1. For thyristors pulse triggering is preferred to do triggering because :

(A) Gate dissipation is low

(B) Pulse system is simpler

(C) Triggering signal is required for short duration

(D) All the above

Ans:D

https://testbook.com/objective-questions/mcq-on-thyristors--5eea6a1539140f30f369f3be

2. In a perfectly elastic collision :

(A) Linear momentum and K.E. both are conserved

(B) Only momentum is conserved

(C) Only K.E. is conserved

(D) None of them is conserved

Ans:

An **elastic collision** is an encounter between two bodies in which the total kinetic energy of the two bodies remains the same. In an ideal, perfectly elastic collision, there is no net conversion of kinetic energy into other forms such as heat, noise, or potential energy.

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3. An isentropic process is:

(A) Irreversible and adiabatic

(B)Reversible and isothermal

(C) Frictionless

(D) Reversible and adiabatic

Ans: D

4. The elements with atomic numbers 2, 10, 18, 36 and 54 are all :

(A) Light metals (B) Halogens (C) Rare earths (D) Noble gases

Ans:D

5. A wound watch spring has

(A) mechanical (B) kinetic

(C) potential energy. (D) kinetic and potential

Ans:C

6. Deforestation generally decreases :

(A) Rainfall (B) Soil erosion

(C) Drought (D) Global Warming

Ans: A

7. In S.I engine, to obtain the required firing order :

(A) battery is installed

(B) distributor is installed

(C) Carburettor is installed

(D) ignition coil is installed

Ans:B

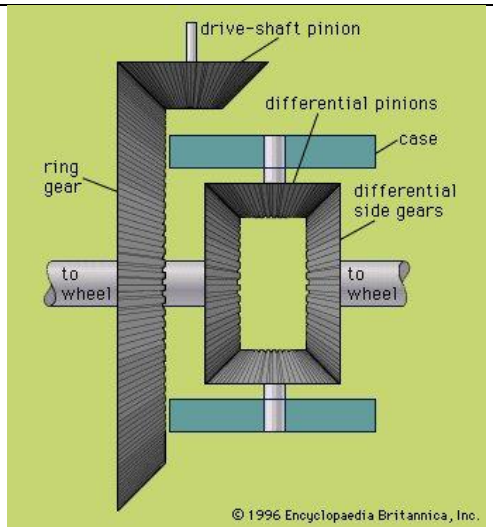
8. …… gears are used in a differential of an automobile.

(A) Double helical (B) Mitre

(C) Straight Bevel (D) None of these

Ans:3

Differential gear, in automotive mechanics, gear arrangement that permits power from the engine to be transmitted to a pair of driving wheels, dividing the force equally between them but permitting them to follow paths of different lengths, as when turning a corner or traversing an uneven road. On a straight road the wheels rotate at the same speed; when turning a corner the outside wheel has farther to go and will turn faster than the inner wheel if unrestrained.



Britannica, The Editors of Encyclopaedia. "Differential gear". ***Encyclopedia Britannica***, 20 Jul. 1998, https://www.britannica.com/technology/differential-gear. Accessed 17 October 2021.

9. Which gate has the output low, only when both the inputs are high?

(A) NOR (B) OR (C) NAND (D) AND

Ans:C

11. A body is thrown up with an initial velocity u and covers a maximum height of h, then his equal to :

(A) $\frac{u^2}{2g}$ (B) $\frac{u}{2g}$ (C) 2ug (D) None of these

Ans: A

12. The temperature at which the volume of a gas becomes zero is called

(A) Absolute scale temperature

(B) Absolute zero temperature

(C) Absolute temperature

(D) None of these

Ans: B

13. When animals feed on other dead animals another animals, the relationship is termed as :

(A) Predation (B) Competition (C) Scavenging (D)Symbiosis

Ans: A

14. Who was the founder of slave dynasty ?

(A) Iltutmish (B)Balban

(C) Raziya (D) Qutub-ud-Din Aibak

Ans: A

15. The electrical switches are put in the :

(A) Live wire (B) Earth wire (C) Neutral wire (D) Any one of these

Ans:A

16. A grocer has 50 kg of rice. He sells a part of it at 8% profit and rest at 18% profit. He gains 15% on the whole. Find the quantity sold at 18% profit.

