

AME CET Technical Aptitude

Sample Paper – 8

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 body of mass 6 kg moving at 8 m/s is brought to rest in 4 s by a constant force. The magnitude of the force is:

- (A) 48 N
- (B) 2 N
- (C) 12 N
- (D) 192 N

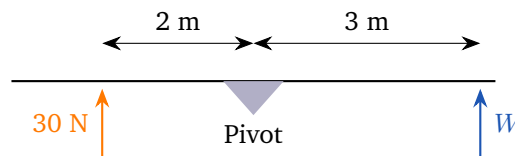
Q2. A body of mass 8 kg has a kinetic energy of 256 J. Its linear momentum (using $p = \sqrt{2mE_k}$) is:

- (A) 32 kg·m/s



- (B) $16 \text{ kg}\cdot\text{m/s}$
- (C) $128 \text{ kg}\cdot\text{m/s}$
- (D) $64 \text{ kg}\cdot\text{m/s}$

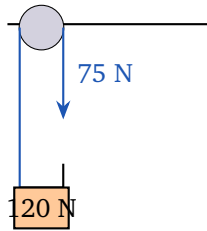
Q3. On the seesaw shown, a 30 N weight sits 2 m to the left of the pivot. To balance it, a weight is placed 3 m to the right of the pivot. The required weight is:



- (A) 45 N
 - (B) 20 N
 - (C) 90 N
 - (D) 5 N
- Q4.** A motor delivers a steady power of 250 W for 8 s . The work done by the motor is:
- (A) 2000 J
 - (B) 31.25 J
 - (C) 258 J
 - (D) 242 J
- Q5.** An electric motor lifts a load by doing 4500 J of useful work in 15 s . The output power of the motor is:
- (A) 67500 W
 - (B) 0.0033 W
 - (C) 300 W
 - (D) 4515 W

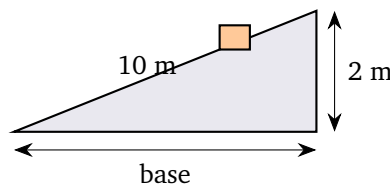


Q6. A single movable pulley (ideal $MA = 2$) is used to lift a 120 N load. In practice an effort of 75 N is needed. The efficiency of the pulley is:



- (A) 100%
- (B) 80%
- (C) 62.5%
- (D) 160%

Q7. An inclined plane has a length of 10 m and a vertical height of 2 m, as shown. Its ideal mechanical advantage (length \div height) is:



- (A) 0.2
- (B) 20
- (C) 8
- (D) 5

Q8. A straight cable supporting a hanging lift carries the weight of the lift. The type of stress acting along the cable is:

- (A) Tensile stress
- (B) Compressive stress
- (C) Shear stress
- (D) Zero stress



Q9. The failure of a metal part after it has been subjected to a large number of repeated or cyclic loads is called:

- (A) Creep
- (B) Corrosion
- (C) Fatigue
- (D) Annealing

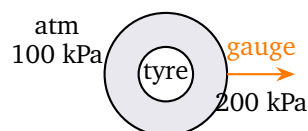
Q10. The SI unit of magnetic flux is the:

- (A) Tesla
- (B) Weber
- (C) Henry
- (D) Ampere

Q11. The number 0.04736 rounded off to three significant figures is:

- (A) 0.047
- (B) 0.0473
- (C) 0.05
- (D) 0.0474

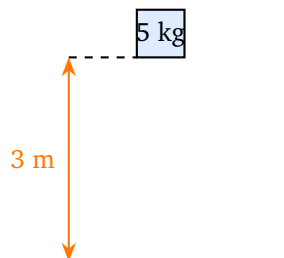
Q12. A tyre gauge reads a gauge pressure of 200 kPa. Taking atmospheric pressure as 100 kPa, the absolute pressure inside the tyre is:



- (A) 300 kPa
- (B) 100 kPa
- (C) 200 kPa
- (D) 20000 kPa



- Q13.** Two equal volumes of liquids, of densities 800 kg/m^3 and 1200 kg/m^3 , are mixed. The density of the mixture is:
- (A) 400 kg/m^3
(B) 1000 kg/m^3
(C) 2000 kg/m^3
(D) 960 kg/m^3
- Q14.** A heat engine takes in 800 J of heat and does 200 J of useful work in each cycle. Its efficiency is:
- (A) 4%
(B) 400%
(C) 25%
(D) 75%
- Q15.** A box of mass 5 kg is raised to a shelf 3 m above the floor, as shown. Taking $g = 10 \text{ m/s}^2$, its gravitational potential energy is:



- (A) 15 J
(B) 8 J
(C) 1.5 J
(D) 150 J

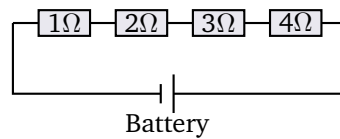
**Part B: Electrical, Electronics &
Aviation Technical Fundamentals**

- Q16.** A current of 4 A flows through a 7Ω resistor. The voltage drop across the resistor is:



- (A) 1.75 V
- (B) 28 V
- (C) 11 V
- (D) 0.57 V

Q17. Four resistors of $1\ \Omega$, $2\ \Omega$, $3\ \Omega$ and $4\ \Omega$ are connected in series, as shown. The total resistance of the circuit is:



- (A) $0.48\ \Omega$
- (B) $6\ \Omega$
- (C) $24\ \Omega$
- (D) $10\ \Omega$

Q18. Two resistors, each of $2\ \Omega$, are connected in parallel. Their combined resistance is:

- (A) $1\ \Omega$
- (B) $4\ \Omega$
- (C) $2\ \Omega$
- (D) $0.5\ \Omega$

Q19. A device draws a current of $5\ \text{A}$ from a $12\ \text{V}$ supply. The power consumed by the device is:

- (A) $17\ \text{W}$
- (B) $2.4\ \text{W}$
- (C) $60\ \text{W}$
- (D) $7\ \text{W}$



- Q20.** Five identical cells, each of EMF 2 V, are connected in series. The total EMF of the combination is:
- (A) 2 V
 - (B) 10 V
 - (C) 0.4 V
 - (D) 7 V
- Q21.** The device that converts electrical energy into sound energy is the:
- (A) Microphone
 - (B) Generator
 - (C) Transformer
 - (D) Loudspeaker
- Q22.** A transformer can change voltage levels only with alternating current because it works on the principle of:
- (A) mutual electromagnetic induction
 - (B) chemical reaction
 - (C) electrostatic attraction
 - (D) simple resistance heating
- Q23.** Which of the following is a commonly used semiconductor material in electronic devices?
- (A) Copper
 - (B) Rubber
 - (C) Silicon
 - (D) Glass
- Q24.** The voltage supplied by a standard AC mains source varies with time in the shape of a:

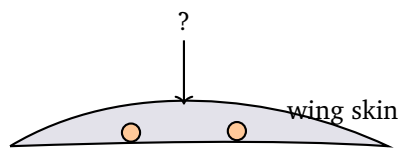


- (A) straight horizontal line
- (B) sine wave
- (C) square pulse that never changes
- (D) single sudden spike

Q25. The cockpit instrument that indicates the quantity of fuel remaining in the aircraft tanks is the:

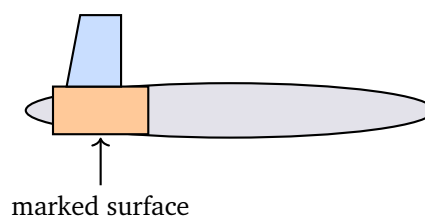
- (A) Altimeter
- (B) Airspeed indicator
- (C) Fuel gauge
- (D) Magnetic compass

Q26. In the wing cross-section shown, the marked internal member runs front-to-back and gives the wing its aerofoil shape. It is called the:



