DESIGN CHECKMATES

PH:- +91 – 9164866204 , E-MAIL :- designcheckmates@gmail.com

ABOUT US :

We are a company that was established in 2012 with a simple, deeply committed vision to unleash the power of Engineering. We work on various model outsourcing based on the customer needs and to name few are Build Operate Transfer, On-site/ Offshore outsourcing and Co-Managed Outsourcing.

MISSION STATEMENT :

At ' Design checkmates ', we focus on supporting customers on regular basis by providing quality services within the time and budget. We continuously work on enhancing skills to bring more productivity and to make the process faster.

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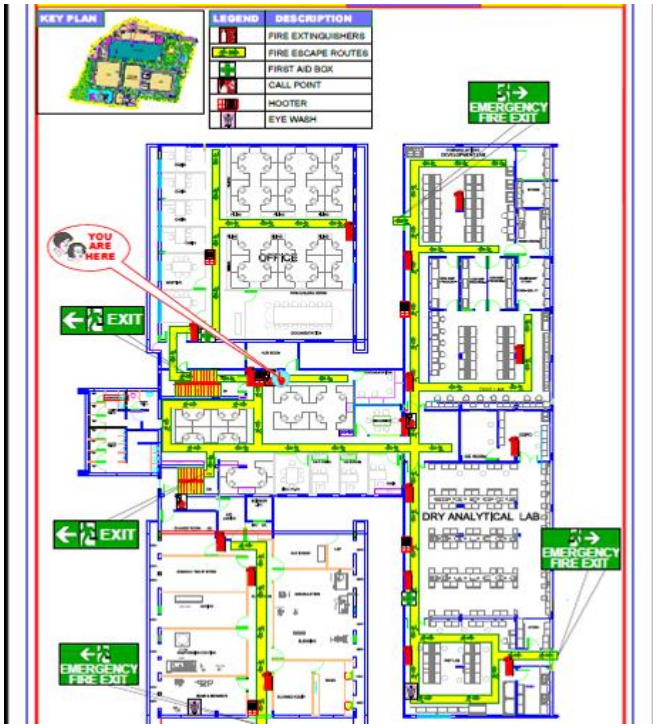
FIRE ESCAPE ROUTE PLAN AND THE FIRE PROCEDURE:

A fire Escape Route plan (FERP) is a written document which includes the action to be taken by all staff in the event of fire and the arrangements for calling the fire brigade. It can include any relevant information in relation to the FERP.



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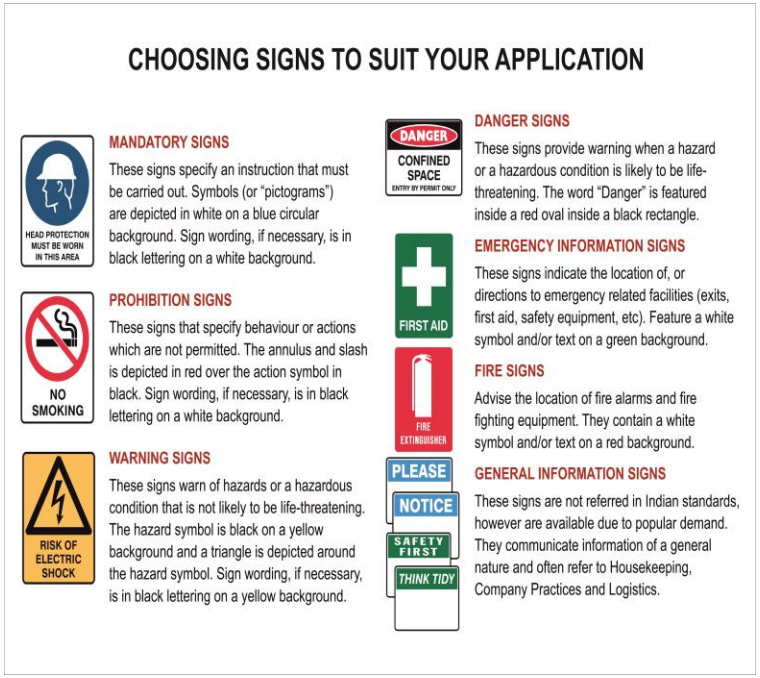
THE IMPORTANCE OF SAFETY SIGNS :

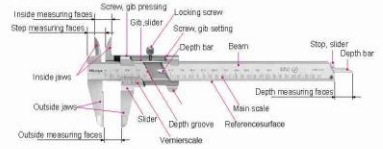
At Design Checkmates we have the widest range of legends for you to choose from to ensure you can create a safe, well identified facility. Our range of Safety Signs are designed to meet Indian Standard which outlines specific parameters for safety signs in an occupational environment. This standard sets out the requirements for the design and use of safety signs intended for use in the occupational environment.

These signs are designed to regulate and control safety related behavior, to warn of hazards and to provide emergency information including fire protection information.

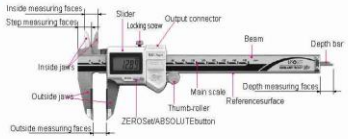


VERNIER CALIPER PARTS NAME & PRINCIPLE

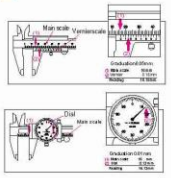
VERNIER CALIPER



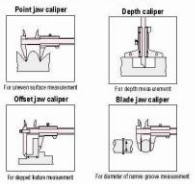
Absolute Digimatic Caliper



How to Read the Scale



Special Purpose Caliper Applications



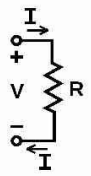
DC-A-01

OHM'S LAW AND KIRCHHOFF'S LAW

OHM'S LAW :-

Ohm's law states that the voltage or potential difference between two points is directly proportional to the current or electricity passing through the resistance, and directly proportional to the resistance of the circuit. The formula for Ohm's law is V=IR.

The same formula can be rewritten in order to calculate the current and resistance respectively as follows:
I=V/R ; R=V/I



KIRCHHOFF'S LAW :-

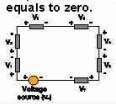
Kirchhoff's first law -

The total current entering a junction or a node is equal to the charge leaving the node as no charge is lost.

I1 + I2 + I3 = I4 + I5 + I6

Kirchhoff's Second Law -

The voltage around a loop equals to the sum of every voltage drop in the same loop for any closed network and also equals to zero.

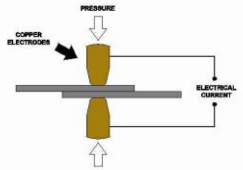


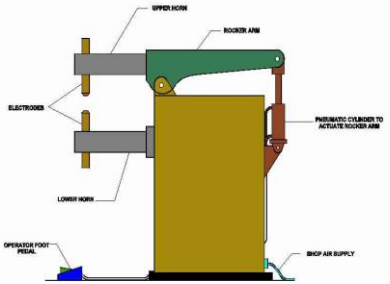
V1 + V2 + V3 + V4 + V5 + V6 + V7 - V8 = 0

DC-A-02

SPOT WELDING

Spot welding (also known as resistance spot welding) is a resistance welding process. This welding process is used primarily for welding two or more metal sheets together by applying pressure and heat from an electric current to the weld area.

