1. The planet farthest from the Sun is:

(1) Neptune (2) Pluto

(3) Saturn (4) Uranus

Ans: 1 (Now Pluto is not a planet- it was delisted)

2. The universal Law of Gravitation was propounded by:

(1) Galileo (2) John Kepler

(3) Newton (4) Copernicus

Ans: 3

3. The Laws of planetary motion was postulated by:

(1) Galileo (2) John Kepler

(4) Newton (4) Copernicus

Ans:2

4. Photoelectric effect was postulated by whom and also got Noble prize for that is :

Galileo (2) John Kepler

Newton (4) Albert Einstein

Ans:4

5. For the rear view, motorists use which type of mirror and why?

(1) Plane mirror, to get real image

(2) Convex mirror, to get closer view of an object behind the motorist

(3) Concave mirror, to get magnified image

(4) None

Ans: 2

6. Dentist use which type of mirror and why?

(1) Plane mirror, to get real image

(2) Convex mirror, to get virtual image

(3) Concave mirror, to get magnified image

(4) None.

Ans: 3

7. A woman's voice is shriller than a man's due to:

(1) higher frequency (2) higher amplitude

(3) lower frequency (4) weak vocal chords

Ans: 1

8. Broad wooden sleepers are placed below the rails in railways track to:

(1) act as shock absorber
(2) fix the fish plates properly
(3) hold the rails parallel
(4) reduce pressure exerted by the train

Ans: 3

9. Litmus is obtained from:

(1) an alga (2) a bacterium
(3) a fungus (4) lichen

Ans: 4. (**Litmus** solution is commonly **obtained from** lichens. A natural dye which is **extracted from** lichens is dissolved in distilled water to form a **litmus** solution. Litmus solution is used as an indicator to distinguish between acids and bases. When we add acidic solution to it, it turns red and when we add basic solution to it, it turns blue.)

Litmus, mixture of coloured organic compounds obtained from several species of lichens that grow in the Netherlands, particularly ***Lecanoratartarea*** and ***Roccellatinctorum*.** Litmus turns red in acidic solutions and blue in alkaline solutions and is the oldest and most commonly used indicator of whether a substance is an acid or a base.

Britannica, The Editors of Encyclopaedia. "Litmus". ***Encyclopedia Britannica***, 8 May. 2012, https://www.britannica.com/science/litmus. Accessed 3 October 2021.

10. Among the following medium, Sound travels at maximum speed in :

(1) vacuum (2) air
(3) liquid (4) steel

Ans: 4

11. The three primary colors are:

(1) Red, blue, green (2) blue, green and yellow
(3) yellow, orange and red (4) violet, indigo and blue

Ans: 1 (Remember RBG for primary colours)

11.1. Thyristers are basically

(1) SCRs (2) Triacs
(3) Both SCRs and Triacs (4) All PNPN devices

Ans: 1

Thyristor is a unidirectional semiconductor device. It allows current to flow only in one direction like diodes. SCR and TRIAC are major thyristors. It operates only in two states either open or close, like a latch. So it can be used for switching applications.

https://technicalstudies.in/thyristor/

12. A device used for converting A.C into D.C is called

(1) transformer (2) rectifier
(3) induction coil (4) dynamo

Ans: 2

13. A device used for converting D.C into A.C is called

(1) transformer (2) rectifier
(3) Inverter (4) dynamo

Ans: 3

14. Two types of extrinsic semi-conductors are:

(1) Holes and blocks (2) p type and n type
(3) White and black (4) White and grey

Ans: 2

15. Two types of semi-conductors are:

(1) Holes and blocks (2) intrinsic and extrinsic
(3) White and black (4) White and grey

Ans: 2

16. The purpose of tempering a hardened steel component is for

(1) increasing its hardness
(2) reducing its hardness
(3) increasing its ductility
(4) increasing its toughness

Ans: 4

17. In the gas nitriding process, the parts are heated at 500°C for about 100 hrs ..

(1) in a constant circulation of Hydrogen gas
(2) in a constant circulation of Ammonia gas
(3) in a constant circulation of Helium gas
(4) in a constant of Oxygen gas