(A) 20 kg (B) 30 kg (C) 15 kg (D) 35 kg

Ans:B

17. Which number is similar to the numbers 13, 7, and 11 ?

(A) 9 (B) 17 (C) 12 (D) 15

Ans: B (Prime number)

18. Cod liver oil derived from fish is a rich source of :

(A) Vitamin C (B) Vitamin B12 (C) Vitamin D (D) Vitamin B,

Ans: C

19. In TIG welding, the welding zone is shielded by an atmosphere of

(A) Hydrogen gas (B) Oxygen gas

(C) Either (A) or (B) (D) Helium gas

Ans: D

20. A transformer has 1000 primary turns. It is connected to 250 V A.C. supply. Find the number of secondary turns to get secondary voltage of 400 volts.

(A) 625 (B) 1600 (C) 400 (D) 1250

Ans:A

21. Twelve years hence a man will be four times as he was 12 years ago. His present age is :

(A) 25 years (B) 20 years (C) 28 years (D) 30 years

Ans:B

Let the present be x. Age before 12 years is x-12 and age after 4 years from now = x+4

The above conditions → x+ 12 = 4(x-12) →3x = 60 →20.

22. Find the value of $\left\{\sqrt{\frac{4}{3}} - \sqrt{\frac{3}{4}}\right\}$

(A) 1 (B)$\frac{5\sqrt{3}}{2}$ (C)$\frac{1}{2\sqrt{3}}$ (D) $\frac{7}{12}$

Ans:C

The sum is $= \frac{4-3}{\sqrt{3}\sqrt{4}} = \frac{1}{2\sqrt{3}}$

23. A fan produces a feeling of comfort during hot weather because :

(A) Under fan, our perspiration evaporates quickly

(B) Our body radiates more heat when air is flowing

(C) Fan supplies cool air

(D) Conductivity of air increases

Ans:A

24. The capacity of the battery is given in terms of :

(A) Ampere-hour (B) Voltage

(C) Weight of the battery (D) Volume of the electrolyte

Ans: A

25. A car travels at 80 km/hr and a aero plane travels at 16000 m/min. How far will the car have travelled when the plane travels 800 km ?

(A) 80.6 km (B) 66.7 km (C) 60.0 km (D) 63.5 km

Ans:B (Aero plane speed = 16000x60/100 = 960kmph.

Time taken for the plane to travel 800 km =800/960 hr = 5/6 hr

Distance travelled by car in 5/6 hr = 80x5/6 = 66.66km

26. At the back of domestic refrigerator, the bank of tubes is called:

(A) Evaporator tubes, (B) Condenser tubes

(C) Refrigerant cooling tubes (D) Capillary tubes

Ans: B

26.1 In a domestic refrigerator, evaporator is located -------,

Ans: Inside the cabinet at the top with cooling coil wound.

26.2 In a domestic refrigerator, compressor (hermitically sealed) is located -------,

Ans: Outside, backside below the condenser tubebank.

https://www.secop.com/solutions/compressor-qa-tools/hermetic-compressors

What is Hermetically Sealed Compressor?

In hermetically sealed compressor, the compressor and the motor are enclosed in the welded steel casing and the two are connected by a common shaft. This makes the whole compressor and the motor a single compact and portable unit that can be handled easily. The hermetically sealed compressor is very different from the traditional open type of compressors in which the compressor and the motor are different entities and the compressor is connected to the motor by coupling or belt.