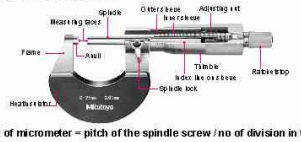




DC-A-03

MICROMETER PARTS NAME & PRINCIPLE

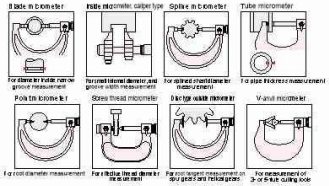
Standard Outside Micrometer



Least count of micrometer = pitch of the spindle screw /no of division in the spindle

Digimatic Outside Micrometer

Special Purpose Micrometer Applications

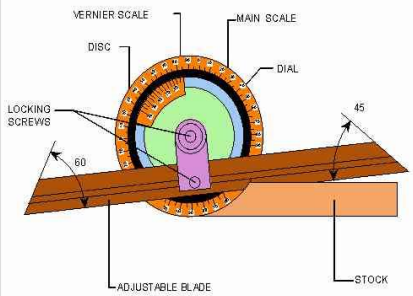


DC-A-04

VERNIER BEVEL PROTRACTOR PARTS & PRINCIPLE

Vernier bevel protractor is an angle measuring micrometers used to layout or check an angle of up to 5 minutes precision. Its design consists of a fixed stock and an adjustable blade with a graduated dial. Graduations are made from 0 ° to 90 ° or 0 ° to 180 °.

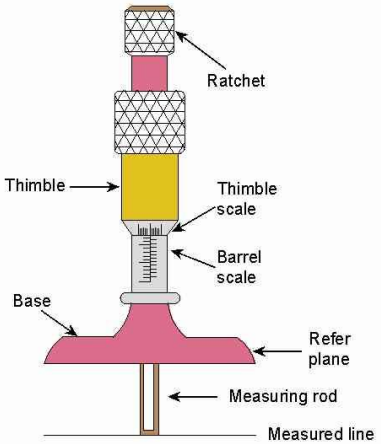
It can be rotated at any angle around a circle and clamped to a certain position by a locking Screw nut.



DC-A-05

DEPTH MICROMETER PARTS & PRINCIPLE

Depth micrometer (micrometer depth gauge) is used to measure the depth of holes, slots and recessed areas.
It consists of a base (measuring face) which is fixed on the barrel and measuring spindle which is attached with thimble as shown in Fig. The axial movement of the spindle takes place by rotation of thimble.



DC-A-06

CLASSIFICATION OF FITS

The types of fits depend upon the actual limit of the hole or shaft which can be divided into three categories which are:

1) Clearance fit 2) Interference fit 3) Transition fit

CLEARANCE FIT :

Clearance fit is an air space or clearance which exists between the shaft and holes. Such clearance fits give loose joints.

The clearance fit has to be joined with other fits so that the clearance fit can have its space. These fits are guaranteed with clearance and are designed for movable couplings of parts in which pivots running and sliding fits of shapes, guiding bushings, sliding gears and clutch discs and pistons of hydraulic machines are used.

INTERFERENCE FIT :

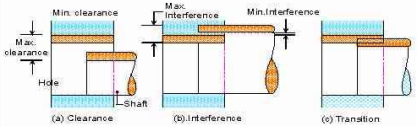
The interference fit is also called as a press fit or friction fit.
The interference fit is a fastening between two parts and generally achieved by friction after the combined parts are pushed together.

In these kinds of fits, the minimum permissible diameters of the shaft are larger than the maximum allowable diameter of the hole.
If there is ever a difference between the sizes of the hole and shaft before being assembled then the negative fit is called the interference fit.

TRANSITION FIT :

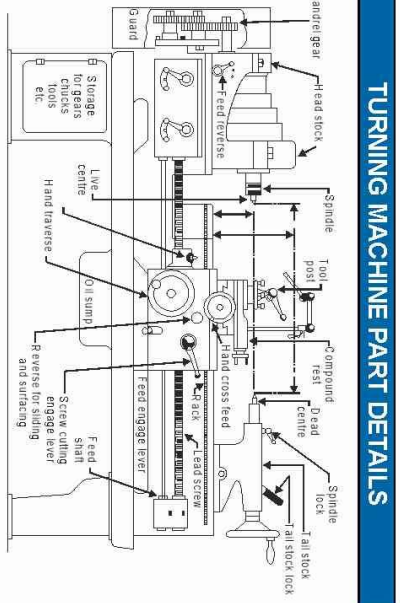
Transition fit is a fit which may provide either a clearance or interference. In transition fit the tolerance zones of the hole and shaft overlap with each other. Transition fit lies between clearance and interference fit.

These are used for applications where the accurate location is needed and it can be utilized with small clearance and hole or shaft should be precise.



DC-A-07

TURNING MACHINE PART DETAILS

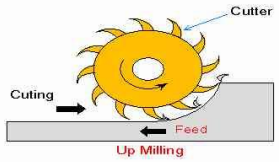


DC-A-08

UP MILLING & DOWN MILLING

UP MILLING :

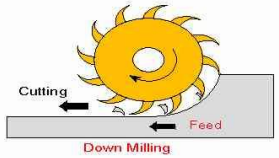
The up milling is also called as conventional milling or Climb up milling in which the cutter and feed moves in opposite direction i.e the rotary cutter moves against the feed.. With reference to the adjacent figure, you can see that the cutter rotates in anti-clockwise direction while the direction of feed is from right to left.



Up Milling

DOWN MILLING :

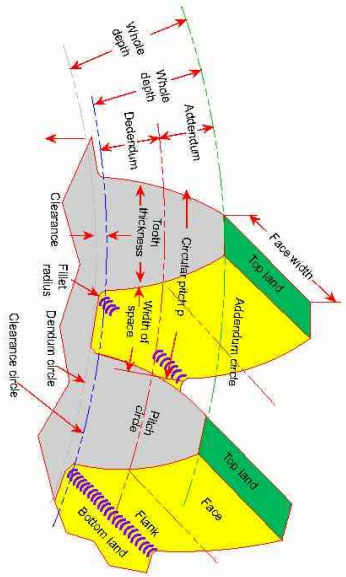
In case of down milling, the cutter rotates in the same direction as that of the feed. You can see that, in down milling there is less friction involved between the cutter and the workpiece as both i.e. cutter and feed are moving in the same direction.



