# **BMRCL RECRUITMENT** Station Controller and Train Operator

# **Question Paper :- Exam Date: 22-07-2023**

KEY Ans.

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- Who were the first Muslim invaders of India ?
  - (A) The Ghaznavids (B) The Ghurids
  - (C) The Arabs (D) None of these

### (B)- The Arabs

. The first Prime Minister of India was

(A) Lal Bahadur Shastri

(C) Morarji Desai

(B) Jawaharlal Nehru

(D) Indira Gandhi

**(B)- Jawaharlal Nehru** 

- 3. The Gram Panchayats are elected by Gram Sabhas consisting of
  - (A) every citizen living in the village
  - (B) entire male and female population of the village
  - (C) every adult male living in the village
  - (D) every farmer of the village

## (A)- Every citizen living in the village

- 4. The four major components of atmosphere are
  - (A) Oxygen, Hydrogen, Carbon dioxide and Neon
  - (B) Oxygen, Nitrogen, Carbon dioxide and Water vapour
  - (C) Oxygen, Nitrogen, Carbon dioxide and Hydrogen
  - (D) Oxygen, Nitrogen, Carbon dioxide and Argon

#### (D)- Oxygen, Nitrogen, Carbon dioxide & Argon

5. The person who received Padma Bhushan in 2023, for Literature and Education category,

is

- (A) Ms. Sudha Murthy
- (B) Shri S.L. Bhyrappa
- (C) Shri S.M. Krishna
- (D) Ms. Rani Machaiah

#### (B)- Shri S.L. Bhyrappa

- 6. World Environment Day is celebrated on
  - (A)  $15^{\text{th}}$  June (B)  $5^{\text{th}}$  July (C)  $5^{\text{th}}$  June (D)  $15^{\text{th}}$  July

(C)- 5<sup>th</sup> June

- 7. Rough endoplasmic reticulum looks rough due to presence of
  - (A) Ribosomes (B) Cristae (C) Genes (D) Vacuoles

(A)- Ribosomes

- 8. Horns of mammals are made of
  - (A) Chitin
  - (C) Cartilage

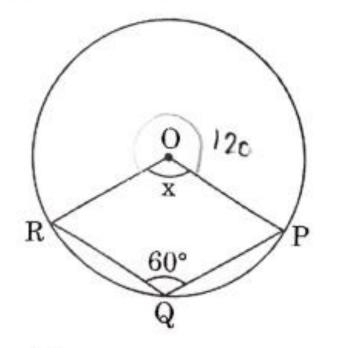
- (B) Connective tissue
- (D) Keratin

## (D)- Keratin

- 9. Autotrophic mode of nutrition requires
  - (A)  $CO_2$  and  $H_2O$
  - (C) Sunlight
  - (D)- All the above

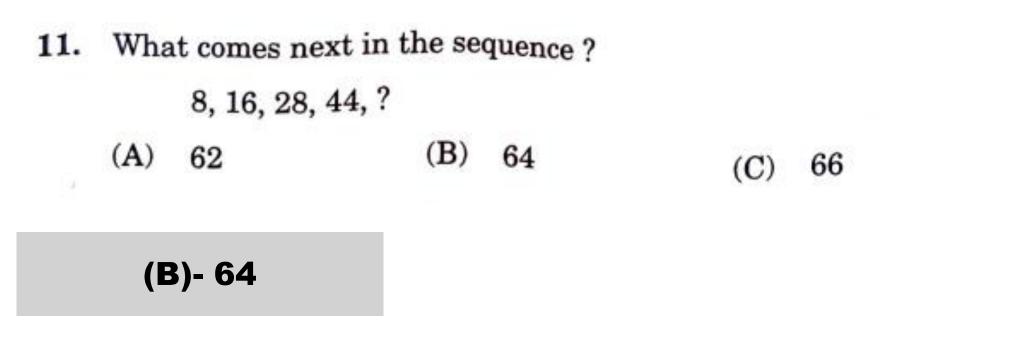
- (B) Chlorophyll
- (D) All the above

10. In the figure shown, find value of 'x'.



(A) 200° (B) 220° (C) 230° (D) 240°

(D)- 240



12. What should come in place of the question mark (?)? 3W, 7V, 11U, 15T, ?

(A) 19Z (B) 20P

(C) 22U

(D) 19S

(D)

60

(D)- 19S

- 13. Lata starts from point A and walks 2 km towards north, then turns to her right and walks for 2 km, then again turns to her right and walks for another 2 km. In which direction is she facing now ?
  - (A) West (B) South (C) North (D) East