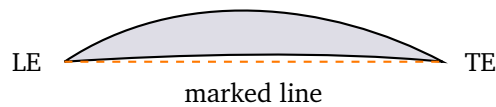
- (A) Aileron
- (B) Nacelle
- (C) Fuselage
- (D) Rib

Q27. The fixed horizontal tail surface marked in the figure provides longitudinal (pitch) stability to the aircraft. It is called the:



- (A) Horizontal stabilizer
- (B) Aileron
- (C) Vertical fin
- (D) Wing flap

Q28. For the aerofoil section shown, the straight line marked joining the leading edge to the trailing edge is called the:



- (A) Camber line
 - (B) Chord line
 - (C) Span line
 - (D) Angle of attack
- Q29.** Of the four forces acting on an aircraft in flight, the weight always acts:
- (A) forward along the flight path
 - (B) backward opposing motion
 - (C) vertically downward toward the centre of the Earth
 - (D) upward, perpendicular to the wing
- Q30.** The aircraft system responsible for slowing and stopping the wheels during landing roll and taxiing is the:
- (A) Fuel system
 - (B) Oxygen system
 - (C) Ignition system
 - (D) Brake system



Detailed Solutions

Q1.

Solution

Concept — Impulse–momentum theorem: The constant force needed to change a body's momentum is $F = \frac{m(v - u)}{t}$, where the magnitude is taken for the retarding force.

Step 1 — Write the formula:

$$F = \frac{m(u - v)}{t}$$

Step 2 — Substitute $m = 6 \text{ kg}$, $u = 8 \text{ m/s}$, $v = 0$, $t = 4 \text{ s}$:

$$F = \frac{6 \times (8 - 0)}{4}$$

Step 3 — Multiply the numerator:

$$F = \frac{48}{4}$$

Step 4 — Simplify:

$$F = 12 \text{ N}$$

Why other options are wrong:

- Option A (48): stops at the momentum change mu , forgetting to divide by time.
- Option B (2): divides time by velocity instead of using the full formula.
- Option D (192): multiplies by time instead of dividing.

Final Answer: 12 N \Rightarrow C

Answer: (C) [Go Back to Q1](#)



Q2.

Solution

Concept — Momentum from kinetic energy: Kinetic energy and momentum are linked by $p = \sqrt{2mE_k}$.

Step 1 — Write the formula:

$$p = \sqrt{2mE_k}$$

Step 2 — Substitute $m = 8 \text{ kg}$ and $E_k = 256 \text{ J}$:

$$p = \sqrt{2 \times 8 \times 256}$$

Step 3 — Multiply inside the root:

$$2 \times 8 = 16$$

$$16 \times 256 = 4096$$

Step 4 — Take the square root:

$$p = \sqrt{4096} = 64 \text{ kg} \cdot \text{m/s}$$

Why other options are wrong:

- Option A (32): takes the square root of $2E_k$ only, dropping the mass factor.
- Option B (16): square-roots only the product $2m$.
- Option C (128): forgets to take the square root of the full product.

Final Answer: $64 \text{ kg} \cdot \text{m/s} \Rightarrow \boxed{\text{D}}$

Answer: (D) [Go Back to Q2](#)

Q3.

Solution

Concept — Principle of moments: A seesaw balances when the clockwise moment equals the anticlockwise moment, $W_1d_1 = W_2d_2$.

Step 1 — Write the balance condition:

$$W_1d_1 = W_2d_2$$



Step 2 — Substitute $W_1 = 30 \text{ N}$, $d_1 = 2 \text{ m}$, $d_2 = 3 \text{ m}$:

$$30 \times 2 = W_2 \times 3$$

Step 3 — Compute the known moment:

$$60 = W_2 \times 3$$

Step 4 — Solve for W_2 :

$$W_2 = \frac{60}{3} = 20 \text{ N}$$

Why other options are wrong:

- Option A (45): multiplies 30 by 1.5 in error.
- Option C (90): multiplies the moment by 3 instead of dividing.
- Option D (5): divides 30 by the wrong distance.

