AME CET Technical Aptitude

Sample Paper – 1

Duration: 30 Minutes **Maximum Marks: 120**

Instructions

- This paper contains **30** Multiple Choice Questions (Single Correct Answer), covering **Mechanical & Applied-Physics Aptitude** (Q1–15) and **Electrical, Electronics & Aviation Technical Fundamentals** (Q16–30), in the **AME CET** marking style.
- Each correct answer carries **+4 marks**. Each wrong answer carries -1 **mark**. Unattempted questions carry **0 marks**.
- Only **one** option is correct per question. Choose carefully.
- This is a **supplementary technical-aptitude practice set** for AME CET aspirants; pacing is one minute per question, matching the main exam.
- Use of mobile phones, calculators, or any electronic gadget is strictly prohibited.

Part A: Mechanical & Applied-Physics Aptitude

Q1. A net force of 10 N acts on a body of mass 2 kg. The acceleration produced in the body is:

(A) 5 m/s^2

(B) 20 m/s^2

(C) 8 m/s^2

(D) 0.2 m/s^2

Q2. The linear momentum of a body of mass 4 kg moving with a velocity of 5 m/s is:

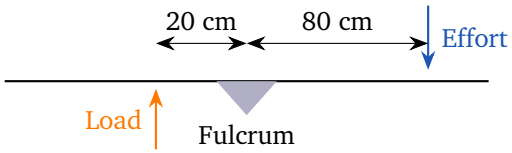
(A) 9 kg·m/s

(B) 1.25 kg·m/s

(C) 100 kg·m/s

(D) 20 kg·m/s

Q3. In the class-1 lever shown, the effort arm is 80 cm and the load arm is 20 cm. The ideal mechanical advantage of the lever is:



(A) 0.25

(B) 100

(C) 4

(D) 60

Q4. A constant force of 50 N moves a crate through a distance of 4 m in the direction of the force. The work done is:

(A) 54 J

(B) 200 J

(C) 12.5 J

(D) 46 J

Q5. A machine does 600 J of work in 30 seconds. The power output of the machine is:

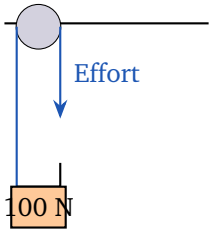
(A) 20 W

(B) 18000 W

(C) 0.05 W

(D) 630 W

Q6. A single movable pulley (ideal, weightless and frictionless) is used to lift a load of 100 N, as shown. The effort required is:



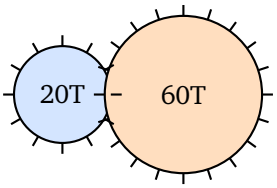
(A) 200 N

(B) 100 N

(C) 25 N

(D) 50 N

Q7. A driver gear with 20 teeth meshes with a driven gear of 60 teeth, as shown. If the driver gear rotates at 300 rpm, the driven gear rotates at:



(A) 900 rpm

(B) 100 rpm

(C) 300 rpm

(D) 60 rpm

Q8. A force of 500 N acts normally on a metal bar of cross-sectional area 1×10^{-4} m^2. The stress developed in the bar is:

(A) 5×10^4 Pa

(B) 0.05 Pa

(C) 5×10^6 Pa

(D) 5×10^8 Pa

Q9. The property of a metal that allows it to be drawn into thin wires is called:

(A) Brittleness

(B) Ductility

(C) Density

(D) Conductivity

Q10. The SI unit of pressure is the:

(A) Newton

(B) Joule

(C) Watt

(D) Pascal

Q11. A screw gauge has a pitch of 1 mm and 100 equal divisions on its circular scale. Its least count is:

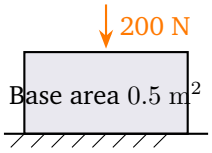
(A) 0.01 mm

(B) 0.1 mm

(C) 1 mm

(D) 0.5 mm

Q12. A rectangular block of weight 200 N rests on the ground with its base area equal to 0.5 m^2, as shown. The pressure exerted on the ground is:



(A) 100 Pa

(B) 1000 Pa

(C) 400 Pa

(D) 40 Pa

Q13. An object completely immersed in water displaces 0.002 m^3 of water. Taking the density of water as 1000 kg/m^3 and $g = 10$ m/s^2, the buoyant force on the object is:

(A) 2 N

(B) 200 N

(C) 0.02 N

(D) 20 N

Q14. The heat required to raise the temperature of 2 kg of a metal by $10\,^\circ$C, given its specific heat capacity is 500 J/kg $\cdot$ $^\circ$C, is:

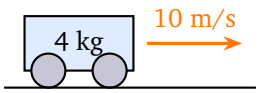
(A) 1000 J

(B) 10000 J

(C) 100 J

(D) 25 J

Q15. A trolley of mass 4 kg moves with a velocity of 10 m/s, as shown. Its kinetic energy is:



(A) 200 J

(B) 40 J

(C) 20 J

(D) 400 J

Part B: Electrical, Electronics & Aviation Technical Fundamentals

Q16. A current of 2 A flows through a resistor of 5 Ω. The voltage across the resistor is:

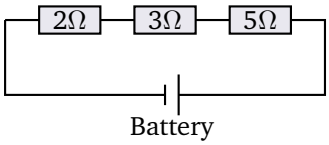
(A) 10 V

(B) 2.5 V

(C) 0.4 V

(D) 7 V

Q17. Three resistors of 2 Ω, 3 Ω and 5 Ω are connected in series, as shown. The total resistance of the circuit is:



(A) 0.97 Ω

(B) 10 Ω

(C) 6 Ω

(D) 1.03 Ω

Q18. Two resistors, each of 6 Ω, are connected in parallel. Their combined resistance is:

(A) 12 Ω

(B) 6 Ω

(C) 3 Ω

(D) 9 Ω

Q19. A current of 3 A flows through a 4 Ω resistor. The power dissipated in the resistor is:

(A) 12 W

(B) 7 W

(C) 1.33 W

(D) 36 W

Q20. Three identical cells, each of EMF 1.5 V, are connected in series. The total EMF of the combination is:

(A) 4.5 V

(B) 1.5 V

(C) 0.5 V

(D) 3.0 V

Q21. The device that converts electrical energy into mechanical energy is the:

(A) Generator

(B) Transformer

(C) Motor

(D) Battery

Q22. Which of the following machines converts mechanical energy into electrical energy?

(A) Motor

(B) Transformer

(C) Capacitor

(D) Generator

Q23. An ideal semiconductor diode allows current to flow:

(A) in both directions equally

(B) in no direction at all

(C) only when it is reverse biased

(D) in one direction only

Q24. Alternating current (AC), used in many aircraft electrical systems, is best described as a current that:

(A) flows in one direction only

(B) periodically reverses its direction

(C) is always equal to zero

(D) cannot do useful work

Q25. The cockpit instrument that indicates an aircraft's height above mean sea level is the:

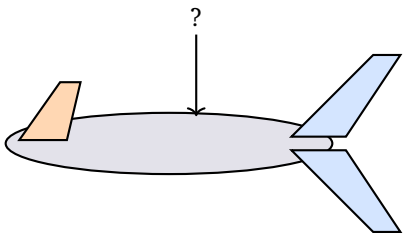
(A) Altimeter

(B) Airspeed indicator

(C) Magnetic compass

(D) Tachometer

Q26. In the simplified aircraft outline shown, the main central body to which the wings and tail are attached is called the:



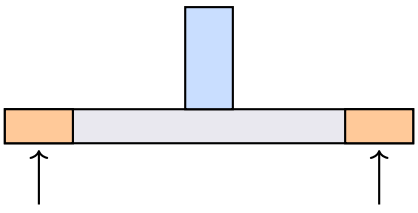
(A) Aileron

(B) Fuselage

(C) Empennage

(D) Nacelle

Q27. The control surfaces marked on the wings in the figure deflect to roll the aircraft about its longitudinal axis. These surfaces are the:



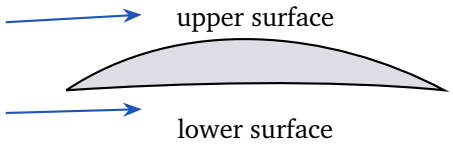
(A) Rudder

(B) Elevator

(C) Ailerons

(D) Flaps

Q28. Air flows over the curved aerofoil section shown. By the common Bernoulli explanation of lift, the faster airflow over the more curved surface produces lower pressure. The lower-pressure region is the:



(A) Lower surface

(B) Upper surface

(C) Trailing edge only

(D) There is no pressure difference

Q29. In steady, straight and level flight at constant speed, the lift produced by the wings exactly balances the:

(A) Thrust

(B) Drag

(C) Weight

(D) Friction

Q30. In most modern transport aircraft, the landing gear is raised and lowered mainly by the:

(A) Hydraulic system

(B) Fuel system

(C) Oxygen system

(D) Ignition system

Detailed Solutions

Q1.

Solution

Concept — Newton's second law: The acceleration of a body equals the net force on it divided by its mass, $a = F/m$.

Step 1 — Write the formula:

$$a = \frac{F}{m}$$

Step 2 — Substitute the values $F = 10$ N and $m = 2$ kg:

$$a = \frac{10}{2}$$

Step 3 — Simplify:

$$a = 5 \text{ m/s}^2$$

Why other options are wrong:

- Option B (20): multiplies force by mass instead of dividing.
- Option C (8): adds force and mass, which is dimensionally invalid.
- Option D (0.2): divides mass by force, inverting the formula.

Final Answer: $5 \text{ m/s}^2 \Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q1

Q2.

Solution

Concept — Linear momentum: Momentum is the product of mass and velocity, $p = mv$.

Step 1 — Write the formula:

$$p = mv$$

Step 2 — Substitute $m = 4$ kg and $v = 5$ m/s:

$$p = 4 \times 5$$

Step 3 — Simplify:

$$p = 20 \text{ kg} \cdot \text{m/s}$$

Why other options are wrong:

- Option A (9): adds mass and velocity instead of multiplying.
- Option B (1.25): divides velocity by mass.
- Option C (100): multiplies by an extra factor of 5.

Final Answer: 20 kg·m/s $\Rightarrow$ D

Answer: (D) Go Back to Q2

Q3.

Solution

Concept — Mechanical advantage of a lever: For an ideal lever the mechanical advantage equals the effort arm divided by the load arm.

Step 1 — Write the formula:

$$\text{MA} = \frac{\text{effort arm}}{\text{load arm}}$$

Step 2 — Substitute effort arm $= 80$ cm and load arm $= 20$ cm:

$$\text{MA} = \frac{80}{20}$$

Step 3 — Simplify:

$$\text{MA} = 4$$

Why other options are wrong:

- Option A (0.25): inverts the ratio (load arm over effort arm).
- Option B (100): adds the two arm lengths.
- Option D (60): subtracts the arm lengths.

Final Answer: 4 $\Rightarrow$ C

Answer: (C) Go Back to Q3

Q4.

Solution

Concept — Work done by a constant force: When the force and displacement are in the same direction, work = force × distance.

Step 1 — Write the formula:

$$W = F \times d$$

Step 2 — Substitute $F = 50$ N and $d = 4$ m:

$$W = 50 \times 4$$

Step 3 — Simplify:

$$W = 200 \text{ J}$$

Why other options are wrong:

- Option A (54): adds force and distance.
- Option C (12.5): divides force by distance.
- Option D (46): subtracts distance from force.