Down Milling

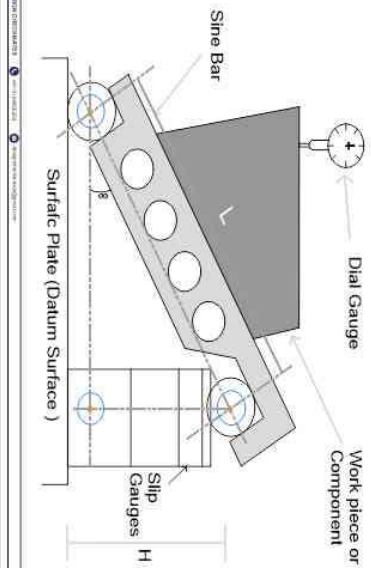
DC-A-09

ELEMENTS OF SPUR GEAR



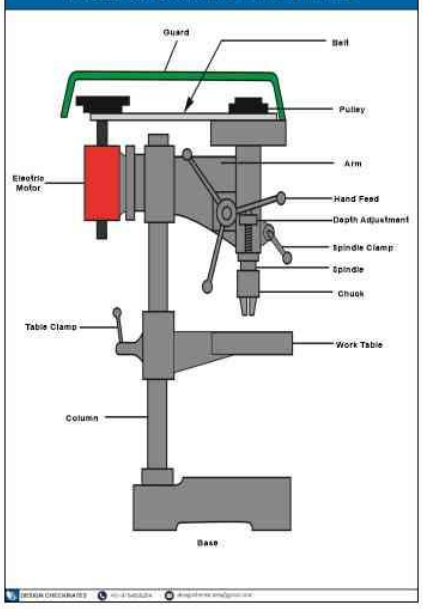
DC-A-10

SINE BAR



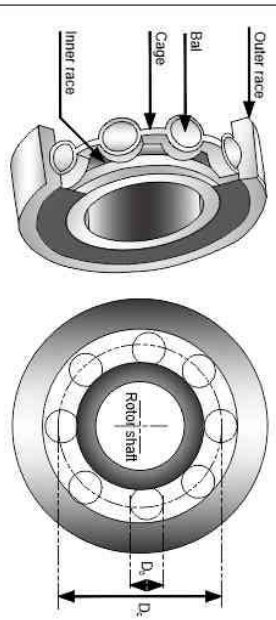
DC-B-01

DRILLING MACHINE PARTS NAME



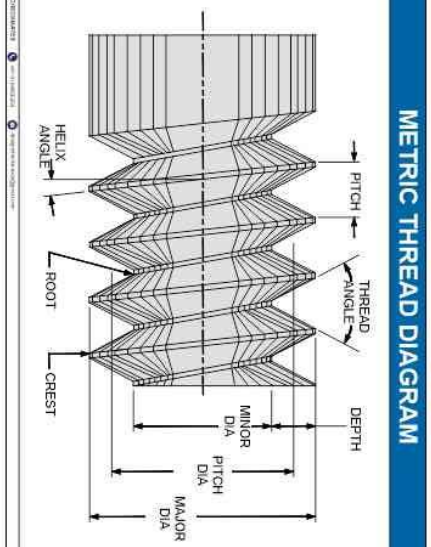
DC-B-02

BEARING EXPLODED VIEW



DC-B-03

METRIC THREAD DIAGRAM



DC-B-04

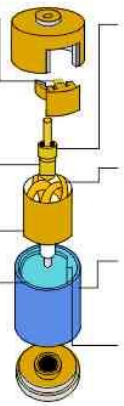
PARTS OF DC MACHINE

Brushes
Brushes with the commutator are working as a bridge to connect the static electrical circuit to the rotor

DC Motor ccommutor
The commutator isa split ring made up of Copper segments. Commutator is another DC motor part.

Armature Windings
The armature winding of the DC motorhas two constructions: Lap Winding and Wave Windings

Stator
The stator is the DC Motor part that receives the supply.



Rotor
The dynamic part of a DC motor is the rotor that creates the mechanical rotations of the unit.

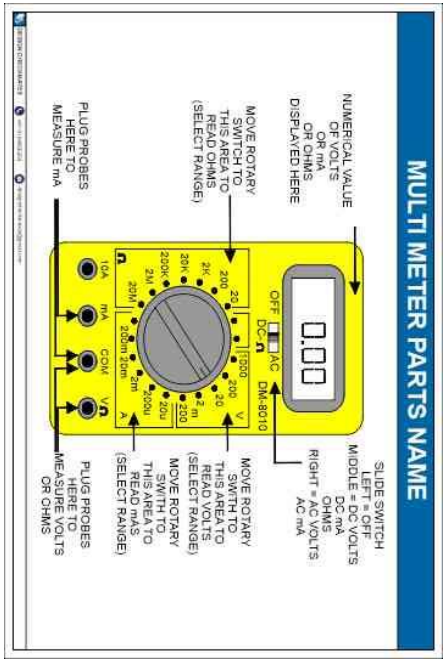
Field
Made with copper wire (fieldcoils), the Field Windings circle around the slots carried by the pole shoes.

Yoke
Yoke is a magnetic frame made of cast iron or sometimes steel, which works as a protector.

Poles
Poles have two parts: The pole Core and the Pole shoe. These two parts are fixed together by hydraulic pressure and are attached to the Yoke.

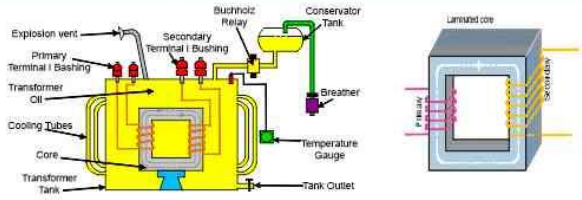
DC-B-05

MULTI METER PARTS NAME



DC-B-06

TRANSFORMERS PRINCIPLE



Construction of Transformer

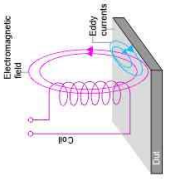
The transformer works on the principle of Faraday's law of electromagnetic induction and mutual induction.
There are usually two coils primary coil and secondary coil on the transformer core.
The core laminations are joined in the form of strips. The two coils have high mutual inductance.
When an alternating current pass through the primary coil it creates a varying magnetic flux.
As per faraday's law of electromagnetic induction, this change in magnetic flux induces an emf (electromotive force) in the secondary coil which is linked to the core having a primary coil.
This is mutual induction.

DC-B-10

EDDY CURRENT AND HYSTERESIS LOOP

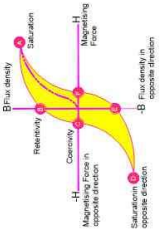
EDDY CURRENT :

Eddy currents are loops of electrical current induced within conductors by a changing magnetic field in the conductor according to Faraday's law of induction. Eddy currents flow in closed loops within conductors, in planes perpendicular to the magnetic field.