(B)- South

- 14. Anil introduced Rohit as the son of the only brother of his father's wife. How is Rohit related to Anil?
  - (A) Cousin (B) Son (C) Uncle (D) Son-in-law

(A)- Cousin

- 15. Among 5 boys, Vasant is taller than Manohar but not as tall as Raju. Jayant is taller than Dutta but shorter than Manohar. Who is the tallest in the group ?
  - (A) Raju (B) Manohar (C) Vasant (D) Jayant

(A)- Raju

- 16. If day before yesterday was Saturday, then what day of the week will it be on the day after tomorrow ?
  - (A) Friday (B) Thursday (C) Wednesday (D) Tuesday

(C)- Wednesday

17. In a joint family, there are a father, a mother, 3 married sons and one unmarried daughter. Of the sons, two have 2 daughters each and one has a son. How many female members are there in the family ?

- 18. India first won Olympic Hockey Gold at
  - (A) London
  - (B) Berlin Grace
  - (C) Los Angeles

(D) Rome

19. Match the following :

	List I (Sanctuary / Tiger Reserve / National Park)		List (Stat
P.	Buxa Tiger Reserve	1.	Raja
Q.	Periyar Tiger Reserve	2.	Guja
R.	Sariska National Park	3.	West
S.	Wild Ass Sanctuary	4.	Kera

#### Code:

	$\mathbf{P}$	$\mathbf{Q}$	R	$\mathbf{s}$
(A)	2	1	4	3
(B)	3	4	1	<b>2</b>
(C)	2	4	1	3
(D)	3	1	4	2

)		List II (State)
	1.	Rajasthan
	2.	Gujarat
	3.	West Bengal
	4.	Kerala -

**20.** Match the following :

	List I (Manufacturing Site)		List II (Industry)
Ρ.	Ludhiana	1.	Auto Parts
Q.	Kanpur	2.	Woollen Garments
R.	Varanasi	3.	Leather
S.	Vijayawada	4.	Handloom
_			

#### Code :

	Р	Q	R	$\mathbf{S}$
(A)	1	4	3	2
(B)	2	3	4	1
(C)	2	4	3	1
(D)	1	3	4	2

- 21. One should not connect a number of electric appliances to the same socket of power because
  - (A) Appliances will not get full voltage
  - (B) Appliances will not get proper current
  - (C) This can damage appliances
  - (D) This can damage domestic wiring due to overheating

#### (D)- This can damage domestic wiring due to overheating

- 22. Water boils at lower temperature than 100°C on hill stations because
  - (A) There is cloud formation at high altitude
  - (B) Pressure is lower at higher altitude
  - (C) Temperature is lower at high altitude
  - (D) Water vapours are less at high altitude

#### (B)- Pressure is lower at higher altitude

- 23. Which of the following is the longest river in India ?
  - (A) Ganga
  - (C) Brahmaputra

(B) Narmada

(D) Godavari

6

10

(B)

 $(\mathbf{D})$ 

(A)- Ganga

24. The total number of factors of 40 is

(A) 4

(C) 8

**(C)**- 8

- 25. Which of the following is an example of a man-made ecosystem ?
  - (A) Herbarium
  - (C) Tissue culture

**(B)- Aquarium** 

Aquarium (B)

Forest (D)

The resistivity of conductor 26.

- Increases with increase in length  $(\mathbf{A})$
- Decreases with increase in length  $(\mathbf{B})$
- Decreases with increase in area (C)
- Does not change (D)

#### (A)- Increases with increase in length

- 27. A circuit whose characteristics are same irrespective of the direction of current or voltage is called
  - (A) Bilateral
  - (C) Linear