Final Answer: 200 J $\Rightarrow$ B

Answer: (B) Go Back to Q4

Q5.

Solution

Concept — Power: Power is the rate of doing work, $P = W/t$.

Step 1 — Write the formula:

$$P = \frac{W}{t}$$

Step 2 — Substitute $W = 600$ J and $t = 30$ s:

$$P = \frac{600}{30}$$

Step 3 — Simplify:

$$P = 20 \text{ W}$$

Why other options are wrong:

- Option B (18000): multiplies work by time instead of dividing.
- Option C (0.05): divides time by work, inverting the formula.
- Option D (630): adds work and time.

Final Answer: 20 W $\Rightarrow$ A

Answer: (A) Go Back to Q5

Q6.

Solution

Concept — Single movable pulley: An ideal single movable pulley has a mechanical advantage of 2, so the effort is half the load.

Step 1 — State the mechanical advantage:

$$\text{MA} = 2$$

Step 2 — Relate effort and load:

$$\text{Effort} = \frac{\text{Load}}{\text{MA}} = \frac{100}{2}$$

Step 3 — Simplify:

$$\text{Effort} = 50 \text{ N}$$

Why other options are wrong:

- Option A (200): doubles the load instead of halving it.
- Option B (100): assumes no mechanical advantage.
- Option C (25): uses a mechanical advantage of 4, which a single movable pulley does not give.

Final Answer: 50 N $\Rightarrow$ D

Answer: (D) Go Back to Q6

Q7.

Solution

Concept — Gear speed ratio: For two meshing gears, speed is inversely proportional to the number of teeth: $N_{\text{driven}} = N_{\text{driver}} \times \dfrac{T_{\text{driver}}}{T_{\text{driven}}}$.

Step 1 — Write the relation:

$$N_{\text{driven}} = N_{\text{driver}} \times \frac{T_{\text{driver}}}{T_{\text{driven}}}$$

Step 2 — Substitute $N_{\text{driver}} = 300$ rpm, $T_{\text{driver}} = 20$, $T_{\text{driven}} = 60$:

$$N_{\text{driven}} = 300 \times \frac{20}{60}$$

Step 3 — Simplify the fraction:

$$\frac{20}{60} = \frac{1}{3}$$

Step 4 — Compute:

$$N_{\text{driven}} = 300 \times \frac{1}{3} = 100 \text{ rpm}$$

Why other options are wrong:

- Option A (900): multiplies by 3 instead of dividing.
- Option C (300): assumes equal gears, ignoring the tooth ratio.
- Option D (60): uses the tooth count as the speed.

Final Answer: 100 rpm $\Rightarrow$ B

Answer: (B) Go Back to Q7

Q8.

Solution

Concept — Stress: Stress is the force per unit cross-sectional area, $\sigma = F/A$.

Step 1 — Write the formula:

$$\sigma = \frac{F}{A}$$

Step 2 — Substitute $F = 500$ N and $A = 1 \times 10^{-4}$ m^2:

$$\sigma = \frac{500}{1 \times 10^{-4}}$$

Step 3 — Simplify:

$$\sigma = 500 \times 10^{4} = 5 \times 10^{6} \text{ Pa}$$

Why other options are wrong:

- Option A (5×10^{4}): off by a factor of 100 in the area exponent.
- Option B (0.05): multiplies instead of divides by the area.
- Option D (5×10^{8}): uses too large a power of ten.

Final Answer: 5×10^{6} Pa $\Rightarrow$ C

Answer: (C) Go Back to Q8

Q9.

Solution

Concept — Mechanical properties of metals: Ductility is the ability of a material to be drawn out into thin wires without breaking.

Step 1 — Match the definition: Being "drawn into thin wires" is the defining description of ductility.

Step 2 — Confirm the property: Metals such as copper and aluminium are highly ductile, which is why they are used for wires.