Final Answer: 20 N \Rightarrow

[Go Back to Q3](#)

Q4.

Solution

Concept — Work from power and time: Power is work per unit time, so the work done is $W = P \times t$.

Step 1 — Write the formula:

$$W = P \times t$$

Step 2 — Substitute $P = 250 \text{ W}$ and $t = 8 \text{ s}$:

$$W = 250 \times 8$$

Step 3 — Simplify:

$$W = 2000 \text{ J}$$

Why other options are wrong:

- Option B (31.25): divides power by time instead of multiplying.
- Option C (258): adds power and time.



- Option D (242): subtracts time from power.

Final Answer: 2000 J \Rightarrow

Answer: (A) [Go Back to Q4](#)

Q5.

Solution

Concept — Output power of a motor: Output power is the useful work done divided by the time taken, $P = W/t$.

Step 1 — Write the formula:

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

Step 2 — Substitute $W = 4500$ J and $t = 15$ s:

$$P = \frac{4500}{15}$$

Step 3 — Simplify:

$$P = 300 \text{ W}$$

Why other options are wrong:

- Option A (67500): multiplies work by time instead of dividing.
- Option B (0.0033): divides time by work, inverting the formula.
- Option D (4515): adds work and time.

Final Answer: 300 W \Rightarrow

Answer: (C) [Go Back to Q5](#)

Q6.

Solution

Concept — Efficiency of a machine: Efficiency is the ideal effort divided by the actual effort (or load/MA divided by actual effort), expressed as a percentage.

Step 1 — Find the ideal effort:

$$\text{Ideal effort} = \frac{\text{Load}}{\text{MA}} = \frac{120}{2} = 60 \text{ N}$$



Step 2 — Write the efficiency formula:

$$\eta = \frac{\text{ideal effort}}{\text{actual effort}} \times 100\%$$

Step 3 — Substitute ideal = 60 N and actual = 75 N:

$$\eta = \frac{60}{75} \times 100\%$$

Step 4 — Simplify:

$$\eta = 0.8 \times 100\% = 80\%$$

Why other options are wrong:

- Option A (100%): assumes the ideal effort equals the actual effort.
- Option C (62.5%): divides actual effort wrongly using the full load.
- Option D (160%): inverts the ratio, giving an impossible value above 100%.

Final Answer: 80% \Rightarrow

[Go Back to Q6](#)

Q7.

Solution

Concept — Mechanical advantage of an inclined plane: For an ideal inclined plane the mechanical advantage equals the slope length divided by the vertical height.

Step 1 — Write the formula:

$$MA = \frac{\text{length}}{\text{height}}$$

Step 2 — Substitute length = 10 m and height = 2 m:

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

Step 3 — Simplify:

$$MA = 5$$

Why other options are wrong:



- Option A (0.2): inverts the ratio (height over length).
- Option B (20): multiplies length and height.
- Option C (8): subtracts height from length.

Final Answer: 5 \Rightarrow

Answer: (D) [Go Back to Q7](#)

Q8.

Solution

Concept — Types of stress: A force that stretches or pulls a member along its length produces tensile stress; a force that pushes or squeezes produces compressive stress.

Step 1 — Identify the loading: A hanging lift pulls down on the cable, stretching it along its length.

Step 2 — Match to the stress type: A stretching (pulling) load along the member is tensile stress.

Why other options are wrong:

- Option B (Compressive): would apply if the member were being pushed or squeezed, not stretched.
- Option C (Shear): acts parallel to the cross-section, as in cutting, not along a stretched cable.
- Option D (Zero stress): the cable clearly carries the weight, so the stress is not zero.

Final Answer: Tensile stress \Rightarrow

Answer: (A) [Go Back to Q8](#)

Q9.

