

Glossary of engineering terms and abbreviations

The definitions in this glossary refer to words only as they are used in this book. The meanings of certain words will vary according to context. As the texts in this book are authentic and come from a variety of sources, some inconsistency in hyphenation and spelling is inevitable.

The unit and task numbers indicate where the word first appears.

Abbreviations used in the text

R = Reading section

SP = Speaking practice

T = Task

TS = Tapescript

U = Unit

W = Writing section

n = noun

adj = adjective

v = verb

A

A-frame /'eɪ freɪm/ *n* [U10, T5] a structural frame in the shape of the letter A

ac /eɪ 'si:/ *n* [U23, T6] alternating current

aerodynamic /,eə'reɒdai'næmɪk/ *adj* [U12, T3] designed to reduce wind resistance

air classifier /'eə ,klæsɪfaɪə(r)/ *n* [U27, T3] a machine which uses air to segregate materials by size and weight

alarm /ə 'lɑ:m/ *n* [U11, T3] a means of attracting attention utilizing either sound or vision

alloy /'ælɔɪ/ *n* [U12, T3] a metal formed by mixing together other metals and elements

alternator /'ɔ:ltəneɪtə(r)/ *n* [U17, T3] a type of generator producing alternating current

amplifier /'æmplɪfaɪə(r)/ *n* [U16, T8] an electronic device which converts small signal changes to large

anthropomorphic /,ænrəpə'mɔ:fɪk/ *n* [U28, T3] of human-like form

armature /'ɑ:mətʃə(r)/ *n* [U6, T2] the moving part of an electric motor which comprises a piece of iron with loops of wire running round it: the current through the

wire is reversed to provide the changes in magnetic fields required to make the motor run

B

bearing /'beərɪŋ/ *n* [U2, T4] a device to reduce friction and wear between a rotating shaft and a stationary part: may contain balls or rollers

bimetallic corrosion /,bɪmætəlɪk kə'rəʊʒn/ *n* [U22, T6] *see* galvanic corrosion

block diagram /'blɒk ,daɪəgræm/ *n* [U11, T3] schematic drawing showing different functions in a system or stages in a process

body scanner /'bɒdi ,skænə(r)/ *n* [U1, T4] a medical electronic device for building up an image of the internal organs of a patient

brittle /'brɪtl/ *adj* [U3, T2] describes a material which tends to break easily. e.g. glass

brushes /'brʌʃɪz/ *n* [U6, T2] spring-loaded carbon blocks which carry the electric current to the commutator of an electric motor

buoyancy /'bɔɪənsɪ/ *n* [U5, T3] the upthrust exerted by a fluid
buzzer /'bʌzə(r)/ *n* [U7, T5 TS] a device which uses an electric signal to produce a buzzing sound

C

CAD /kæd/ *n* [U20, T1] computer-aided design

CAM /kæm/ *n* [U20, T2] computer-aided manufacture

cam /kæm/ *n* [U4, T7] a specially profiled part which is fitted to a rotating shaft to produce linear motion

capillary tube /kə'pɪləri ,tju:b/ *n* [U15, T2] a tube with a very small diameter bore

CAPP /kæp/ *n* [U20, T2] computer-aided process planning

carbon fibre /'kɑ:bɪn ,faɪbə(r)/ *n* [U25, T5] high-strength fibre made from carbon atoms

carburettor /,kɑ:bə'retə(r)/ *n* [U17, T3] a device where air and petrol are mixed in an internal combustion engine

Cartesian co-ordinates /kɑ:ˌti:ʒn kəʊ'ɔ:diməts/ *n* [U28, T5] information about the position of a body in space using distances measured from three intersecting planes

chain wheel /'tʃeɪn wi:l/ *n* [U12, T1] a toothed pulley or sprocket used for transmitting torque by a chain

charger /'tʃɑ:dʒə(r)/ *n* [U15, T4] a device which contains a unit for converting mains power to direct current at a suitable voltage for charging batteries

chisel /'tʃɪzəl/ *n* [U18, T3] a steel tool with one end formed into a cutting edge