Hermetically Sealed Refrigeration Compressors

The hermetically sealed reciprocating compressor is widely used for the refrigeration and air conditioning applications. In all the household refrigerators, deep freezers, window air conditioners, split air conditioners, most of the packaged air conditioners, the hermetically sealed reciprocating compressor is used. The hermetically sealed reciprocating compressor is very easy to handle, and requires low maintenance. They are used with motor power requirements from 1/20 to 71/2 hp.

https://www.brighthubengineering.com/hvac/52198-hermetically-sealed-refrigeration-compressors/

27. In a four stroke engine, the camshaft rotates at ……speed of crank shaft

(A) Half (B) Three fourth (C) Equal (D) Double

Ans: A

28. Delhi became the capital of India in the year :

(A) 1910 (B). 1911 (C) 1916 (D) 1923

Ans: B

29. Compression ratio of petrol engines normally have the range :

(A) 8 to 10 (B) 10 to 15 (C) 16 to 20 (D)80 to 90

Ans: A

29.1 Compression ratio of diesel engines normally have the range:

(A) 8 to 10 (B) 10 to 15 (C) 16 to 20 (D)80 to 90

Ans: C

30. The representative fraction of $\frac{1}{1,00,000}$ signifies a scale of :

(A) 1 cm=1,00,000 m (B) 1 cm= 10 km

(C) 1 cm =1 km (D) None of these

Ans:C

31. The EPROM stands for :

(A) Erasable Programmable Read Only Memory

(B) Extended Parasitic Read Only Memory

(C) Extended Polar Read Only Memory

(D) None of the above

Ans:A

EPROM, in full **erasable programmable read-only memory**, form of computer memory that does not lose its content when the power supply is cut off and that can be erased and reused. EPROMs are generally employed for programs designed for repeated use but that can be upgraded with a later version of a program. EPROMs are erased with ultraviolet light. The capabilities of EPROMs were extended with EEPROM (electrically erasable programmable read-only memory); flash memory, which is extensively used in computers in the early 21st century, is an EEPROM.

Britannica, The Editors of Encyclopaedia. "EPROM". ***Encyclopedia Britannica***, 25 Jun. 2021, https://www.britannica.com/technology/EPROM. Accessed 3 October 2021.

32. $\alpha=3, \beta = 5, \gamma = -8$, then the value of $\alpha^3 + \beta^3 + \gamma^3$ is :

(A) – 240 (B) 240 (C) -460 (D) Zero

Ans:C (27+125-512 =-460)

33. Which country is the largest producer of coffee in the world ?

(A) Sri Lanka (B) Brazil (C) India (D) China

Ans:B

34. Bacteria in sewage are mostly :

(A) Anaerobic (B) Pathogenic (C)Saprophytic (D)Parasitic

Ans:B

35. A satellite that revolves around the equator 36,000 km from earth's centre is called :

(A) Polar (B) Geostationary (C) Equatorial (D) Elliptical

Ans: B

36. A cyclotron is a:

(A) Bunch of gamma rays (B) high frequency oscillator

(C) Particle accelerator (D) none of these

Ans: C

37. The turbine suitable for low heads and high flow rates is :

(A) Pelton wheel (B) Francis

(C) Kaplan (D)All of these

Ans: C

38. The equipment's attached to CPU which computer can access are called :

(A) Control units (B) Computer components

(C) Hardware (D) Peripherals

Ans:D

39. Power loss in a resistor is given by :

(A) $P=V^2R$ (B) $P = \frac{V^2}{R}$ (C) $P = \frac{I^2}{R}$ (D) $P= \frac{V}{I}$

Ans:B. ($V=IR$, $P =VI$ or I^2R)

40. A micro-processor with a clock frequency of 100 MHz will have a clock period of :

(A) 1 ns (B) 10 ns. (C) 100 ns (D) 1000 ns

Ans:B (ns= nano sec.)

$T = 1/f \rightarrow T = 1/(100x1000000)$ s = 10 ns (1 ns = 10^{-9} s)

A CPU with a clock speed of 3.2 GHz executes 3.2 billion cycles per second. (Older CPUs had speeds measured in megahertz, or millions of cycles per second.)

https://www.intel.in/content/www/in/en/gaming/resources/cpu-clock-speed.html

……..