Solution

Concept — Fatigue failure: Fatigue is the progressive weakening and eventual fracture of a material caused by repeated or cyclic loading, even below its normal breaking stress.

Step 1 — Match the description: “Failure after many repeated or cyclic loads” is the defining description of fatigue.



Step 2 — Confirm the relevance: Fatigue is a key concern in aircraft maintenance, since wings and fuselage experience countless load cycles.

Why other options are wrong:

- Option A (Creep): slow deformation under a constant load over time, not cyclic loading.
- Option B (Corrosion): chemical attack of the material, not a load effect.
- Option D (Annealing): a heat treatment to soften metal, not a failure mode.

Final Answer: Fatigue \Rightarrow

Answer: (C) [Go Back to Q9](#)

Q10.

Solution

Concept — SI unit of magnetic flux: The SI unit of magnetic flux is the weber (Wb), equal to one tesla times one square metre.

Step 1 — Recall the quantity: Magnetic flux measures the total magnetic field passing through a surface.

Step 2 — Name the unit:

$$1 \text{ weber} = 1 \text{ tesla} \times 1 \text{ m}^2$$

Why other options are wrong:

- Option A (Tesla): the unit of magnetic flux density (field strength), not total flux.
- Option C (Henry): the unit of inductance.
- Option D (Ampere): the unit of electric current.

Final Answer: Weber \Rightarrow

Answer: (B) [Go Back to Q10](#)



Q11.

Solution

Concept — Significant figures: To round to three significant figures, keep the first three non-zero digits and round the third using the next digit. Leading zeros are not significant.

Step 1 — Identify the significant digits of 0.04736: The significant digits are 4, 7, 3, 6 (the leading zeros do not count).

Step 2 — Keep three significant figures: The first three significant digits are 4, 7, 3, giving 0.0473 before rounding.

Step 3 — Round using the next digit (6): Since the next digit is 6 (≥ 5), round the 3 up to 4.

$$0.04736 \approx 0.0474$$

Why other options are wrong:

- Option A (0.047): this has only two significant figures, not three.
- Option B (0.0473): correct digits but not rounded up for the trailing 6.
- Option C (0.05): rounded to only one significant figure.

Final Answer: 0.0474 \Rightarrow D

Answer: (D) [Go Back to Q11](#)

Q12.

Solution

Concept — Gauge and absolute pressure: Absolute pressure equals the gauge pressure plus the atmospheric pressure, $P_{\text{abs}} = P_{\text{gauge}} + P_{\text{atm}}$.

Step 1 — Write the relation:

$$P_{\text{abs}} = P_{\text{gauge}} + P_{\text{atm}}$$

Step 2 — Substitute $P_{\text{gauge}} = 200 \text{ kPa}$ and $P_{\text{atm}} = 100 \text{ kPa}$:

$$P_{\text{abs}} = 200 + 100$$

Step 3 — Add:

$$P_{\text{abs}} = 300 \text{ kPa}$$



Why other options are wrong:

- Option B (100): gives only the atmospheric pressure.
- Option C (200): gives only the gauge reading, omitting atmospheric.
- Option D (20000): multiplies the two pressures instead of adding.

Final Answer: 300 kPa \Rightarrow

Answer: (A) [Go Back to Q12](#)

Q13.

Solution

Concept — Density of a mixture of equal volumes: When equal volumes of two liquids are mixed, the mixture density is the simple average of the two densities.

Step 1 — Write the relation for equal volumes:

$$\rho_{\text{mix}} = \frac{\rho_1 + \rho_2}{2}$$

Step 2 — Substitute $\rho_1 = 800$ and $\rho_2 = 1200$:

$$\rho_{\text{mix}} = \frac{800 + 1200}{2}$$

Step 3 — Add the numerator:

$$\rho_{\text{mix}} = \frac{2000}{2}$$

Step 4 — Divide:

$$\rho_{\text{mix}} = 1000 \text{ kg/m}^3$$

Why other options are wrong:

- Option A (400): subtracts and halves the densities.
- Option C (2000): adds the densities but forgets to divide by two.
- Option D (960): uses an incorrect weighted value.