(A)- Bilateral

- (B) Unilateral
- (D) Non-linear

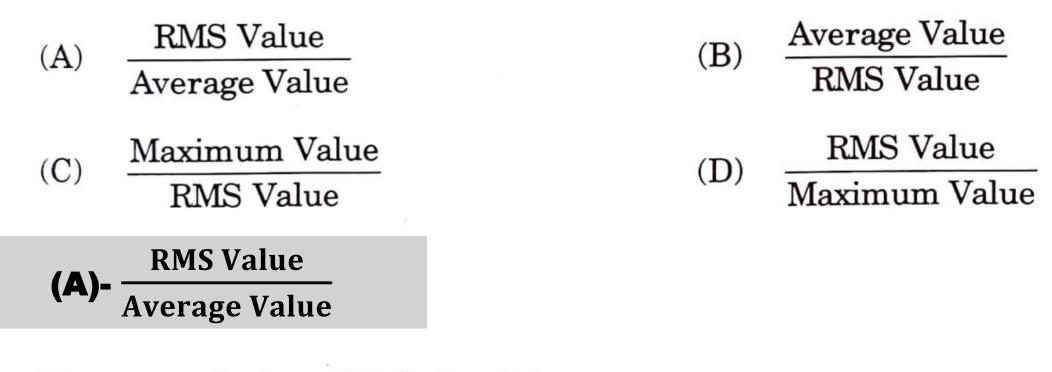
- 28. Unit of magnetic flux is
  - (A) Weber
  - (C) Tesla

(A)- Weber

(B) Ampere-turn

(D) Coulomb

29. Form factor for sinusoidal alternating current is given by



- **30.** The power factor of R-C circuit is
  - (A) Always zero
  - (C) Always unity
  - (A) Between 0 and 1

- (B) Between 0 and 1
- (D) Between 0 and -1

- **31.** In a megger, the controlling torque is provided by
  - (A) Weights attached to the moving system
  - (B) Springs
  - (C) Braking magnet
  - (D) Pointer

#### (C)- Braking magnet

- When load is removed \_\_\_\_\_ motor will run at highest speed.
  - (A) Differential compound
  - (C) Cumulative compound

#### (B)- Series

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**(B)** 

(D)

Series

Shunt

**33.** In an alternator, if the winding pitch is shortpitched by  $60^{\circ}$  electrical, its pitch factor will be (A) 0.75 (B) 1 (C) 0.28 (D) 0.866

(D)- 0.866

**34.** The pipe connected between the surge tank and prime mover is

(A) Spillway (B) Tailrace (C) Penstock (D) Draft tube

(C)- Penstock

- 35. A solar panel is a packaged interconnected assembly of
  - (A) photon cells
    - (C) photovoltaic cells
  - (C)- Photovoltaic Cells

- (B) fuel cells
- (D) load cells

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- 36. The skin effect is increased when
  - (A) the frequency of supply increases
  - (B) the frequency of supply decreases
  - (C) the supply voltage increases
  - (D) the supply voltage decreases

#### (B)- the frequency of supply decreases

- **37.** Dielectric heating is used in
  - surface hardening of metals (A)
  - annealing of metals (C)

- melting of metals **(B)**
- preheating of plastics (D)

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#### (d)- preheating of plastics

- In a circuit breaker, if the dielectric strength of the medium between contacts builds up **38**. more rapidly than the restriking voltage, then arc will be
  - Extinguished (A)  $(\mathbf{B})$
  - (C) Enhanced

- Produced
- Decreased (D)

### (A)- Extinguished

- 39. The MCB works on the principle of
  - (A) Electromagnet Release
  - (C) Thermal Release

- (B) Magneto-thermic Release
- (D) Ionic Release

#### **(B)- Magneto-thermic Release**

- 40. A semi-conductor has \_\_\_\_\_\_ temperature co-efficient.
  - (A) Positive (B) Zero (C) Negative (D) Constant

#### (C)- Negative

- 41. A hole in a semi-conductor is defined as
  - (A) a free electron
  - (B) the incomplete part of an electron pair bond
  - (C) a free proton
  - (D) a free neutron

#### (B)- the incomplete part of an electron pair bond

- **42.** A crystal diode is a \_\_\_\_\_ device.
  - (A) Non-linear (B) Bilateral (C) Linear (D) Non-conductive

#### (A)- Non-linear

- **43.** Decimal 43 in hexadecimal number system is
  - (A) B2 (B) 2B (C) C2 (D) 2C

(B)- 2B

- 44. The core of a fiber optic cable is made up of
  - (A) Air (B) Glass (C) Diamond (D) Quartz

(B)- Glass

- 45. In online UPS, inverter is
  - (A) Always off
  - (B) Always on
  - (C) On only during failure of supply
  - (D) Off only during failure of supply

(B)- Always on

- 46. Ohm's law is applicable for
  - (A) Electrolytes
  - (B) Conductors
  - (C) Insulators
  - (D) Vacuum tubes

**(B)- Conductors** 

47. In a DC circuit, 3 inductances  $L_1$ ,  $L_2$ , and  $L_3$  are connected in series. Equivalent inductance

'L' is given by

(A) 
$$L = \frac{1}{L_1} + \frac{1}{L_2} + \frac{1}{L_3}$$
  
(B)  $\frac{1}{L} = L_1 + L_2 + L_3$   
(C)  $L = L_1 + L_2 + L_3$   
(D)  $\frac{1}{L} = \frac{1}{L_1} + \frac{1}{L_2} + \frac{1}{L_3}$ 