CIM /sɪm/ *n* [U20, T1] computer-integrated manufacturing; describes a series of processes or activities co-ordinated by using a computer

circuit breaker /'sɜ:kɪt ,breɪkə(r)/ *n* [U21, T6] an electrical switch fitted with an overload protection cut out

closed loop /,kləʊzd'lu:p/ *n* [U11, T3] a system where part of the output of a system is fed back into the input to modify the output

commutator /'kɒmjʊ: ,tɛtə(r)/ *n* [U6, T2] the part of the armature of an electric motor which is in contact with the brushes; it reverses the flow of current through the armature

compact disc /,kɒmpækt 'dɪsk/ *n* [U13, T2] plastic disc used to store high quality sound recordings or computer data on its surface

component evaluation /kəm,pəʊnənt ɪvælju'eɪʃn/ *n* [U30, T4] the testing of a component to ensure it conforms to specifications

composite /'kɒmpəzɪt/ *n* [U25, T4] a fibre-reinforced plastic material

compressed air /kəm,pres't'eə(r)/ *n* [U18, T1] air at higher than atmospheric pressure; used to power pneumatic devices such as drills

compression /kəm'preʃn/ *n* [U4, T4] the effect of forces which act to squash a structure

computer model /kəm'pjʊ:tə ,mɒdl/ *n* [U24, T7] a representation of a design created in 3D on a computer using a CAD programme

computer-based /kəm'pjʊ:tə ,beɪst/ *adj* [U30, T3] describes a system which relies on the use of a computer

condenser /kən'densə(r)/ *n* [U15, T2] a unit where vapour is converted back into a liquid

conductor /kən'dʌktə(r)/ *n* [U3, T3] a material which will transmit electricity or heat

constraint /kən'streɪnt/ *n* [U28, T6] limit imposed by the nature of a mechanism

cooling duct /'ku:lɪŋ dʌkt/ *n* [U23, T9] a passageway to allow air to pass to a hot surface, for example, in a motor

corrosion-resistant /kə'rəʊʒn rɪ,zɪstənt/ *adj* [U3, T3] describes a material which can be used in environments where long-term strength or appearance is important, e.g. stainless steel

corrosive /kə'rəʊsɪv/ *adj* [U9, T1] describes a substance which corrodes (eats or wears away), usually by chemical action

crankshaft /'kræŋkʃɑ:ft/ *n* [U4, T2] the main shaft of an engine which carries the cranks for the pistons

crevice corrosion /'kreɪvɪs kə,rəʊʒn/ *n* [U22, T6] corrosion in cracks or crevices in pipes carrying liquids

cylinder head /'sɪlɪndə ,hed/ *n* [U3, W] a plate which seals the ends of cylinders on internal combustion engines; it contains the valves

D

- damper** /'dæmpə(r)/ *n* [U23, T2] a device fitted between the chassis and axle of a vehicle to remove spring effects and smooth travel
- database** /'deɪtəbeɪs/ *n* [U20, T2] a bank of information stored in a computer for easy access
- dc** /di:'si:/ *n* [U6, T5] direct current
- debug** /,di:'bʌg/ *vt* [U29, T2] detect, locate and correct faults
- degrees of freedom** /dɪ,gri:z əv 'fri:dəm/ *n* [U28, T4] the movements achievable by a robot in three-dimensional space
- desalination** /,di:sæli'neɪʃn/ *n* [U29, T5] production of fresh water from sea water
- die** /daɪ/ *n* [U13, T7] a specially shaped block of metal used as a mould for other materials
- die-cast** /'daɪkɑ:st/ *adj* [U12, T6] produced from moulds
- disc brakes** /'dɪsk breɪks/ *n* [U19, T2] brakes in which a caliper clamps brake pads onto a disc connected to the wheel of the vehicle
- diverter valve** /daɪ'vɜ:tə ,vælv/ *n* [U8, T6] a valve used in central heating to redirect the flow of hot water from radiators to water heating and vice versa
- documentation** /,dɒkjə'men'teɪʃn/ *n* [U30, T9] the complete description of a product in words and drawings at every stage in its manufacture
- ductile** /'dʌktaɪl/ *adj* [U3, T3] describes a material which can be stretched and yet retain its strength, e.g. copper
- ductility** /dʌk'tɪlɪti/ *n* [U26, T9] quality of being ductile

E

- EDM** /,i: di: 'em/ *n* [U20, T2] engineering data management
- elastic limit** /i'læstɪk ,lɪmɪt/ *n* [U26, T6] the point at which a material will no longer return to its original shape after tensile forces are released
- elasticity** /ɪlæs'tɪsɪti/ *n* [U5, T3] the property of a material to stretch and then return to its original state
- encapsulation** /ɪŋ,kæpsjə'leɪʃn/ *n* [U3, T3] the process of completely embedding a component in a resin as protection from the environment