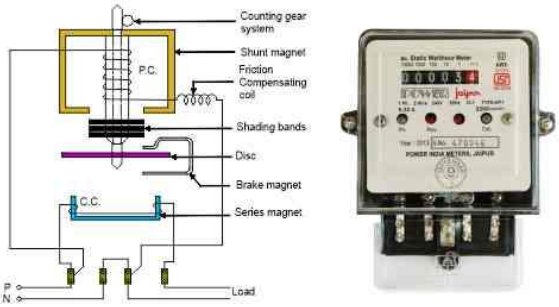
HYSTERESIS LOOP :

The hysteresis loop shows the relationship between the magnetic flux density and the magnetizing field strength. The loop is generated by measuring the magnetic flux coming out from the ferromagnetic substance while changing the external magnetizing field.



DC-C-04

SINGLE PHASE ENERGY METER

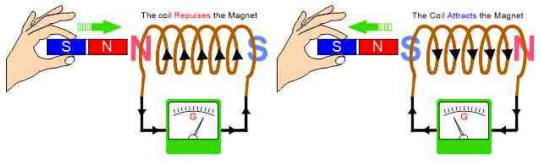


DC-B-09

LENZ'S LAW

The induced electromotive force with different polarities induces a current whose magnetic field opposes the change in magnetic flux through the loop in order to ensure that original flux is maintained through the loop when current flows in it.

An induced current always flows in a direction such that it opposes the change which produced it.



when the "N" Pole of the magnet is moved towards the coil, end of the coil becomes "N" Pole.

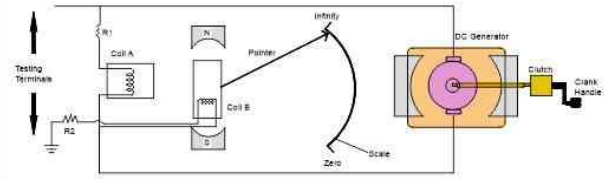
when the "N" Pole of the magnet is moved away from the coil, end of the coil becomes "S" Pole.

DC-C-03

INTERNAL CONNECTION OF MEGGER

Megger is used to measure a high value of resistance. Megger consists of the following parts.

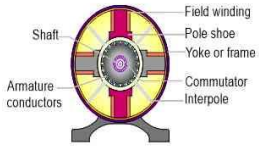
DC generator
2 Coils (Coil A, Coil B)
Clutch
Crank handle
terminal X & Y



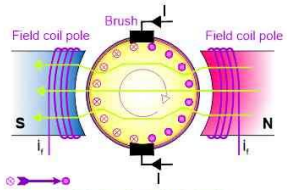
DC-B-08

DC MOTOR

A DC motor is defined as a class of electrical motors that convert direct current electrical energy into mechanical energy.



DC motor construction parts

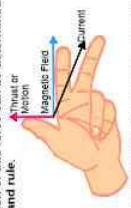


Production of torque in a DC motor

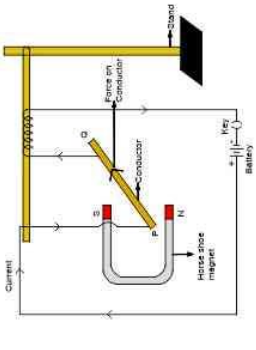
DC-C-02

CURRENT CARRYING CONDUCTOR IN A MAGNETIC FIELD

A current carrying conductor produces a magnetic field around it. I.e. behaves like a magnet and exerts a force when a magnet is placed in its magnetic field. Similarly a magnet also exerts equal and opposite force on the current carrying conductor. The direction of this force can be determined using Flemings left-hand rule.

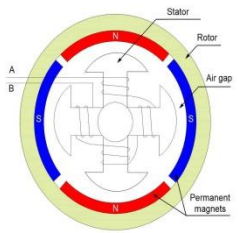


When a current-carrying conductor is placed in a magnetic field, the conductor experiences a force which is responsible for the movement of the conductor.
The current-carrying conductor acts as an electromagnet and generates its own magnetic field around it, because of the moving charges in the conductor.