Why other options are wrong:

- Option A (Brittleness): brittle materials fracture rather than stretch.
- Option C (Density): a measure of mass per unit volume, unrelated to wire-drawing.
- Option D (Conductivity): the ability to carry current, not to be shaped into wire.

Final Answer: Ductility $\Rightarrow$ B

Answer: (B) Go Back to Q9

Q10.

Solution

Concept — SI units: Pressure is force per unit area, and its SI unit is the pascal (Pa), equal to one newton per square metre.

Step 1 — Recall the definition of pressure:

$$\text{Pressure} = \frac{\text{Force}}{\text{Area}} = \frac{\text{N}}{\text{m}^2}$$

Step 2 — Name the unit:

$$1\ \frac{\text{N}}{\text{m}^2} = 1 \text{ pascal (Pa)}$$

Why other options are wrong:

- Option A (Newton): the unit of force, not pressure.
- Option B (Joule): the unit of energy or work.
- Option C (Watt): the unit of power.

Final Answer: Pascal $\Rightarrow$ $\boxed{\text{D}}$

Answer: (D) Go Back to Q10

Q11.

Solution

Concept — Least count of a screw gauge: The least count is the pitch divided by the number of divisions on the circular scale.

Step 1 — Write the formula:

$$\text{Least count} = \frac{\text{pitch}}{\text{number of circular-scale divisions}}$$

Step 2 — Substitute pitch $= 1$ mm and 100 divisions:

$$\text{Least count} = \frac{1}{100}$$

Step 3 — Simplify:

$$\text{Least count} = 0.01 \text{ mm}$$

Why other options are wrong:

- Option B (0.1): divides by 10 instead of 100.
- Option C (1): takes the pitch itself as the least count.
- Option D (0.5): halves the pitch, ignoring the division count.

Final Answer: 0.01 mm $\Rightarrow$ A

Answer: (A) Go Back to Q11

Q12.

Solution

Concept — Pressure on a surface: Pressure is the normal force divided by the area over which it acts, $P = F/A$.

Step 1 — Write the formula:

$$P = \frac{F}{A}$$

Step 2 — Substitute $F = 200$ N and $A = 0.5$ m^2:

$$P = \frac{200}{0.5}$$

Step 3 — Simplify:

$$P = 400 \text{ Pa}$$

Why other options are wrong:

- Option A (100): divides by 2 instead of 0.5.
- Option B (1000): multiplies in error.
- Option D (40): off by a factor of ten.

Final Answer: 400 Pa $\Rightarrow$ C

Answer: (C) Go Back to Q12

Q13.

Solution

Concept — Archimedes' principle: The buoyant force equals the weight of the displaced fluid, $F_B = \rho V g$.

Step 1 — Write the formula:

$$F_B = \rho V g$$

Step 2 — Substitute $\rho = 1000$, $V = 0.002$, $g = 10$:

$$F_B = 1000 \times 0.002 \times 10$$

Step 3 — Multiply step by step:

$$1000 \times 0.002 = 2$$

$$2 \times 10 = 20 \text{ N}$$

Why other options are wrong:

- Option A (2): forgets to multiply by g.
- Option B (200): uses the wrong power of ten for the volume.
- Option C (0.02): misplaces the decimal point.

Final Answer: 20 N $\Rightarrow$ $\boxed{\text{D}}$

Answer: (D) Go Back to Q13

Q14.

Solution

Concept — Heat and specific heat: The heat needed to change the temperature of a body is $Q = mc\Delta T$.

Step 1 — Write the formula:

$$Q = mc\Delta T$$

Step 2 — Substitute $m = 2$, $c = 500$, $\Delta T = 10$:

$$Q = 2 \times 500 \times 10$$

Step 3 — Multiply step by step:

$$2 \times 500 = 1000$$

$$1000 \times 10 = 10000 \text{ J}$$

Why other options are wrong:

- Option A (1000): stops after multiplying mass and specific heat, omitting ΔT.
- Option C (100): divides instead of multiplying somewhere.
- Option D (25): divides the quantities together.