Ans: 2

GAS NITRIDING

Nitriding is a case-hardening process in which nitrogen is introduced into the surface of a ferrous alloy such as steel by holding the metal at a temperature below that at which the crystal structure begins to transform to austenite on heating (Ac_1) as defined by the Iron-Carbon Phase Diagram. Gas nitriding is typically done using ammonia with or without dilution of the atmosphere with dissociated ammonia or nitrogen (or nitrogen/hydrogen) in the temperature range of 925-1050°F (500-565°C). Ammonia (NH_3) is allowed to flow over the parts to be hardened
https://www.industrialheating.com/articles/89973-principles-of-gas-nitriding-part-2
……
https://www.corrosionpedia.com/definition/581/gas-nitriding
Gas nitriding develops a very hard case at a relatively low temperature, without the need for quenching. Nitriding of steels produces less distortion and deformation than either carburizing or conventional hardening. Gas nitriding is most effective when applied to steels containing nitride-forming elements. The process is applicable to:

- Tool steels
- Hot-work steels
- Cold-work steels
- Mold steels

For optimum results, the material should be in a hardened and tempered condition prior to gas nitriding.

18. Law of Motion involved in recoil of a gun is

(1) Newton's 1st law of motion (2) Newton's 2nd law of motion

(3) Netwon's 3rd law of motion (4) None of the above

Ans: 3 (other examples of 3rd law applications- rocket propulsion, rowing of boat,,)

19. Jet engine motion follows

(1) Newton's 1st law of motion (2) Newton's 2nd law of motion

(3) Netwon's 3rd law of motion (4) None of the above

Ans: 3

20. Rowing of boat follows

(1) Newton's 1st law of motion (2) Newton's 2nd law of motion
(2) Netwon's 3rd law of motion (4) None of the above

Ans: 3

21. The purpose of air conditioning means

(1) Cooling the air to comfort temperature
(2) Cooling the air to comfort temperature, purifying (removing odor) and controlling humidity of air
(3) Adding moisture to air
(4) None of the above

Ans: 2

22. The multi-point cutting tools used to produce external 'V' threads are called :

(1) taps (2) chasers
(3) pitches (4) chucks

Ans: 2 (thread chasers)

23. Which of the following is used as a lubricant (solid) in heavy machines?

(1) Bauxite (2) Sulphur
(3) Phosphorus (4) Graphite

Ans: 4. (There are a variety of solid lubricant options, such as Boron nitride, Polytetrafluoroethylene, Graphite and Molybdenum disulfide.)

24. Cutting tool material should be :

(1) harder and stronger than the material being cut
(2) hotter than the material being cut
(3) bigger than the material being cut
(4) smoother than the material being cut

Ans: 1

25. For converting linear motion of the plunger of the dial test indicator into rotary motion of the pointer :

(1) a rack and pinion mechanism is used
(2) heat exchange principle is used
(3) jigs are used
(4) self-centering mechanism is used

Ans: 1

26. An electrical appliance is earthed to :

(1) protect the appliance against any damage
(2) prevent shocks to those come in accidental contact with the live wire of the appliance
(3) reduce consumption
(4) avoid short-circuiting

Ans: 2

27. Which of the following devices converts electrical energy into mechanical energy ?

(1) Dynamo (2) Transformer
(3) Electric motor (4) Inductor

Ans: 3

28. The device used for converting mechanical energy into electrical energy is

(1) Cell (2) Transformer
(3) Dynamo (4) Electric motor

Ans: 3

29. What is the source of electric energy in an artificial satellite ?

(1) a mini nuclear reactor (2) a dynamo
(3) a thermopile (4) Solar cells

Ans: 4

30. A second cut file is used to :

(1) remove hard material
(2) trim the rough edges
(3) give a deep cut
(4) give a good finish on hard metals

Ans: 4

31. The starting current of an electric motor is _____ the current flowing before the motor reaches its normal running speed.