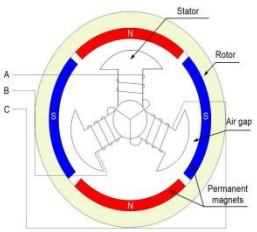


DC-B-07

1 PHASE AND 3 PHASE AC INDUCTION MOTOR



Single - phase



Three - phase

DC-C-01

DC-C-05

DC-C-06

DC-C-07

DC-C-08

DC-C-09

DC-C-10

DC-D-01

DC-D-02

DC-D-06

DC-D-05

DC-D-04

DC-D-03

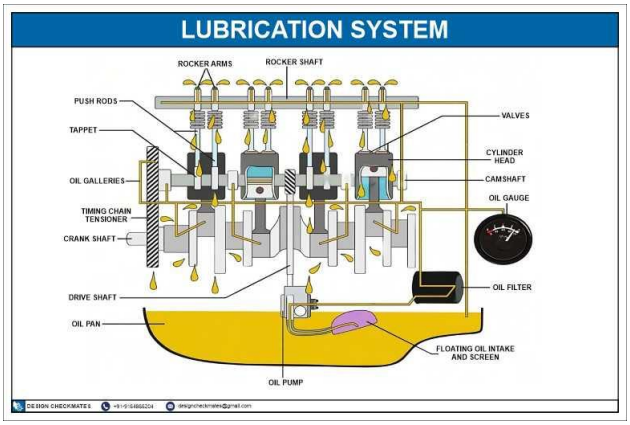
DC-D-07

DC-D-08

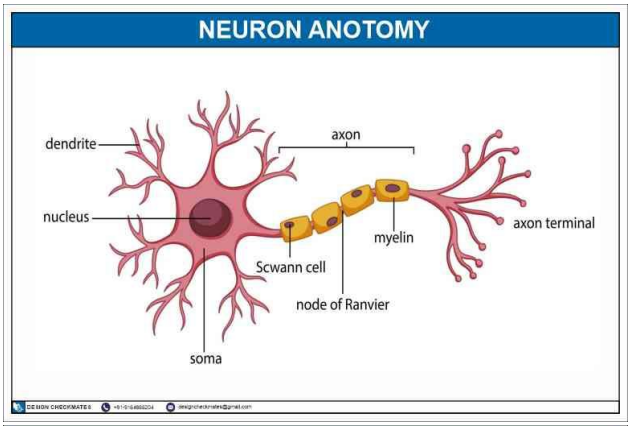
DC-D-09

DC-D-10

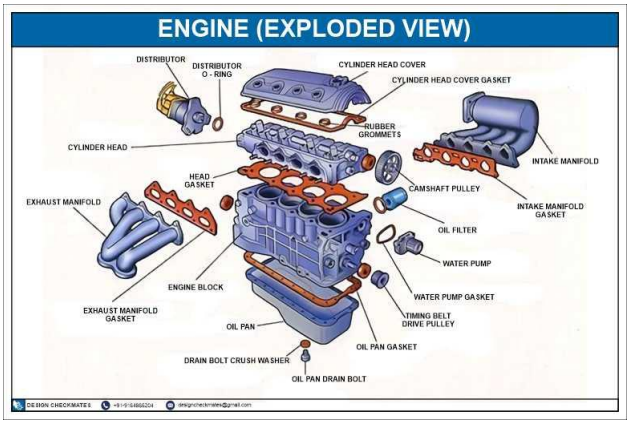
DC-E-04



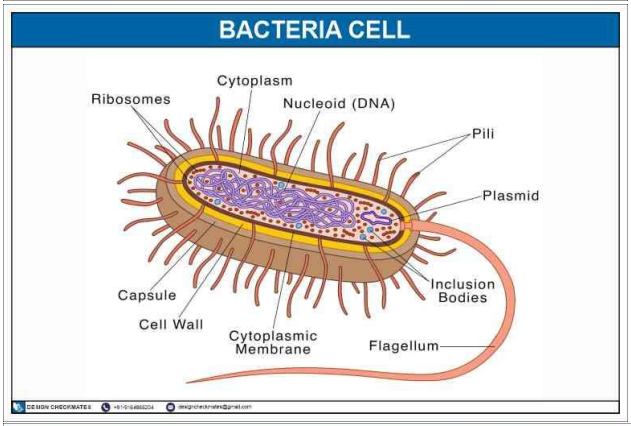
DC-F-03



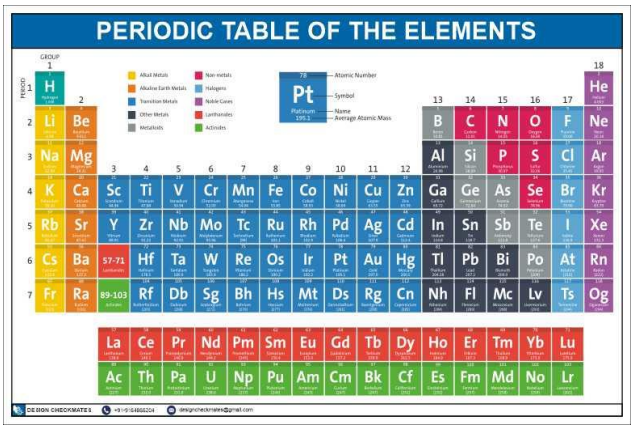
DC-E-03



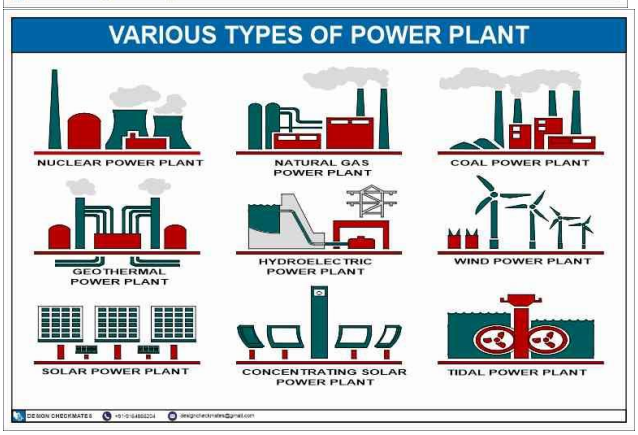
DC-F-02



DC-E-02



DC-F-01



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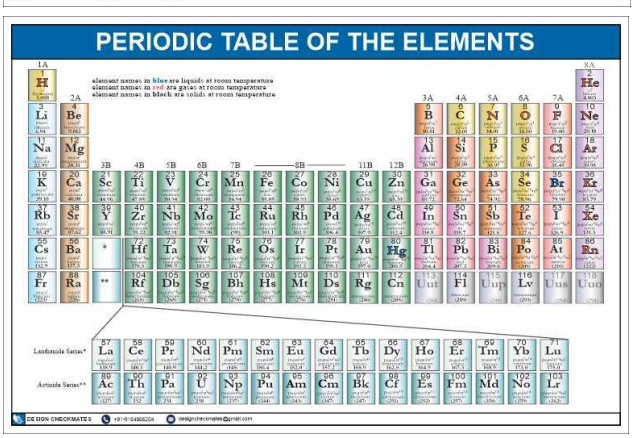

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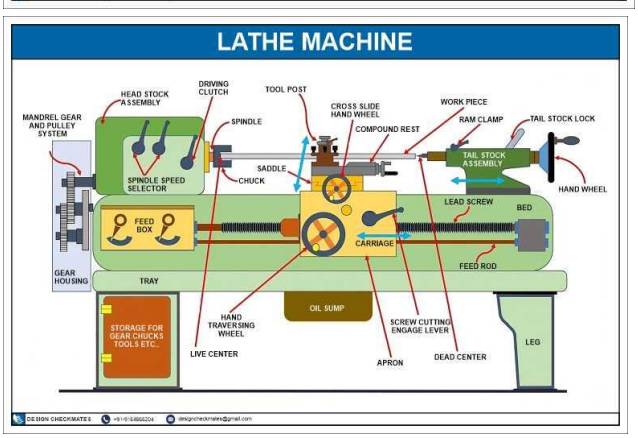


DC-F-04

DC-F-05

DC-F-06

DC-F-07

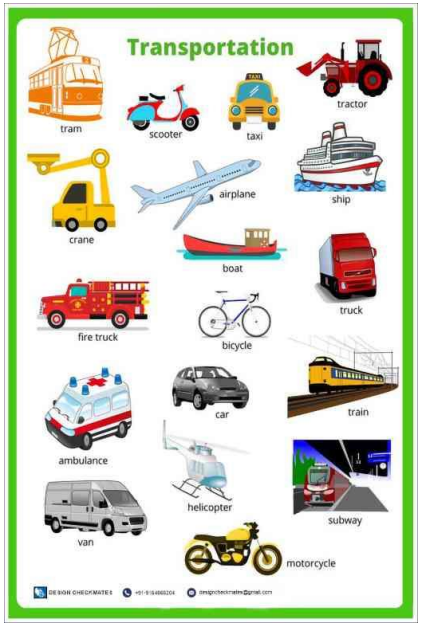
DC-G-01

DC-G-02

DC-G-03

DC-G-04

DC-G-05



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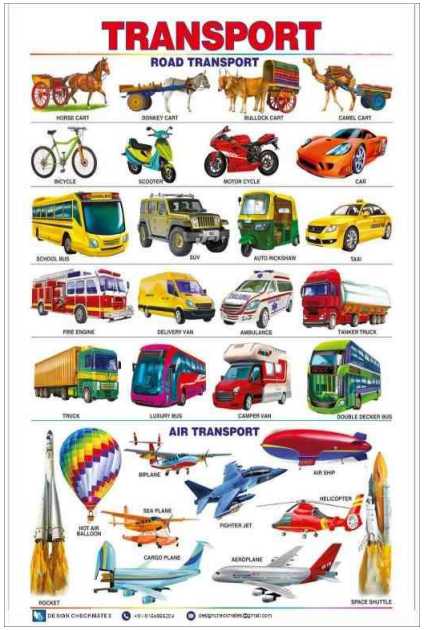