- engine** /'endʒɪn/ *n* [U3, W] a device which converts fuel into work
- equilibrium** /,ekwɪ'lɪbrɪəm/ *n* [U5, T3] balance (a structure is in equilibrium when all the forces on it are stable and there is no movement)
- escalator** /'eskəleɪtə(r)/ *n* [U4, T2] moving stairs
- evaporator** /ɪ'væpəreɪtə(r)/ *n* [U15, T2] a unit in which a liquid is converted into a vapour
- exfoliate corrosion** /eks'fəʊliət kə,rəʊʒn/ *n* [U22, T6] when flakes of metal are displaced due to corrosion
- extrusion** /ɪk'stru:ʒn/ *n* [U13, T7] a manufacturing process whereby a material in its plastic state is forced through a die, e.g. to make plastic pipes

F

- feedback** /'fi:dbæk/ *n* [U11, T3] a signal responding to the output of a system which is returned to the input to modify the output
- field magnet** /'fi:ld ,mægnət/ *n* [U6, T2] a magnet for producing and maintaining the magnetic field in a generator or electric motor
- friction** /'frɪkʃn/ *n* [U5, T2] the resistance experienced when two bodies rub against each other
- fuel cell** /'fjuəl sel/ *n* [U25, T4] a cell which converts the chemical energy of a fuel to electrical energy
- fulcrum** /'fʊlkrəm/ *n* [U5, T6] the pivot point of a system of levers, e.g. the screw in a pair of scissors

G

- galvanic corrosion** /gæl'vænɪk kə,rəʊʒn/ *n* [U22, T6] the corrosion which results when two dissimilar metals are connected in the presence of moisture
- gears** /gɪəz/ *n* [U12, T1] an arrangement of toothed wheels which mesh together to change the speed or direction of movement
- goggles** /'gɒgəlz/ *n* [U9, T7] protective eye wear completely surrounding the eyes
- granules** /'grænʒəʊlz/ *n* [U13, T7] material, e.g. plastic, in the form of small grains

grinder /'graɪndə(r)/ *n* 1 [U9, T3] a machine with a rotating disc of abrasive material used for sharpening tools and removing rough edges [U29 SP (A)] a grinding machine operator

guard /gɑ:d/ *n* [U9, T3] a device to safeguard the operators of moving machinery

H **hammer mill** /'hæmə ml/ *n* [U27, T3] a crushing machine using impacts from rotating arms

hazard /'hæzəd/ *n* [U9, T2] danger

heat exchanger /'hi:t iks,tʃeɪndʒə(r)/ *n* [U8, T3] the part of a boiler where the water is heated

heat-resistant /'hi:t ri,zɪstənt/ *adj* [U3, T3] describes a material which will withstand exposure to high temperature

hinge /hɪndʒ/ *n* [U5, T6] a flexible mounting for doors and lids

hydraulic /haɪ'drɔ:ɪk/ *adj* [U19, T2] describes a system using cylinders and pistons and driven by a fluid

I **ignition** /ɪg'niʃn/ *n* [U28, T9] the circuit which allows high-tension current to pass to the sparking plugs in an internal combustion engine

insulator /'ɪnsjʊ,leɪtə(r)/ *n* [U3, T3] a substance which will not transmit electricity or heat

interface /'ɪntəfeɪs/ *n* [U28, T2] hardware and software to enable a computer to communicate with the device to be controlled

intergranular corrosion /,ɪntəgrænjələ kə'rəʊʒn/ *n* [U22, T6] corrosion at the boundaries of the crystal grains of a material

IT /aɪ 'ti:/ *n* [U20, T1] information technology

J **jig** /dʒɪg/ *n* [U29 SP (A)] a work-holding device made for a specific component, e.g. to hold it for drilling

JIT /dʒeɪ aɪ 'ti:/ *n* [U20, T2] just-in-time manufacturing

L **laser** /'leɪzə(r)/ *n* [U13, T2] Light Amplification by Stimulated Emission of Radiation

LCD /,el si: 'di:/ *n* [U16, T6] liquid crystal display

load cell /'ləʊd sel/ *n* [U16, T5] a load-measuring element using an electrical strain gauge as the measuring device