(C) - L = L1 + L2 + L3

- 48. At absolute zero temperature, a semi-conductor behaves as a/an
  - (A) Conductor
  - (B) Insulator
  - (C) Semi-conductor
  - (D) Short Circuit

(B)- Insulator

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- 49. Diode used as a Voltage Regulator is
  - (A) Varactor diode
  - (C) PIN diode

#### **(D)- Zener diode**

- 50. Varactor diode is used as
  - (A) VCO
  - (C) VRO

- (B) Gunn diode
- (D) Zener diode

- (B) Resistor
- (D) Inductor

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(A)- VCO

- 51. The semi-conductor material used in LED is :
  - (A) Gallium arsenide
    - (C) Potassium carbonate

- (B) Indium phosphide
- (D) Silicon

### (A)- Gallium arsenide

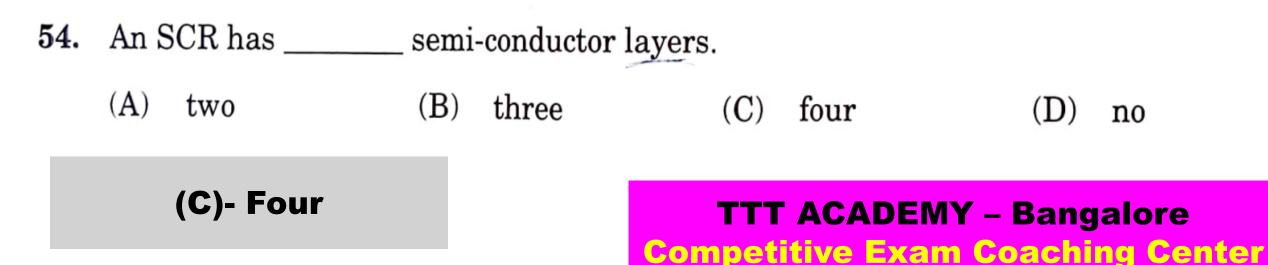
- 52. The point of intersection of DC and AC load line is called
  - (A) Saturation point
  - (C) Operating point

(C)- Operating Point

- (B) Cut-off point
- (D) None of the above

53. A feedback circuit usually employs \_\_\_\_\_\_ network.
(A) Resistive (B) Diode
(C) Transistor (D) SCR

(A)- Resistive



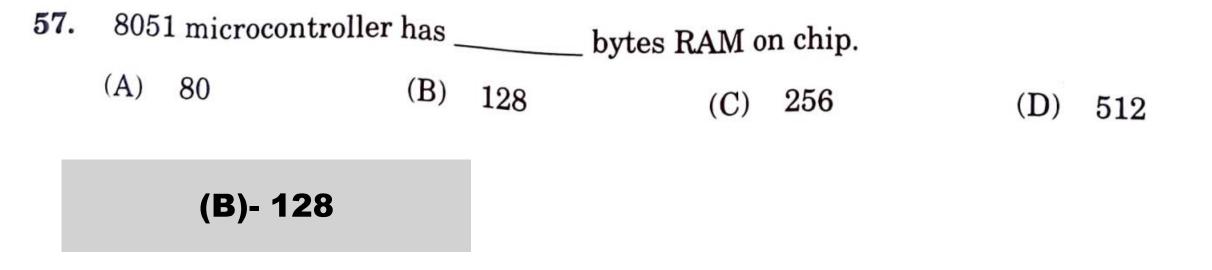
- A single-phase fully controlled Bridge Rectifier uses 55.
  - (A) 2 SCRs 4 SCRs **(B)**  $(\mathbf{C})$ 3 SCRs 6 SCRs (D)

**(B)- 4 SCRs** 

- Which of the following inverters allows multi-motor operation ? **56**.
  - (A) Voltage Source Inverter **Current Source Inverter**  $(\mathbf{B})$
  - Both VSI and CSI (C)

- None of the above (D)

#### (A)- Voltage Source Inverter



58. The Special Function Register used to set the Interrupt priority is :
 (A) IE
 (B) IP
 (C) TMOD
 (D) SCON

(B)- IP

- 59. For maximum power to be transferred from a source to load in a network, the load resistance must be \_\_\_\_\_\_ the Thevenin resistance.
  - (A) greater than
  - (C) equal to