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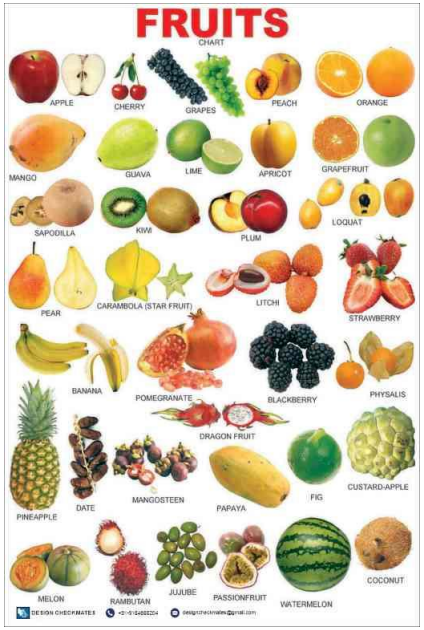

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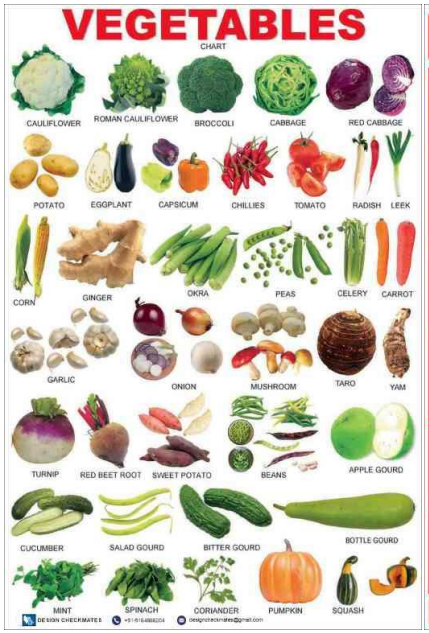
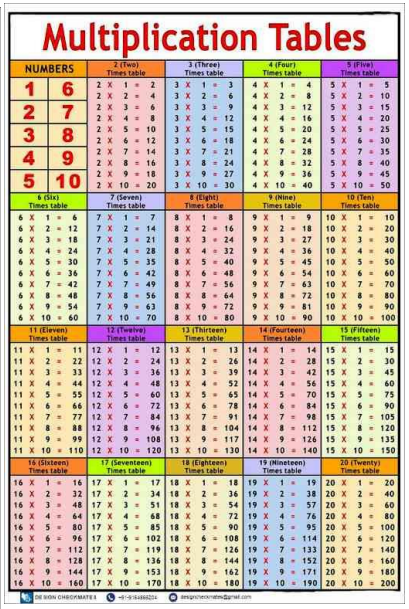


DC-G-09

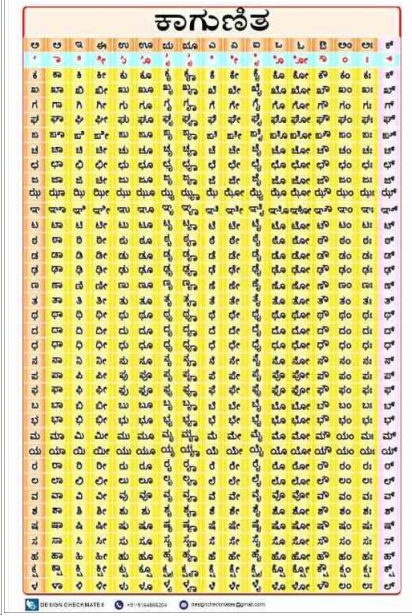
DC-G-10

DC-H-01



DC-H-02

DC-H-03



DC-H-04

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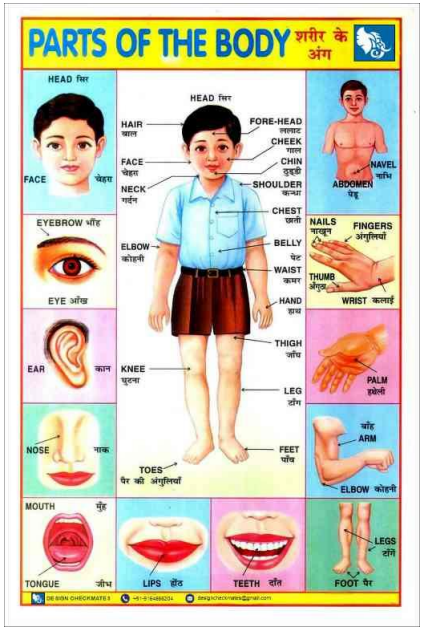

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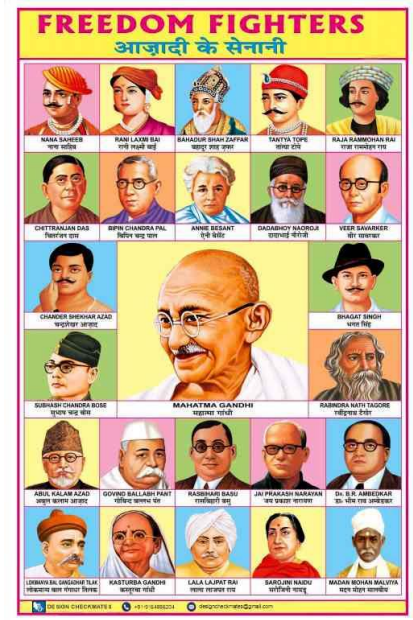
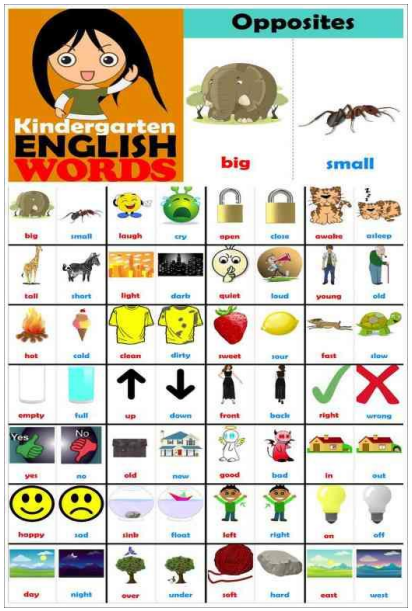