M **malleable** /'mæliəbl/ *adj* [U3, T3] describes a material which can be stretched without breaking apart, e.g. copper

manipulator /mə'nɪpjə,leɪtə(r)/ *n* [U28, T2] the part of a robot which carries out the work

methods engineer /'meθədʒ endʒɪ,nɪə(r)/ *n* [U29, T7] someone concerned with establishing the best production method and equipment for making an article

micrometer /maɪ'krɒm.ɪtə(r)/ *n* [U29, T2] a U-shaped gauge used for precise measurement of thicknesses: the gap between the measuring faces is adjusted by rotating a screw thread encased in a graduated sleeve

microprocessor /,maɪkrəʊ'prəʊsesə(r)/ *n* [U16, T5] integrated circuit chip at the centre of a computer for controlling the system and processing the data

mill /mɪl/ *n* [U29, SP (B)] a milling machine: uses multi-toothed cutters to shape metals and plastics

miller /'mɪlə(r)/ *n* [U29, SP (A)] a milling machine operator

MRP /,em ɑ: 'pi:/ *n* [U20, T2] materials requirement planning

P **pedal** /'ped(ə)l/ *n* [U12, T1] foot-operated lever, e.g. the accelerator pedal of a car

pendulum /'pendjələm/ *n* [U4, T2] the swinging weight used for time control in some clocks

pilot light /'paɪlət laɪt/ *n* [U8, T2] a small flame used to ignite the main burners in a gas-fired heating boiler

pitch /pɪtʃ/ *n* [U28, T8] angular displacement along the lateral axis

pitting /'pɪtɪŋ/ *n* [U22, T6] corrosion due to localized chemical reaction

plant /plɑ:nt/ *n* [U8, T7] the machines in a factory and all the buildings

PLC /,pi: el 'si:/ *n* [U20, T2] programmable logic control/controller: the system/device by which a microprocessor controls a stage in a process automatically

pneumatic drill /nju:,mæɪtɪk 'drɪl/ *n* [U18, T3] a drilling machine using compressed air for power

pressure regulator /'preʃə ,regjələtə(r)/ *n* [U21, T6] a device for adjusting or maintaining pressure levels

prototype /'prəʊtə,taɪp/ *n* [U10, T2 TS] the first working model

pulley /'pʊli/ *n* [U10, T5] a grooved wheel over which a rope passes

R

- reaction** /ri:'ækʃn/ *n* [U5, T3] the force which opposes an applied force
- reamer** /ri:mə(r)/ *n* [U19, T6] a tool for enlarging a drilled hole to a precise diameter
- recycling** /,ri:'saɪklɪŋ/ *n* [U27, T1] extracting from waste all materials that can be reprocessed to be used again
- refrigerant** /rɪ'frɪdʒərənt/ *n* [U15, T2] a substance which changes easily from a liquid to a gas and which can be used in refrigeration to remove heat energy and transfer it to the surroundings
- regenerative braking** /rɪ'dʒenərətɪv ,breɪkɪŋ/ *n* [U25, T5] a method of braking electric motors where the motor becomes a generator converting the energy of the slowing wheels into electricity
- remote control** /rɪ,məʊt kən'trəʊl/ *n* [U11, T3] a device for controlling something from a distance
- respirator** /'respə,reɪtə(r)/ *n* [U9, T7] a mask worn over the nose and mouth to filter air
- resultant** /rɪ'zʌltənt/ *n* [U5, T2] the single outcome of a number of different vectors
- revolve** /rɪ'vɒlv/ *vi* [U5, T7 TS] turn, rotate
- robotics** /rəʊ'bɒtɪks/ *n* [U28] the study or production of machines which perform tasks in a manner similar to humans
- roll** /rəʊl/ *n* [U28, T8] angular rotation about a longitudinal axis
- rotor** /'rəʊtə(r)/ *n* [U17, T2] rotating part of a generator

S

- scallop** /'skɒləp/ *n* [U28, T6] fan-shaped curve
- scratch-resistant** /'skrætʃ rɪ,zɪstənt/ *adj* [U3, T3] describes a material which retains its appearance when exposed to abrasion
- sensing device** /'sensɪŋ dɪ,vaɪs/ *n* [U7, T5 TS] a device which monitors the operating environment and is sensitive to change
- shock absorber** /'ʃɒk əb,zɔ:bə(r)/ *n* [U11, T2] a device for absorbing shocks and vibrations