Final Answer: 1000 kg/m³ \Rightarrow

Answer: (B) [Go Back to Q13](#)



Q14.

Solution

Concept — Efficiency of a heat engine: Efficiency is the useful work output divided by the heat input, expressed as a percentage.

Step 1 — Write the formula:

$$\eta = \frac{W}{Q_{\text{in}}} \times 100\%$$

Step 2 — Substitute $W = 200 \text{ J}$ and $Q_{\text{in}} = 800 \text{ J}$:

$$\eta = \frac{200}{800} \times 100\%$$

Step 3 — Simplify the fraction:

$$\frac{200}{800} = 0.25$$

Step 4 — Convert to percentage:

$$\eta = 0.25 \times 100\% = 25\%$$

Why other options are wrong:

- Option A (4%): divides incorrectly, misplacing a factor.
- Option B (400%): inverts the ratio, giving an impossible value.
- Option D (75%): uses the rejected heat (600 J) instead of the work.

Final Answer: 25% \Rightarrow C

Answer: (C) [Go Back to Q14](#)

Q15.

Solution

Concept — Gravitational potential energy: The potential energy gained on raising a body is $PE = mgh$.

Step 1 — Write the formula:

$$PE = mgh$$



Step 2 — Substitute $m = 5 \text{ kg}$, $g = 10 \text{ m/s}^2$, $h = 3 \text{ m}$:

$$\text{PE} = 5 \times 10 \times 3$$

Step 3 — Multiply step by step:

$$5 \times 10 = 50$$

$$50 \times 3 = 150 \text{ J}$$

Why other options are wrong:

- Option A (15): multiplies only mass and height, omitting g .
- Option B (8): adds the three quantities instead of multiplying.
- Option C (1.5): divides instead of multiplying.

Final Answer: 150 J \Rightarrow D

Answer: (D) [Go Back to Q15](#)

Q16.

Solution

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

Step 1 — Write the formula:

$$V = IR$$

Step 2 — Substitute $I = 4 \text{ A}$ and $R = 7 \Omega$:

$$V = 4 \times 7$$

Step 3 — Simplify:

$$V = 28 \text{ V}$$

Why other options are wrong:

- Option A (1.75): divides resistance by current.
- Option C (11): adds current and resistance.
- Option D (0.57): divides current by resistance.

Final Answer: 28 V \Rightarrow B



Answer: (B) [Go Back to Q16](#)

Q17.

Solution

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

Step 1 — Write the formula:

$$R_{\text{total}} = R_1 + R_2 + R_3 + R_4$$

Step 2 — Substitute 1 Ω , 2 Ω , 3 Ω and 4 Ω :

$$R_{\text{total}} = 1 + 2 + 3 + 4$$

Step 3 — Add:

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

Why other options are wrong:

- Option A (0.48): uses the parallel-combination formula by mistake.
- Option B (6): adds only three of the four resistors.
- Option C (24): multiplies the resistors instead of adding.

Final Answer: 10 Ω \Rightarrow D

Answer: (D) [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:

$$\frac{1}{R_p} = \frac{1}{R} + \frac{1}{R}$$



Step 2 — Substitute $R = 2 \Omega$:

$$\frac{1}{R_p} = \frac{1}{2} + \frac{1}{2} = \frac{2}{2} = 1$$

Step 3 — Invert to find R_p :

$$R_p = 1 \Omega$$

Why other options are wrong:

- Option B (4): adds the resistors as if in series.
- Option C (2): leaves a single resistor value.
- Option D (0.5): divides by four instead of two.

Final Answer: $1 \Omega \Rightarrow$

Answer: (A) [Go Back to Q18](#)

Q19.