Final Answer: 10000 J $\Rightarrow$ B

Answer: (B) Go Back to Q14

Q15.

Solution

Concept — Kinetic energy: A moving body has kinetic energy KE $= \frac{1}{2}mv^2$.

Step 1 — Write the formula:

$$\text{KE} = \frac{1}{2}mv^2$$

Step 2 — Substitute $m = 4$ kg and $v = 10$ m/s:

$$\text{KE} = \frac{1}{2} \times 4 \times (10)^2$$

Step 3 — Evaluate the square:

$$(10)^2 = 100$$

Step 4 — Compute:

$$\text{KE} = \frac{1}{2} \times 4 \times 100 = 2 \times 100 = 200 \text{ J}$$

Why other options are wrong:

- Option B (40): forgets to square the velocity.
- Option C (20): uses momentum-like reasoning, not kinetic energy.

- Option D (400): omits the factor of one-half.

Final Answer: 200 J $\Rightarrow$ A

Answer: (A) Go Back to Q15

Q16.

Solution

Concept — Ohm's law: The voltage across a resistor equals the current through it times its resistance, $V = IR$.

Step 1 — Write the formula:

$$V = IR$$

Step 2 — Substitute $I = 2$ A and $R = 5\ \Omega$:

$$V = 2 \times 5$$

Step 3 — Simplify:

$$V = 10\ \text{V}$$

Why other options are wrong:

- Option B (2.5): divides resistance by current.
- Option C (0.4): divides current by resistance.
- Option D (7): adds current and resistance.

Final Answer: 10 V $\Rightarrow$ A

Answer: (A) Go Back to Q16

Q17.

Solution

Concept — Resistors in series: In a series circuit the total resistance is the sum of the individual resistances.

Step 1 — Write the formula:

$$R_{\text{total}} = R_1 + R_2 + R_3$$

Step 2 — Substitute $2\ \Omega$, $3\ \Omega$ and $5\ \Omega$:

$$R_{\text{total}} = 2 + 3 + 5$$

Step 3 — Add:

$$R_{\text{total}} = 10\ \Omega$$

Why other options are wrong:

- Option A (0.97): uses the parallel formula by mistake.
- Option C (6): adds only two of the three resistors.
- Option D (1.03): another parallel-combination error.

Final Answer: $10\ \Omega \Rightarrow$ B

Answer: (B) Go Back to Q17

Q18.

Solution

Concept — Two equal resistors in parallel: For two equal resistors in parallel, the combined resistance is half of one resistor.

Step 1 — Write the parallel formula:

$$\frac{1}{R_{\text{p}}} = \frac{1}{R} + \frac{1}{R}$$

Step 2 — Substitute $R = 6\ \Omega$:

$$\frac{1}{R_{\text{p}}} = \frac{1}{6} + \frac{1}{6} = \frac{2}{6}$$

Step 3 — Invert to find R_{p}:

$$R_{\text{p}} = \frac{6}{2} = 3\ \Omega$$

Why other options are wrong:

- Option A (12): adds the resistors as if in series.
- Option B (6): leaves a single resistor value.
- Option D (9): an arithmetic error.

Final Answer: $3\ \Omega \Rightarrow$ C

Answer: (C) Go Back to Q18

Q19.

Solution

Concept — Power dissipated in a resistor: The power dissipated is $P = I^2R$.

Step 1 — Write the formula:

$$P = I^2R$$

Step 2 — Substitute $I = 3$ A and $R = 4\ \Omega$:

$$P = (3)^2 \times 4$$

Step 3 — Evaluate the square:

$$(3)^2 = 9$$

Step 4 — Compute:

$$P = 9 \times 4 = 36 \text{ W}$$

Why other options are wrong:

- Option A (12): uses $I \times R$ without squaring the current.
- Option B (7): adds current and resistance.
- Option C (1.33): divides instead of multiplying.