(1) nearly equal to (2) exactly equal to
(3) less than (4) much higher than normal operating current

Ans: 4

32. Cutting fluids are used in metal cutting operations to

(1) cool the cutting tool and the cutting zone of the work piece
(2) increase speed of cutting
(3) reduce speed of cutting
(4) heat the cutting tool

Ans: 1

33. Air is completely removed from a filament type electric bulb to prevent :

(1) oxidation of tungsten filament (2) bursting of the bulb
(3) loss of light due to absorption (4) none of these

Ans: 1 (now phased out)

34. The advantage of AC transmission over DC is that :

(1) it contains more electrical energy
(2) it is free from voltage fluctuations
(3) its generation costs much less
(4) it can be transmitted over long distances with minimum power loss

Ans: 4

35. During combustion process, the stored chemical energy in the diesel/petrol fuel is converted into :

(1) mechanical energy (2) thermal energy
(3) electric energy (4) hydraulic energy

Ans: 2

36. Admittance is the reciprocal of :

(1) reactance (2) impedence
(3) susceptance (4) inductance

Ans: 2

Admittance is a measure of how easily a circuit or device will allow a current to flow. It is defined as the reciprocal of impedance, analogous to how conductance & resistance are defined.

Admittance is a complex number. It has both a Real part and the Imaginary Part. Conductance 'G' forms the real part of the equation whereas Susceptance 'B' forms the imaginary part of the Admittance. Thus the formula of the Admittance 'Y' is

Y = G + jB

where, Y is the admittance in siemens, G is conductance in siemens and B is Susceptance in siemens. Conductance is the inverse of resistance.

37. The most essential instrument required by a TV Technician is :

(1) Voltmeter (2) Megger

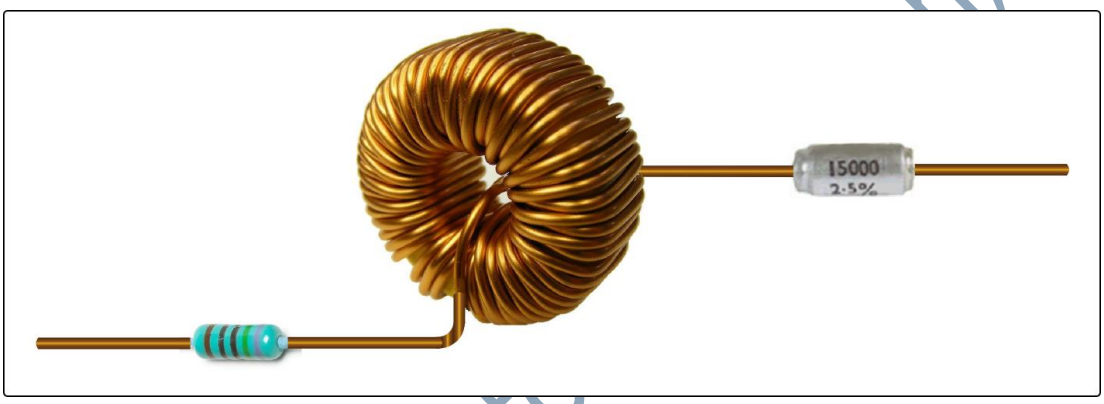
(3) Ohm meter (4) AVO meter

Ans: 4

38. In an RCL series circuit, during resonance, the impedance will be :

(1) Zero (2) Minimum
(3) Maximum (4) None of these

Ans: 2. Eq..



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https://en.wikipedia.org/wiki/RLC_circuit#/media/File:RLC_series.png