- (B) less than
- (D) not equal to

#### (C)- Equal to

- 60. Current is minimum or zero in a tuned circuit where :
  - (A) L and C are in series
  - (C) R and L are in series

- (B) L and C are in parallel
- (D) C and R are in parallel

#### (B)- L and C are in parallel

- **61.** Race around problem is overcome by
  - (A) SR flip-flop
  - (B) D flip-flop
  - (C) Master-Slave JK flip-flop
  - (D) JK flip-flop

#### (C)- Master-Slave JK flip-flop

- 62. The noise which is introduced in the transmitter and carried all the way along to the receiver output is called as
  - (A) Channel noise
  - (C) Crosstalk noise

- (B) Quantization noise
- (D) Transit time noise

#### **(D)- Transit time noise**

- **63.** Light is used as a carrier for information in
  - (A) Twisted pair cables
  - (C) Coaxial cables

(B) Fiber optic cables

(D) Air

# **(B)- Fiber optic cables**

- 64. In \_\_\_\_\_ method the server assigns a physical address to the computer every time it boots.
  - (A) Dynamic address
  - (C) Configurable address

- (B) Static address
- (D) Class F address

#### (A)- Dynamic address

\_\_\_\_\_ connects two separate LANs that use the same media access protocol.

(A) Router

**65**.

(C) Gateway

## (B)- Bridge

- 66. A step-up transformer will
  - (A) Increase the current in secondary
  - (B) Increase the voltage in secondary
  - (C) Decrease the power in secondary
  - (D) Decrease the voltage in secondary

#### **(B)- Increase the voltage in secondary**

- (B) Bridge
- (D) Repeater

- 67. Resistance of a semi-conductor exhibits
  - (A) Positive temperature coefficient
  - (B) Negative temperature coefficient
  - (C) Constant temperature coefficient
  - (D) Will not depend on temperature

#### **(B)- Negative temperature coefficient**

**68.** Find the value of  $\beta$  if  $\alpha = 0.85$ .

(A) 4.66 (B) 5.67 (C) 6.67

**(B)**- 5.67

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10.67

 $(\mathbf{D})$ 

**69.** The current amplification factor in a transistor with common base configuration is denoted by

(A)  $\beta$  (B)  $\gamma$  (C)  $\alpha$  (D)  $\delta$ 



# 70. Number of PN Junctions in GUNN diode is

(A) zero (B) 1 (C) 2 (D) 3

(A)- Zero

- Which of the following component *cannot* be fabricated on IC ? 71.
  - Capacitor (B) Resistor (A) Diode (D) Inductor  $(\mathbf{C})$

# (C)- Inductor

- The phase difference the output and input voltage of a CE amplifier is 72.
  - $180^{\circ}$ (A)
  - $90^{\circ}$ (C)

0° (zero degree) (B)

(D)  $270^{\circ}$ 

# (A)- 180°

- 73. Which of the following is *not* an ideal characteristic of an Op-Amp?
  - (A) Infinite open loop gain
  - (C) Zero input resistance

- (B) Infinite bandwidth
- (D) Infinite CMRR

# (C)- Zero input resistance

- 74. Circuit which converts irregularly shaped waveform to regular shaped waveform is
  - (A) Schmitt trigger
  - (C) Comparator

- (B) Voltage limiter
- (D) Integrator

# (A)- Schmitt trigger

- **75.** An SCR has \_\_\_\_\_ PN junctions.
  - (A) two(B) three(C) four(D) None

# (B)- Three

- **76.** The DC supply of voltage source inverter has \_\_\_\_\_\_ at all the frequencies.
- (A) High impedance
  - (C) Variable

- (B) Low impedance
- (D) None of these

## **(B)- Low impedance**

#### 77. A cycloconverter is

- (A) Single-phase type
- (B) Three-phase type
- (C) Either of the single-phase type or three-phase type
- (D) None of these

#### (C)- Either of the single-phase type or three-phase type

- 78. 8051 microcontroller has \_\_\_\_\_ (bytes) ROM on chip.
  - (A) Zero K (B) 2 K (C) 4 K (D) 8 K

(C)- 4K

- 79. When 8051 microprocessor is reset, the content of S.P. is
- (A) 00H (B) FFH (C) 0FH (D) 07H

# (D)- 07H

80. Memory type used to access bit addressable internal data memory in 8051C is
(A) Code (B) Data (C) bdata (D) X data

# (C)- bdata

- 81. In 8051 for serial data transfer, timer mode used is
  - (A) Timer 0 in mode 1