DC-H-07

DC-H-08

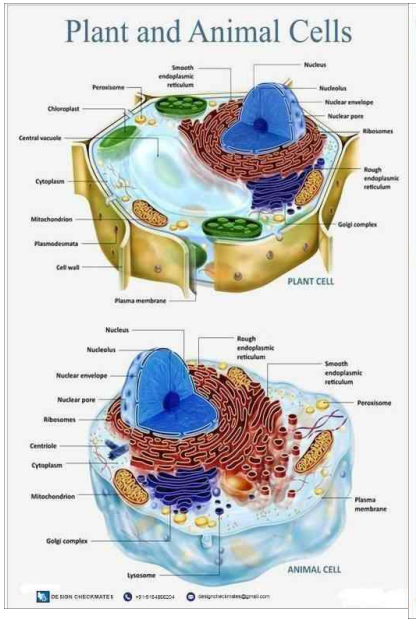


DC-H-09

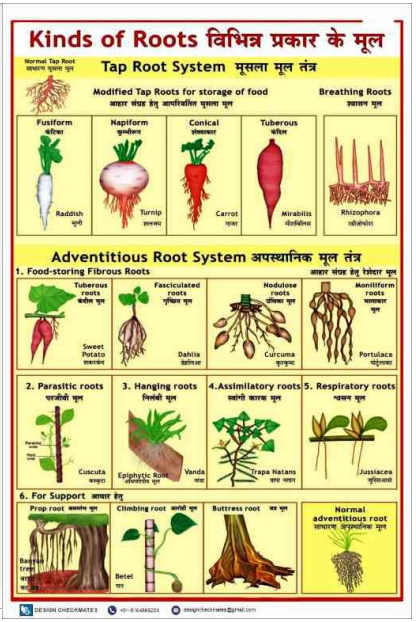
DC-H-10

DC-H-11

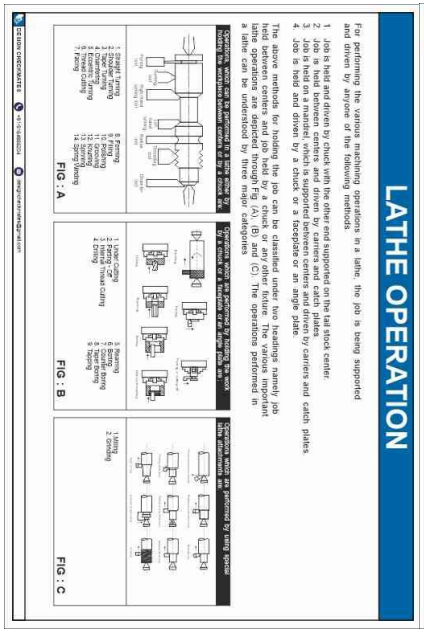
DC-H-12



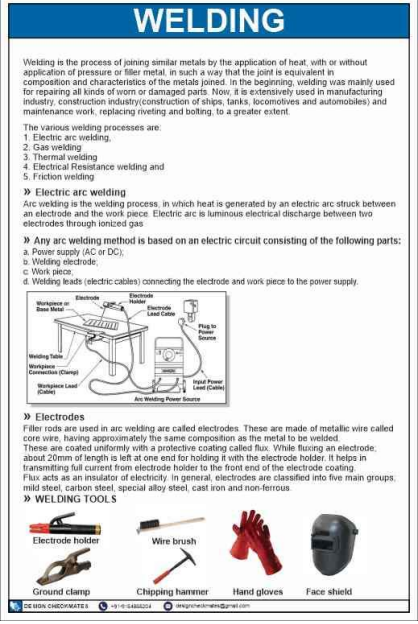
DC-H-13



DC-H01-01



DC-H02-01



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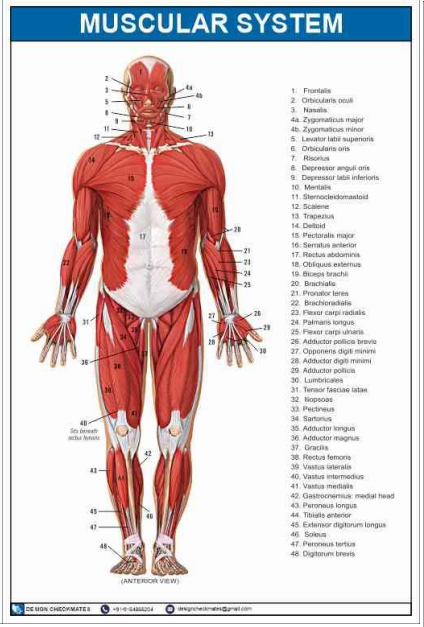

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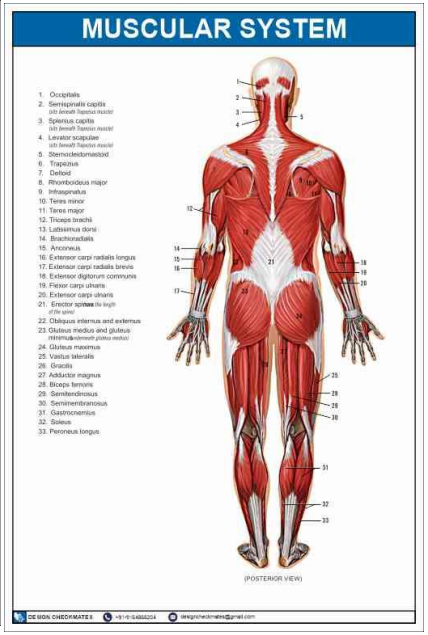

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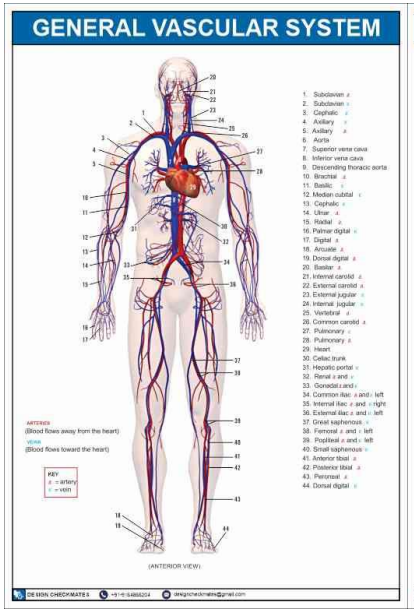

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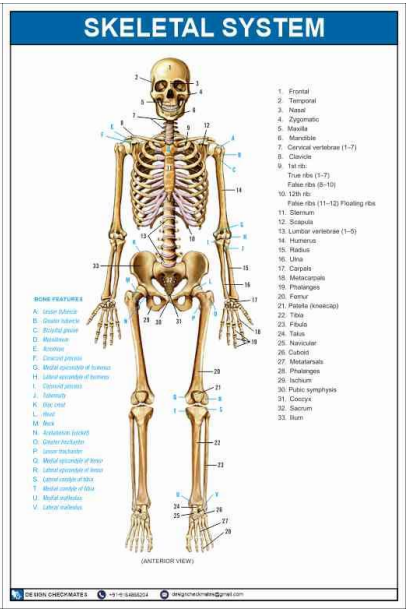