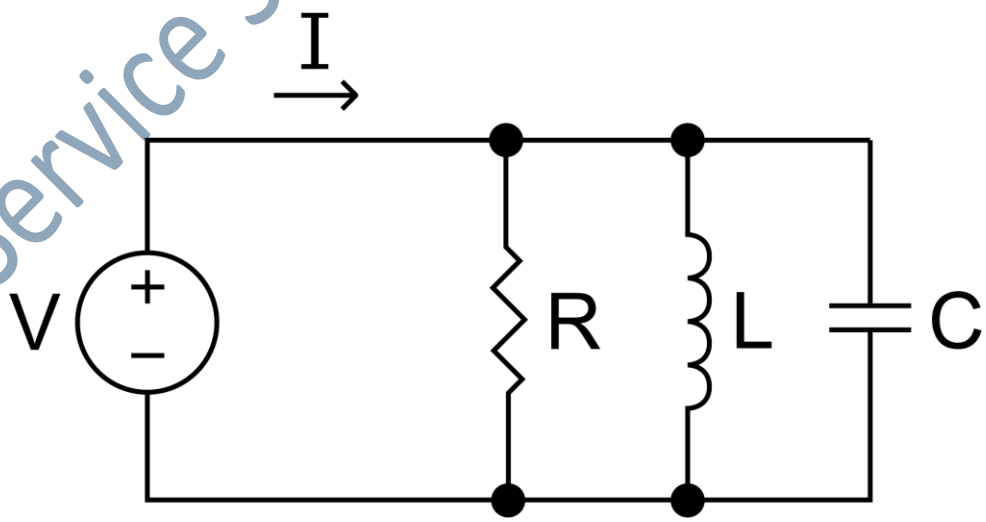

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Figure 2. RLC parallel circuit V – the voltage source powering the circuit I – the current admitted through the circuit R – the equivalent resistance of the combined source, load, and components L – the inductance of the inductor component C – the capacitance of the capacitor component

https://en.wikipedia.org/wiki/RLC_circuit

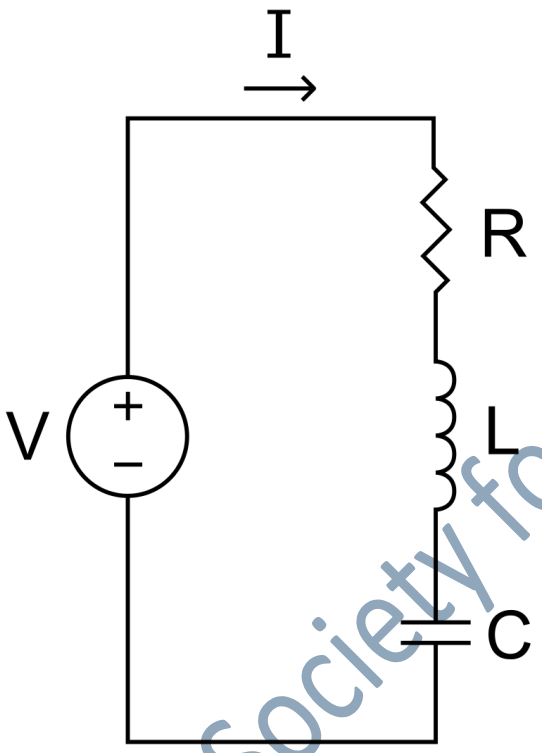

Figure 1: RLC series circuit V, the voltage source powering the circuit I, the current admitted through the circuit R, the effective resistance of the combined load, source, and components L, the inductance of the inductor component C, the capacitance of the capacitor component

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39. If a fuse blows frequently, one should :

(1) replace it with a thin wire
(2) replace it with a thick copper wire
(3) replace it with a paper clip
(4) call an electrician

Ans: 4

40. The mechanism used for controlling air-fuel ratio in petrol engine is known as :

(1) injector (2) governor
(3) carburetor (4) starter

Ans: 3

41. The compression ratio required to ignite the fuel depends on :

(1) size of engine's cylinder (2) amount of fuel available
(3) temperature (4) humidity

Ans: 1

42. A parallel test bar and dial indicator is used for :

(1) aligning lathe centres
(2) starting a lathe
(3) finding the weight of the tool
(4) finding the volume of the tool

Ans: 1

43. The process by which energy is generated in the Sun is the :

(1) fission of Uranium (2) fusion of Helium
(3) Nuclear fusion of Hydrogen (4) combination of all these process