(B) Timer 1 in mode 1

(C) Timer 0 in mode 2

4

0

(D) Timer 1 in mode 2

#### (D)- Timer 1 in mode 2

- 82. Bandwidth end points on a series resonance curve are called
  - (A) Half Frequency Points
  - (C) Full Frequency Points

- (B) Half Power Points
- (D) Full Power Points

#### **(B)- Half Power Points**

- 83. Base 16 refers to which number system?
  - (A) BCD
  - (C) Octal

- (B) Hexadecimal
- (D) Decimal

# (B)- Hexadecimal

- 84. The 1's complement of  $101010_{(2)}$  is
  - (A) 010110 (B)  $010101_{(2)}$  (C) 110111 (D)  $101011_{(2)}$

# **(B)- 010101**<sub>(2)</sub>

85. A single-bit full adder adds

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- (A) two 2-bit binary numbers
- (B) two 4-bit binary numbers
- (C) two single bits and one carry bit
- (D) two 2-bit numbers and one carry bit

#### (A)- two 2-bite binary numbers

- 86. The process of boring a groove or a large hole at a fixed distance from the end of the hole is
  - (A) Tapping

(B) Undercutting

(C) Boring

**(D)- Counterboring** 

(D) Counterboring

- 87. When a body is subjected to some external force, if there is some decrease in length of the body, then the ratio of decrease of length of the body to the original length is known as
  - (A) Tensile strain
  - (B) Compressive strain
  - (C) Volumetric strain
  - (D) Shear strain

## **(B)- Compressive strain**

- 88. Ratio of shear stress to shear strain is
  - (A) Young's modulus
  - (C) Bulk modulus

- (B) Rigidity modulus
- (D) Poisson's ratio

# (B)- Rigidity modulus

- 89. Due to slip of the belt, the velocity ratio of the belt drive
  - (A) Becomes zero

**(D)- Decreases** 

(C) Does not change

- (B) Increases
- (D) Decreases

- 90. In the equation  $PV^n = C$ , if the value of n = 0, then the process is called
  - (A) Constant pressure process
  - (B) Constant volume process
  - (C) Adiabatic process
  - (D) Isothermal process

#### **(D)- Isothermal process**

- 91. The absolute pressure of air at the outlet of a compressor is called
  - (A) Critical pressure

(B) Back pressure

(C) Discharge pressure

(D) Sub-critical pressure

## (C)- Discharge pressure

92. The capacity of a compressor is expressed in

(A) 
$$kg/m^3$$
 (B)  $m^3/min$  (C)  $m^3/kg$  (D)  $kg/m^2$   
(B)-m/min

- 93. In pipeline, the total energy line lies over the hydraulic gradient line by an amount equal the
  - (A) Pressure head
  - (C) Vacuum head
  - (A)- Pressure head

- (B) Atmospheric head
- (D) Velocity head

- 94. The actual head against which a centrifugal pump has to work is called
  - (A) Delivery head

(B) Manometric head

(C) Suction head

(D) Vacuum head

# (B)- Manometric head

- 95. Which of the following pumps is generally used to pump highly viscous fluid?
  - (A) Centrifugal pump
  - (C) Airlift pump

(D)- Screw pump

- (B) Reciprocating pump
- (D) Screw pump

- 96. The type of organization preferred for a steel industry is
  - (A) Line organization

-

- (B) Functional organization
- (C) Line and Staff organization
- (D) Line, Staff and Functional organization

# **(D)-** Line, Staff and Functional organization

- 97. The property of a material due to which it breaks with little permanent distortion is called
  - (A) Ductility
  - (B) Malleability
  - (C) Brittleness
  - (D) Plasticity

**(C)- Brittleness** 

- **98.** Which of the following is *not* a mineral of copper ?
  - (A) Azurite
  - (B) Malachite
  - (C) Duralumin
  - (D) Copper glance

# (C)- Duralumin

- 99. The heat treatment process used for softening hardened steel is
  - (A) Annealing
  - (B) Tempering
  - (C) Normalising
  - (D) Carburising

(A)- Annealing

100. Thermosetting plastics are those materials which

- (A), are formed into shape under heat and pressure
- (B) do not become hard with the application of heat and pressure
- (C) are flexible and can withstand considerable wear under suitable conditions
- (D) are used for friction lining for clutches and brakes

#### (B)- do not become hard with the application of heat and pressure

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