Final Answer: 36 W $\Rightarrow$ D

Answer: (D) Go Back to Q19

Q20.

Solution

Concept — Cells in series: When cells are connected in series, their EMFs add up.

Step 1 — Write the relation:

$$E_{\text{total}} = E_1 + E_2 + E_3$$

Step 2 — Substitute three cells of 1.5 V each:

$$E_{\text{total}} = 1.5 + 1.5 + 1.5$$

Step 3 — Add:

$$E_{\text{total}} = 4.5\ \text{V}$$

Why other options are wrong:

- Option B (1.5): the EMF of a single cell only.
- Option C (0.5): divides instead of adding.
- Option D (3.0): adds only two cells.

Final Answer: 4.5 V $\Rightarrow$ A

Answer: (A) Go Back to Q20

Q21.

Solution

Concept — Electric motor: A motor uses the force on a current-carrying conductor in a magnetic field to convert electrical energy into mechanical (rotational) energy.

Step 1 — Identify the energy conversion: Input is electrical energy; output is mechanical motion.

Step 2 — Match to the device: The device that performs electrical $\rightarrow$ mechanical conversion is the electric motor.

Why other options are wrong:

- Option A (Generator): does the reverse, mechanical $\rightarrow$ electrical.
- Option B (Transformer): changes AC voltage levels, with no mechanical output.
- Option D (Battery): stores chemical energy and supplies electrical energy.

Final Answer: Motor $\Rightarrow$ C

Answer: (C) Go Back to Q21

Q22.

Solution

Concept — Electric generator: A generator uses electromagnetic induction to convert mechanical energy into electrical energy.

Step 1 — Identify the energy conversion: Input is mechanical rotation; output is electrical energy.

Step 2 — Match to the device: The machine performing mechanical $\rightarrow$ electrical conversion is the generator.

Why other options are wrong:

- Option A (Motor): does the reverse conversion.
- Option B (Transformer): only changes AC voltage, no mechanical input.
- Option C (Capacitor): stores charge, it does not generate electricity.

Final Answer: Generator $\Rightarrow$ $\boxed{\text{D}}$

Answer: (D) Go Back to Q22

Q23.

Solution

Concept — Semiconductor diode: A diode conducts when forward biased and blocks current when reverse biased, so it allows current in only one direction.

Step 1 — Recall diode behaviour: Forward bias $\rightarrow$ conducts; reverse bias $\rightarrow$ blocks.

Step 2 — State the consequence: Current is permitted in one direction only, which is why diodes are used for rectification.

Why other options are wrong:

- Option A (both directions): describes a plain conductor, not a diode.
- Option B (no direction): describes an open circuit or insulator.
- Option C (only reverse biased): the opposite of true diode action.

Final Answer: in one direction only $\Rightarrow$ $\boxed{\text{D}}$

Answer: (D) Go Back to Q23

Q24.

Solution

Concept — Alternating current: AC is a current whose direction reverses periodically, unlike DC which flows steadily in one direction.

Step 1 — Recall the definition: The magnitude and direction of AC change with time in a repeating cycle.

Step 2 — Select the matching description: "Periodically reverses its direction" is the defining feature of AC.

Why other options are wrong:

- Option A (one direction only): describes direct current (DC).
- Option C (always zero): then no power could be delivered.
- Option D (cannot do useful work): false, AC powers most electrical equipment.

Final Answer: periodically reverses its direction $\Rightarrow$ $\boxed{\text{B}}$

Answer: (B) Go Back to Q24

Q25.

Solution

Concept — Flight instruments: The altimeter measures the aircraft's altitude (height above mean sea level) using static air pressure.

Step 1 — Match the function to the instrument: Indicating height above sea level is the job of the altimeter.

Step 2 — Confirm the principle: It works by sensing the fall of atmospheric pressure with increasing altitude.