Ans: 3

44. The work done (WD) in holding a weight of 20 kg at a height of 1 m above the ground is

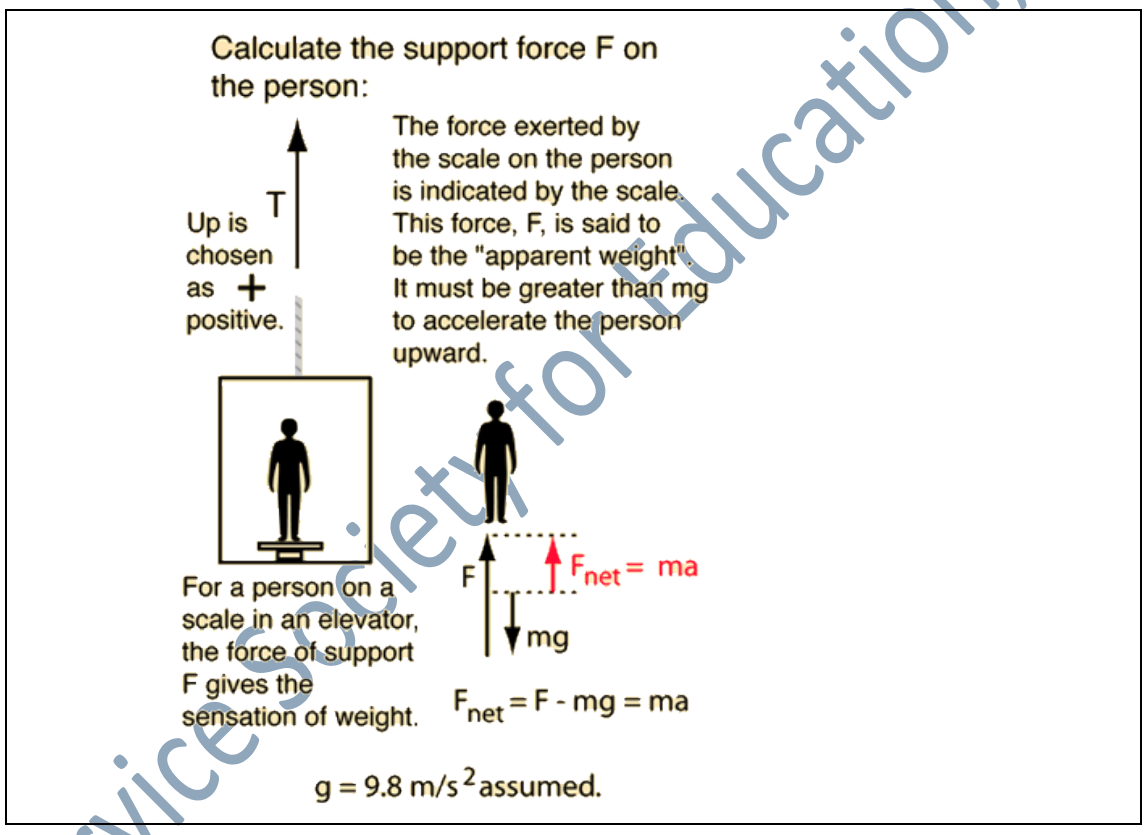
(1) Zero (2) 20 J
(3) 200 J (4) 2000 J

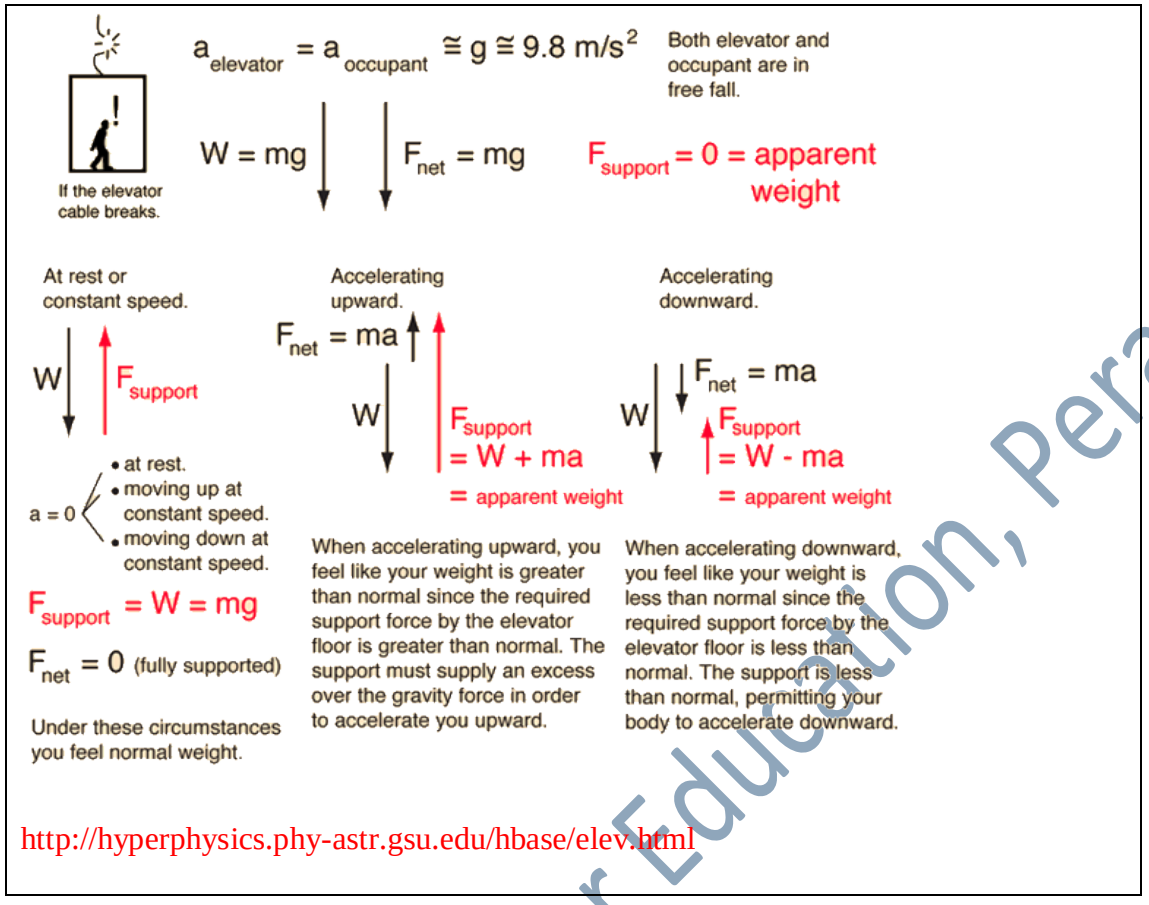
Ans: 1 (It posses energy but no work done since there is no movement of the object due to the gravity/force; WD = Force x Displacement)

45. A person weighs more in a lift which is :

(1) Moving up with a constant velocity
(2) Moving down with a constant velocity
(3) Accelerating upward
(4) Accelerating downward

Ans: 3. .





46. Which refrigerant is generally used in air-conditioning or refrigerators but now phased out due to ozone depleting nature?

(1) Carbon dioxide (2) Freon
(3) Oxygen (4) Hydrogen

Ans: 2. (Now phased out).

47. Telephone was invented by:

1. Ericson 2. Marconi
3. Edison 4. Alexander Graham Bell

Ans: 4

49. Hydraulic brakes in automobiles work on:

1. Bernoulli's principle 2. Posieuille's principle
3. Pascal's law/principle 4. Archimedes' principle

Ans: 3

50. The speed of a loaded DC shunt motor can be decreased below its rated speed by
    1. increasing the resistance in the armature circuit
    2. increasing the resistance in the field circuit
    3. increasing the supply voltage
    4. reducing the current in the armature circuit

    Ans: 2

A **DC shunt motor** (also known as a shunt wound DC motor) is a type of self-excited DC motor where the field windings are shunted to or are connected in parallel to the armature winding of the motor. Since they are connected in parallel, the armature and field windings are exposed to the same supply voltage. though there are separate branches for the flow of armature current and field current. The **speed of a DC motor** (N) is equal to:

$$N = \frac{V - I_a R_a}{k\phi}$$

Therefore speed of the 3 types of DC motors – shunt, series and compound – can be controlled by changing the quantities on the right-hand side of the equation above.

Hence the speed can be varied by changing:

1. The terminal voltage of the armature, V.
2. The external resistance in armature circuit, R_a.
3. The flux per pole, φ.

https://www.yourelectricalguide.com/2021/06/dc-motor-mcq-questions.html