- signal generator** /'sɪgnəl ,dʒenəreɪtə(r)/ *n* [U21, T6] electronic device which produces various signals used in tests and measurements
- solenoid** /'səʊlənɔɪd/ *n* [U11, T2] a coil with an iron core which is pulled into the coil by a current passing through the coil
- solenoid valve** /'səʊlənɔɪd ,vælv/ *n* [U11, T2] a valve operated by a solenoid
- spanner** /'spænə(r)/ *n* [U5, T7 TS] a tool, or level, for applying force to nuts and bolts
- speed governor** /'spi:d ,gʌvənə(r)/ *n* [U21, T6] a device fitted to an engine to limit its speed to a pre-set level
- spring balance** /,sprɪŋ 'bæləns/ *n* [U5, T3] a measuring device in which the force applied is calculated by the extension of a spring
- sprocket** /'sprɒkɪt/ *n* [U12, T10] a toothed wheel over which a chain passes
- stator** /'steɪtə(r)/ *n* [U17, T2] stationary part of a generator
- strain gauge** /'streɪn geɪdʒ/ *n* [U16, T5] a device for measuring strain in a structure
- switchgear** /'swɪtʃgɪə(r)/ *n* [U1, T5] switches and associated equipment for controlling large electrical currents
- systems analyst** /'sɪstəmz ,ænalɪst/ *n* [U29, T7] someone responsible for examining a problem to see whether it is suitable for a computer application

T

- tachogenerator** /'tækəʊ ,dʒenəreɪtə(r)/ *n* [U11, T4] a sensor for measuring the speed of rotation
- TEFC** /,ti: i: ef 'si:/ *adj* [U23, T9] totally-enclosed fan-cooled (motor)
- tension** /'tenʃn/ *n* [U4, T4] the effect of a pulling force which tends to stretch a body
- thermoplastic** /'θɜ:məʊ ,plæstɪk/ *n* [U3, T1] a plastic which softens when heated and hardens when cooled
- thermosetting plastic** /'θɜ:məʊsetɪŋ 'plæstɪk/ *n* [U3, T3] a plastic which retains its shape and rigidity at high temperatures
- thermostat** /'θɜ:məstæt/ *n* [U8, T3] a control device which operates at a pre-set temperature
- throttle** /'θrɒtl/ *n* [U18, T3] a valve for controlling the supply of a gas or liquid (e.g. fuel) to an engine
- thrust** /θrʌst/ *n* [U12, T6] force of propulsion

tooling /'tu:liŋ/ *n* [U13, T10] all manufacturing equipment required for the manufacture of a product

toxic /'tɒksɪk/ *adj* [U9, T1] poisonous

transformer /,træns'fɔ:mə(r)/ *n* [U6, T6] a device for stepping up or down the voltage of an alternating current

treadle /tredl/ *n* [U4, T6] a linkage used to convert oscillating into rotary movement and vice versa

turbine /'tɜ:bain/ *n* [U17, T9] a machine which produces power when steam, gas or water is passed over the blades attached to the rotating drive output shaft

turbulence /'tɜ:bjələns/ *n* [U12, T6] violent or uneven movement of air

turner /'tɜ:nə(r)/ *n* [U29, SP (A)] a lathe operator

Y

yaw /jɔ:/ *n* [U28, T8] angular rotation about a vertical axis

yield point /'ji:ld pɔɪnt/ *n* [U26, T7] the point where the elastic limit is reached

U

undercarriage /'ʌndə,kæriɪdʒ/ *n* [U23, R2] the supporting framework of a vehicle comprising wheels, axles, suspension, etc.

V

vapour /'veɪpə(r)/ *n* [U15, T2] a gas that can be liquefied by increasing its pressure

vernier /'vɜ:nɪə(r)/ *n* [U29, T2] a measuring gauge fitted with an auxiliary scale which allows the operator to read the main scale with an accuracy of one tenth of a division

W

waisting /'weɪstɪŋ/ *n* [U26, T7] deformation which brings about narrowing of the section of a rod or material under tension

wave power /'weɪv ,paʊə(r)/ *n* [U17, T9] a method of generating electricity by using the movement of waves in water

work volume /'wɜ:k ,vɒljʊ:m/ *n* [U28, T4] the space volume into which the manipulator of a robot can be positioned; hence the volume where useful work can be done