Why other options are wrong:

- Option B (Airspeed indicator): shows speed through the air, not height.
- Option C (Magnetic compass): shows heading or direction.
- Option D (Tachometer): shows engine or rotor rotational speed.

Final Answer: Altimeter $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q25

Q26.

Solution

Concept — Aircraft structure: The fuselage is the central body of an aircraft; the wings, tail and other major parts attach to it.

Step 1 — Identify the marked part: The long central body in the outline is the fuselage.

Step 2 — Confirm its role: It houses the crew, passengers and cargo and carries the structural loads from the attached wings and tail.

Why other options are wrong:

- Option A (Aileron): a small control surface on the wing.
- Option C (Empennage): the tail assembly, not the central body.
- Option D (Nacelle): the housing around an engine.

Final Answer: Fuselage $\Rightarrow$ $\boxed{B}$

Answer: (B) Go Back to Q26

Q27.

Solution

Concept — Control surfaces: Ailerons are hinged surfaces near the wingtips that move in opposite directions to roll the aircraft about its longitudinal axis.

Step 1 — Identify the axis of motion: Rolling (banking) is rotation about the longitudinal axis.

Step 2 — Match the surface: The surfaces controlling roll, located on the outer trailing edge of each wing, are the ailerons.

Why other options are wrong:

- Option A (Rudder): on the vertical tail, controls yaw.
- Option B (Elevator): on the horizontal tail, controls pitch.
- Option D (Flaps): increase lift and drag for take-off and landing, they do not roll the aircraft.

Final Answer: Ailerons $\Rightarrow$ $\boxed{C}$

Answer: (C) Go Back to Q27

Q28.

Solution

Concept — Bernoulli explanation of lift: Air moving faster over the more curved upper surface of an aerofoil has lower pressure than the slower air beneath, and the pressure difference produces lift.

Step 1 — Compare the airflow speeds: The upper surface is more curved, so the air there travels faster.

Step 2 — Apply Bernoulli's principle: Faster airflow means lower pressure, so the upper surface is the low-pressure region.

Why other options are wrong:

- Option A (Lower surface): this is the higher-pressure side.
- Option C (Trailing edge only): pressure varies over the whole surface, not just the edge.
- Option D (No difference): then no lift would be generated.

Final Answer: Upper surface $\Rightarrow$ $\boxed{\text{B}}$

Answer: (B) Go Back to Q28

Q29.

Solution

Concept — Four forces of flight: In steady level flight the four forces are in balance: lift balances weight, and thrust balances drag.

Step 1 — Identify the vertical pair: Lift acts upward and weight acts downward.

Step 2 — State the balance: For constant altitude, lift must exactly equal the weight.

Why other options are wrong:

- Option A (Thrust): a horizontal force, balanced by drag, not lift.
- Option B (Drag): the horizontal force opposing thrust.
- Option D (Friction): not one of the four primary forces of flight.

Final Answer: Weight $\Rightarrow$ $\boxed{\text{C}}$

Answer: (C) Go Back to Q29

Q30.

Solution

Concept — Aircraft hydraulic system: The hydraulic system uses pressurised fluid to operate heavy mechanisms such as the landing gear, flaps and brakes.

Step 1 — Identify the function needed: Raising and lowering the landing gear needs large, controlled mechanical force.

Step 2 — Match to the system: Pressurised hydraulic fluid provides this force, so the landing gear is hydraulically actuated.

Why other options are wrong:

- Option B (Fuel system): supplies fuel to the engines.
- Option C (Oxygen system): supplies breathing oxygen at altitude.
- Option D (Ignition system): starts and sustains combustion in the engine.

Final Answer: Hydraulic system $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q30

Answer Key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	A	2	D	3	C	4	B	5	A
6	D	7	B	8	C	9	B	10	D
11	A	12	C	13	D	14	B	15	A
16	A	17	B	18	C	19	D	20	A
21	C	22	D	23	D	24	B	25	A
26	B	27	C	28	B	29	C	30	A