THE SYSTEM CLOCK

At the most basic level, the *system clock* handles all synchronization within a computer system. The system clock is an electrical signal on the control bus which alternates between zero and one at a periodic rate (see Figure below). All activity within the CPU is synchronized with the edges (rising or falling) of this clock signal.

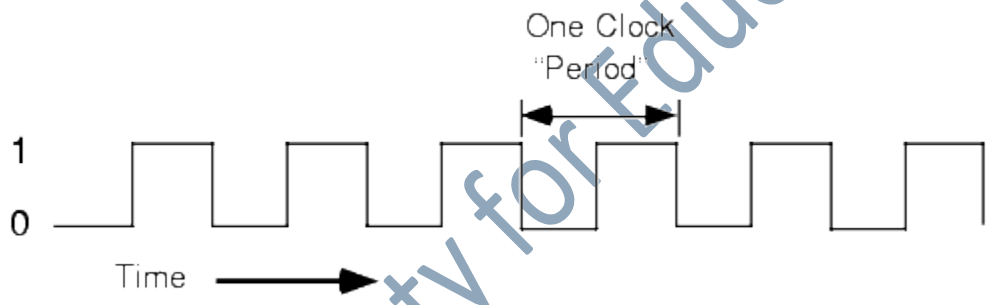


Figure: The System Clock

The frequency with which the system clock alternates between zero and one is the *system clock frequency*. The time it takes for the system clock to switch from zero to one and back to zero is the *clock period*. One full period is also called a *clock cycle*. On most modern systems, the system clock switches between zero and one at rates exceeding several hundred million times per second to several billion times per second. The clock frequency is simply the number of clock cycles which occur each second.

Note that one clock period (the amount of time for one complete clock cycle) is the reciprocal of the clock frequency.

For example, a 1 MHz clock would have a clock period of one microsecond (1/1,000,000th of a second). Likewise, a 10 MHz clock would have a clock period of 100 nanoseconds (100 billionths of a second). A CPU running at 1 GHz would have a clock period of one nanosecond. Note that we usually express clock periods in millionths or billionths of a second.

https://www.plantation-

productions.com/Webster/www.artofasm.com/Windows/HTML/SystemOrganizationa4.html

41. For complete combustion of 1 kg of carbon, _ oxygen is required.

(A) 8 kg (B) 3 kg (approx) (C) 2 kg (1) 1kg

Ans:B (2.66 kg)

42. The distance between the two rails in Broad Gauge in India is :

(A) 1676 mm (B) 1000 mm (C) 762 cm (D) 1676 cm

Ans: A

43. Which is a primary consumer ?

(A) Scavenger (B) Saprophyte (C) Carnivore (D) Herbivore

Ans:D

Primary consumers are **herbivores**, feeding on plants. Caterpillars, insects, grasshoppers, termites and hummingbirds are all examples of primary consumers because they only eat autotrophs (plants)..

44. The impact strength of a material indicates its

(A) Resistance to corrosion (B)Hardness

(C) Toughness (D) None of these

Ans: C

45. Momentum equation deals with the conservation of

(1) Mass (2) Force

(3) Momentum (4) energy

Ans:3

46. Bernoulli's equation deals with the conservation of

(1) Mass (2) Force

(3) Momentum (4) energy

Ans:4

47. In the design of pulley, key and shaft:

(1) All three are designed for same strength

(2) Key is made weaker link

(3) Pulley is made weaker

(4) Shaft is made weaker

Ans:2

48. Strength of a beam is proportional to the square of its:-

(1) length (2) depth

(3) width (4) section modulus

Ans:4 (Section modulus, $Z = \frac{bd^2}{6}$)

49. The moment diagram for a cantilever beam subjected to bending moment at end of beam will be:

(1) rectangle (2) triangle (3) parabola (4) cubic parabola

Ans:1

50. The torsional rigidity of a shaft is expressed by the :

(1) Maximum torque it can transmit

(2) Number of cycles it undergoes before failure

(3) Elastic limit up to which it resists torsion, shear and bending stresses

(4) Torque required to produce a twist of one radian per unit length of shaft

Ans:4