics

10. If you decrease the drag on a moving object, what generally happens to its performance?
A) It slows down because there isn't enough air pushing it. B) It moves more efficiently and quickly through the air. C) It stops working completely. D) It changes its mechanical movement from rotary to linear.

Topic: Product Design
11. A standard USB cable is plugged into a computer to power a circuit. Which two wires inside the USB cable are used to provide the power?
A) The data wires (Green and White) B) The audio wires (Blue and Yellow) C) The power and ground wires (Red and Black) D) All four wires are used for power

12. What is the main job of the resistor in this circuit?
A) To make the LED change colours B) To store electrical energy like a battery C) To protect the LED by limiting the amount of current flowing through it D) To switch the circuit on and off automatically

13. An LED is a "Light Emitting Diode." What is special about a diode?
A) It only lets electricity flow in one direction B) It can change its resistance when it gets hot C) It works better when the circuit is wet D) It turns electricity into sound waves

14. Look at the two legs of a physical LED. One leg is longer than the other. What does the longer leg represent?
A) The negative side (Cathode) B) The switch side C) The positive side (Anode) D) The ground wire

15. Which of the following is the correct schematic symbol for a Resistor?
A) A circle with an 'X' inside it B) A straight line with a break in it C) A simple rectangle (or a zig-zag line) D) A triangle pointing at a line with two small arrows pointing away

16. If you connect the LED backwards in the circuit, what will happen?
A) The LED will burn out immediately B) The LED will not light up at all C) The LED will shine twice as bright D) The computer will turn off

17. In a circuit diagram, what does the symbol of a triangle pointing to a vertical line with two small arrows pointing away from it represent?
A) A Resistor B) A USB Port C) A Battery D) An LED (Light Emitting Diode)

18. A standard USB port from a computer outputs a steady voltage. What voltage does it normally provide?
A) 1.5 Volts B) 5 Volts C) 12 Volts D) 230 Volts

19. Why can't you safely connect a standard red LED directly to a 5V USB cable without a resistor?
A) The LED needs more voltage to work. B) Too much current will flow, causing the LED to overheat and break. C) The LED will stay on forever and cannot be unplugged. D) The USB cable will melt instantly.

20. When drawing a schematic diagram of this circuit, how should the components be connected?
A) The resistor and LED should be connected in a single loop (in series) with the USB power wires. B) The resistor should be left out completely. C) The LED should be connected to the data wires. D) The positive and negative wires of the USB should be tied together directly.

Topic: Textiles
21. What is fast fashion?
A) High-quality clothes made slowly by local designers B) Cheap, rapidly produced clothing that follows the latest trends C) Sports clothing designed specifically for running fast D) Clothes made entirely out of recycled plastic bottles

22. Which 2 techniques can you use to apply your motif to your shorts?
A) Laser cutting and 3D printing B) Appliqué and embroidery C) Soldering and vacuum forming D) Sanding and chiselling

23. What is the folded edge of fabric on the edges of fabric called?
A) Seam B) Hem C) Selvedge D) Grainline

24. What is a sewing pattern?
A) The design or grid printed onto the fabric B) A set of instructions used to thread a sewing machine C) A paper template used as a guide to cut out fabric pieces D) The rhythm of the sewing machine needle moving up and down

25. What skills are we learning whilst making our shorts?
A) Fabric cutting, machine control, and garment construction B) Computer programming, welding, and wood turning C) CAD drawing, electronics schematics, and soldering D) Bread kneading, pasta rolling, and nutrition tracking

26. What is sustainable fashion?
A) Clothing that is cheap to buy but breaks after one wash B) An environmentally friendly approach to designing and producing clothes that protects the planet C) Clothes made to fit people of all sizes D) Fashion trends that change every single week

27. What health and safety rule should you follow when using sewing machines?
A) Keep your fingers close to the needle to guide the fabric tightly B) Look away from the machine to talk to your friend while sewing C) Keep your fingers a safe distance away from the needle and tie long hair back D) Pull the fabric through the machine as fast as possible by force

28. What annotation should you put on your initial designs?
A) Just your name and the date B) Notes on materials, techniques, features, and target audience C) Every single multiple-choice question you can think of D) The price of the final shorts in different shops

29. What 2 types of stitching do you use on the sewing machine?
A) Straight stitch and zig-zag stitch B) Cross stitch and chain stitch C) Blanket stitch and running stitch D) Slip stitch and back stitch by hand

30. Why do we use the reverse stitch lever?
A) To make the machine sew backwards when we make a mistake B) To secure and lock the ends of your stitching so it doesn't undo C) To change the color of the thread automatically D) To increase the speed of the motor

Topic: Graphics
31. Which design movement from your booklet is best described as "bold and playful," using bright colours, patterns, and unusual geometric shapes?
A) Bauhaus B) Alessi C) Memphis D) Classical

32. Why do professional designers "render" their 3D concepts before showing them to clients or factories?
A) To make the file size smaller for emails B) To add realistic color, surface textures, lighting, and shadow so people can visualize the final manufactured product C) To automatically convert a 2D line into a starchy carbohydrate D) To hide any design mistakes they made during the sketching phase

33. In one-point perspective drawing, what do you call the imaginary line that sits at the artist's eye level where the sky meets the land?
A) The vanishing point B) The vertical axis C) The isometric grid D) The horizon line

34. What is the primary purpose of using an isometric grid in graphic design?
A) To help draw perfect circles and curves freehand B) To allow you to draw accurate 3D objects clearly and to a realistic scale without perspective lines shrinking C) To blend different paint colors together smoothly D) To measure the thickness of textiles fabrics

35. The Bauhaus movement focused heavily on the principle that "form follows function." What does this mean for a designer?
A) A product should look beautiful first, even if it doesn't work well. B) The shape and appearance of a product should be decided entirely by its practical use and purpose. C) You should always copy your initial design exactly without changes. D) The product must be made using non-woven

materials like felt.

36. What does the term 'annotation' mean and why is it important when designing a product?
A) Explanatory notes added to a drawing to explain materials, functions, and details that lines alone cannot show B) The practice of tracing another designer's work to save time C) Using a ruler to measure the exact border of your page D) Writing your evaluation and final mark on the feedback sheet

37. What is the main visual difference between a 3D sketch drawn in one-point perspective versus one drawn on an isometric grid?
A) One-point perspective drawings are completely flat, while isometric drawings are always colored red. B) One-point perspective lines shrink toward a single vanishing point, while isometric lines stay parallel and never get smaller. C) Isometric drawings show objects from the inside, while perspective only shows the top. D) There is no visual difference; they use the exact same grid layout.

38. When working on an isometric grid, vertical lines remain perfectly vertical. At what specific angle must you draw the receding lines to create the accurate 3D effect?
A) 45 degrees B) 90 degrees C) 30 degrees D) 180 degrees

39. What does tone mean and why is it useful to add this to your product designs?
A) The thickness of the paper template you are cutting out B) The light and dark areas of a drawing that create depth and show how light hits a 3D surface C) The texture of a fabric before it has been sewn into shorts D) The sound a laser cutter makes when it finishes a task

40. Which formal art elements translate most effectively into technical design drawing?
A) Line, shape, form, and tone B) Expression, emotion, and abstract splashing C) Historical context and oil painting layers D) Sculpture casting and clay molding