Solution

Concept — Electrical power: The power consumed by a device is the product of voltage and current, $P = VI$.

Step 1 — Write the formula:

$$P = VI$$

Step 2 — Substitute $V = 12 \text{ V}$ and $I = 5 \text{ A}$:

$$P = 12 \times 5$$

Step 3 — Simplify:

$$P = 60 \text{ W}$$

Why other options are wrong:

- Option A (17): adds voltage and current.
- Option B (2.4): divides voltage by current.
- Option D (7): subtracts current from voltage.

Final Answer: $60 \text{ W} \Rightarrow$

Answer: (C) [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:

$$E_{\text{total}} = n \times E$$

Step 2 — Substitute $n = 5$ cells of $E = 2$ V each:

$$E_{\text{total}} = 5 \times 2$$

Step 3 — Simplify:

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

Why other options are wrong:

- Option A (2): the EMF of a single cell only.
- Option C (0.4): divides instead of adding.
- Option D (7): adds the cell count and EMF rather than multiplying.

Final Answer: 10 V \Rightarrow

[Go Back to Q20](#)

Q21.

Solution

Concept — Loudspeaker: A loudspeaker uses a current-carrying coil in a magnetic field to vibrate a diaphragm, converting electrical energy into sound energy.

Step 1 — Identify the energy conversion: Input is an electrical signal; output is sound.

Step 2 — Match to the device: The device performing electrical \rightarrow sound conversion is the loudspeaker.

Why other options are wrong:

- Option A (Microphone): does the reverse, sound \rightarrow electrical.
- Option B (Generator): converts mechanical energy into electrical energy.
- Option C (Transformer): changes AC voltage levels, with no sound output.



Final Answer: Loudspeaker \Rightarrow D

Answer: (D) [Go Back to Q21](#)

Q22.

Solution

Concept — Transformer action: A transformer transfers energy between two coils through a changing magnetic field, working on the principle of mutual electromagnetic induction, which requires a changing (AC) current.

Step 1 — Recall how a transformer works: The alternating current in the primary coil sets up a changing magnetic flux that links the secondary coil.

Step 2 — Name the principle: This linking of changing flux between two coils is mutual electromagnetic induction.

Why other options are wrong:

- Option B (chemical reaction): describes a cell or battery, not a transformer.
- Option C (electrostatic attraction): is the basis of a capacitor, not a transformer.
- Option D (resistance heating): describes a heater, and would only waste energy.

Final Answer: mutual electromagnetic induction \Rightarrow A

Answer: (A) [Go Back to Q22](#)

Q23.

Solution

Concept — Semiconductors: Semiconductors have a conductivity between that of conductors and insulators; silicon and germanium are the common materials used in diodes, transistors and chips.

Step 1 — Recall typical semiconductor materials: The most widely used semiconductor in electronics is silicon.

Step 2 — Select the matching option: Among the choices, only silicon is a semiconductor.

Why other options are wrong:

- Option A (Copper): a good conductor, not a semiconductor.



- Option B (Rubber): an insulator.
- Option D (Glass): an insulator.

Final Answer: Silicon \Rightarrow

Answer: (C) [Go Back to Q23](#)

Q24.

Solution

Concept — AC waveform: A standard alternating-current source produces a voltage that rises and falls smoothly, reversing direction each cycle, tracing out a sine wave.

Step 1 — Recall the shape of AC: AC voltage increases to a peak, falls through zero, reaches a negative peak and returns, repeating smoothly.

Step 2 — Name the waveform: This smooth, periodic shape is a sine wave (sinusoidal waveform).

Why other options are wrong:

- Option A (straight horizontal line): describes a constant DC voltage.
- Option C (square pulse that never changes): not how standard AC mains varies.
- Option D (single sudden spike): describes a transient, not a continuous AC supply.

Final Answer: sine wave \Rightarrow

Answer: (B) [Go Back to Q24](#)

Q25.