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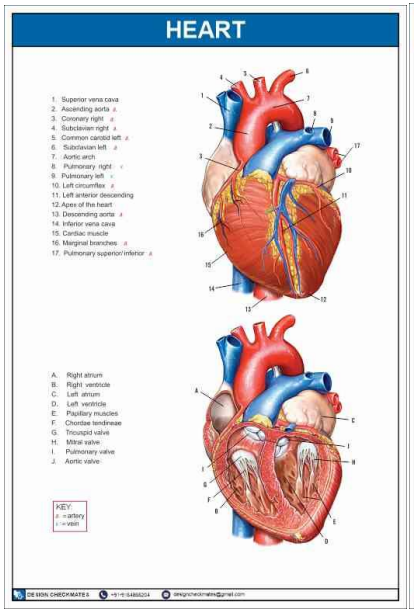

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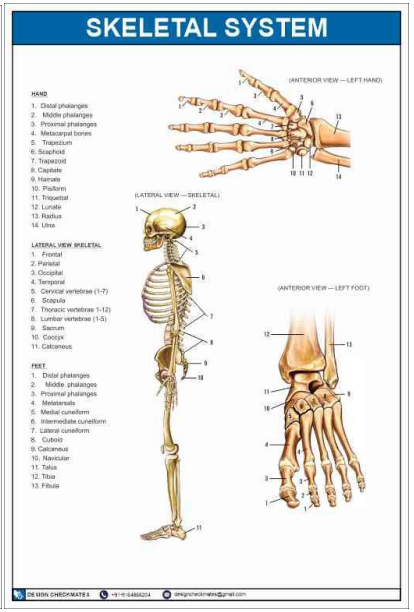

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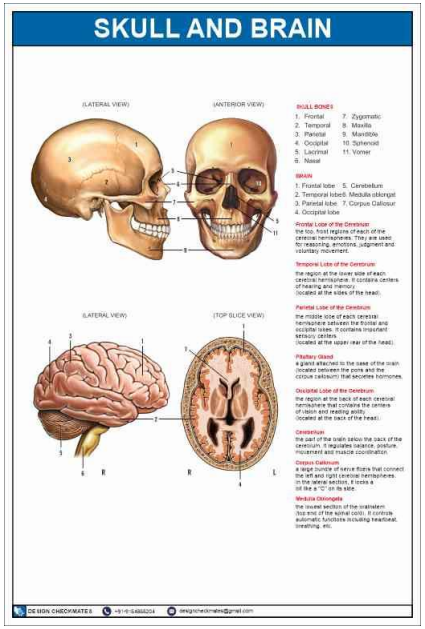

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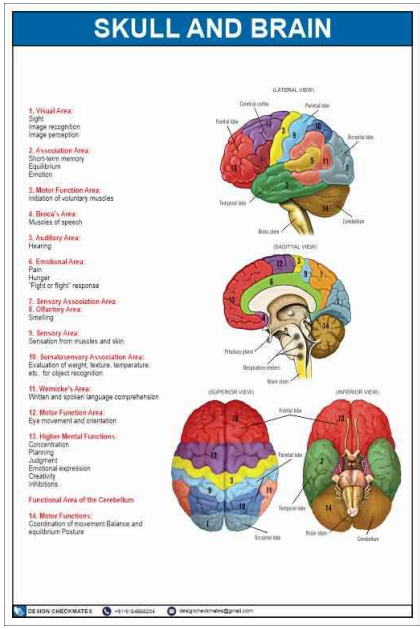

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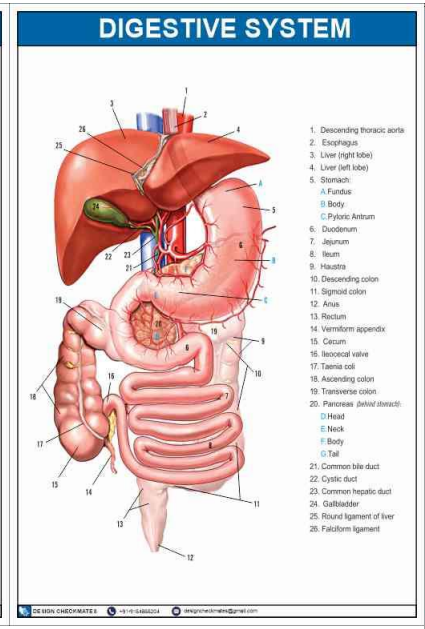

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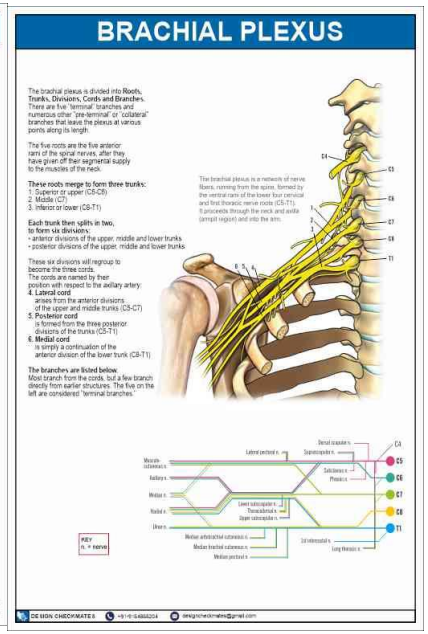
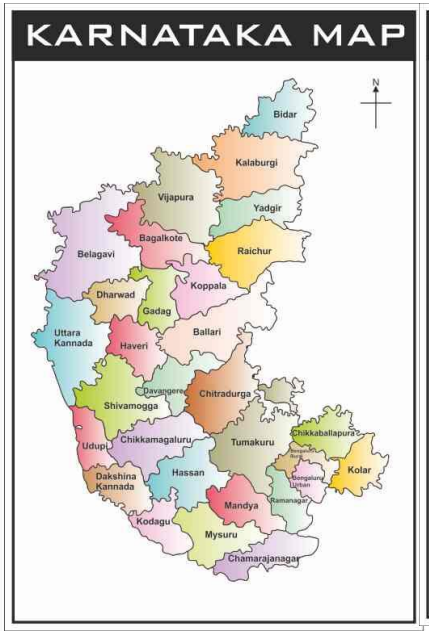


DC-H07-02

DC-H08-03



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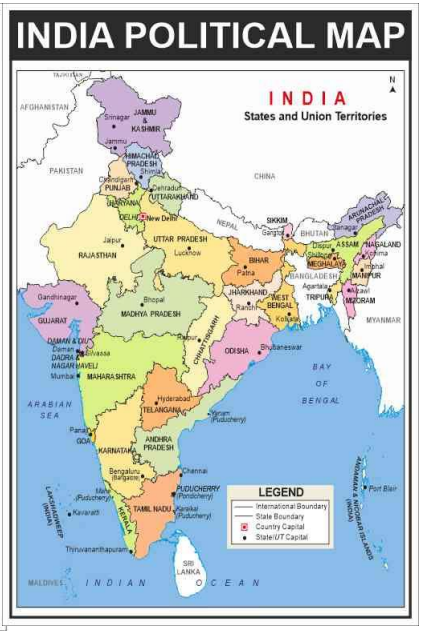

DC-H08-01