Solution

Concept — Flight instruments: The fuel gauge displays the amount of fuel remaining in the aircraft tanks, allowing the crew to monitor consumption and range.

Step 1 — Match the function to the instrument: Indicating the quantity of fuel remaining is the job of the fuel gauge.

Step 2 — Confirm the role: It senses the fuel level in the tanks and shows it to the crew.



Why other options are wrong:

- Option A (Altimeter): shows height above mean sea level.
- Option B (Airspeed indicator): shows speed through the air.
- Option D (Magnetic compass): shows heading or direction.

Final Answer: Fuel gauge ⇒

Answer: (C) [Go Back to Q25](#)

Q26.

Solution

Concept — Wing structure: Ribs are the internal members that run front-to-back across a wing and give it its aerofoil (curved) cross-sectional shape, with the skin attached over them.

Step 1 — Identify the marked member: The member shaping the wing's cross-section and supporting the skin is the rib.

Step 2 — Confirm its role: Ribs maintain the aerofoil profile and transfer loads from the skin to the spars.

Why other options are wrong:

- Option A (Aileron): a movable control surface, not an internal shaping member.
- Option B (Nacelle): the housing around an engine.
- Option C (Fuselage): the central body of the aircraft, not a wing member.

Final Answer: Rib ⇒

Answer: (D) [Go Back to Q26](#)

Q27.

Solution

Concept — Tail surfaces: The horizontal stabilizer is the fixed horizontal surface at the tail that provides longitudinal (pitch) stability, keeping the nose from pitching up or down on its own.

Step 1 — Identify the function: Steady pitch behaviour about the lateral axis is longitudinal stability.



Step 2 — Match the surface: The fixed horizontal tail surface giving this stability is the horizontal stabilizer.

Why other options are wrong:

- Option B (Aileron): a movable wing surface controlling roll, not a fixed tail surface.
- Option C (Vertical fin): the vertical tail surface providing directional (yaw) stability.
- Option D (Wing flap): a high-lift device on the wing, not a stabilizing surface.

Final Answer: Horizontal stabilizer \Rightarrow

Answer: (A) [Go Back to Q27](#)

Q28.

Solution

Concept — Aerofoil geometry: The chord line is the straight line joining the leading edge to the trailing edge of an aerofoil; its length is the chord.

Step 1 — Identify the marked line: The straight line from leading edge to trailing edge is the chord line.

Step 2 — Confirm its use: The chord line is the reference from which the angle of attack and camber are measured.

Why other options are wrong:

- Option A (Camber line): the curved mean line midway between the upper and lower surfaces, not a straight line.
- Option C (Span line): the span runs wingtip to wingtip, not along the section.
- Option D (Angle of attack): an angle between the chord and the airflow, not a line on the aerofoil.

Final Answer: Chord line \Rightarrow

Answer: (B) [Go Back to Q28](#)



Q29.

Solution

Concept — Weight as a force of flight: Weight is the gravitational pull on the aircraft; it always acts vertically downward, toward the centre of the Earth.

Step 1 — Recall the nature of weight: Weight is the force of gravity on the aircraft's mass.

Step 2 — State its direction: Gravity always pulls vertically downward, toward the Earth's centre, regardless of the aircraft's attitude.

Why other options are wrong:

- Option A (forward along the flight path): describes thrust, not weight.
- Option B (backward opposing motion): describes drag.
- Option D (upward, perpendicular to the wing): describes lift.

Final Answer: vertically downward toward the centre of the Earth ⇒

[Go Back to Q29](#)

Q30.

Solution

Concept — Aircraft brake system: The brake system applies friction to the main wheels to slow and stop the aircraft during the landing roll and while taxiing.

Step 1 — Identify the function needed: Slowing and stopping the wheels requires a braking action on the landing-gear wheels.

Step 2 — Match to the system: The system that does this is the brake system.

Why other options are wrong:

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

Final Answer: Brake system ⇒

[Go Back to Q30](#)



Answer Key

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

