

Q1. A husband and wife had 3 married sons and each of them had 3 children. How many members are there in the family?

- A. 16
- B. 20
- C. 17
- D. 15

Ans

(C)

Solution:

$$2+3*2+3*3 = 17$$

Q2. From the given alternatives, select the word which cannot be formed using the letters of the given word - "Distribution"

- A. riot
- B. dust
- C. disturb
- D. tribute

Ans

(D)

Q3. Select the related letters/word/ number from the given alternatives.

Mathematics: Logic :: Science : ?

- A. Experiment
- B. laboratory
- C. scientist
- D. facts

Ans

(A)

Solution:

Mathematics is based on logic, similarly experiment establishes or verifies the theory in science.

Q4. Select the related letters/word/ number from the given alternatives.

Magazine : Editor :: Drama : ?

- A. principal
- B. actress
- C. scenario
- D. director

Ans

(D)

Solution:

Editor supervises magazine in the same way as director does in the case of drama.

Q5. Select the related letters/word/ number from the given alternatives.

Foot : man :: Hoof : ?

- A. Dog
- B. Cow
- C. Cat
- D. Rabbit

Ans

(B)

Solution:

The foot of a human being is analogous to the hoof of a cow.

Q6. Select the related letters/word/ number from the given alternatives.

7 : 60 :: 9 : ?

- A. 96
- B. 83
- C. 92
- D. 86

Ans

(C)

Solution:

$$7*7=49+11=60, 9*9=81+11=92$$

Q7. Select the related letters/word/ number from the given alternatives.

9: 80 :: 100: ?

- A. 901
- B. 1009
- C. 9999
- D. 10999

Ans

(C)

Solution:

$$(9)^2 = 81 - 1 = 80, \text{ similarly, } (100)^2 = 10000 - 1 = 9999$$

Q8. Select the related letters/word/ number from the given alternatives.

CD : 2423 :: BA : ?

- A. 2625
- B. 1112
- C. 2526
- D. 2112

Ans

(C)

Solution:

$$C = 24, D = 23$$

Reverse Position number of the later in English alphabet

Thus, B = 25, A = 26

Q9. Select the related letters/word/ number from the given alternatives.

678 : U :: 456 : ?

- A. P
- B. O
- C. Q
- D. R

Ans

(B)

Solution:

687=6+7+8=21 is the place value of U in alphabetical sequence. Similarly, 456=4+5+6=15 is the place value of O.

Q10. Select the related letters/word/ number from the given alternatives.

CALL Q01. : ACLL :: COOL : ?

- A. LOOC
- B. LCOO
- C. OOLC
- D. OCLO

Ans

(D)

Q11. Select the related letters/word/ number from the given alternatives.

12 : 5 :: 14 : ?

- A. 7
- B. 8
- C. 9
- D. 6

Ans

(D)

Q12. If OBEY is coded as PDHC then how will SAME be coded?

- A. TDPH
- B. TCPI
- C. TCPH

D. TCQI

Ans

(B)

Solution:

In the word OBEY, O is shifted 1 place, B is shifted 2 places, E is shifted 3 places and Y shifted 4 places forward in their alphabetical places. Similarly, SAME can be coded as TCPI.

Q13.If FUTURE is coded as EUUTRF, then how will you code SOMBER?

A. SEMBOR

B. REOBME

C. REBMOS

D. ROBMES

Ans

(D)

Solution:

In the word FUTURE, the F and E and T and U are interchanged among themselves. Remaining letters remain at their original positions. So, SOMBER can be coded as ROBMES.

Q14.If DEAL is equal to 44, then PEAK is equal to

A. 66

B. 38

C. 88

D. 50

Ans

(A)

Solution:

The sum of the place values of D, E, A and L is $(4+5+1+12) = 22$. So, double of this value is 44. Similarly, the sum of place values of P, E, A and K is $(16+5+1+11) = 33$. So, double of this 66 and is the answer.

Q15.Q is twice as heavy as P but twice as lighter than U. R is half the weight of P but is twice heavier than S. Who is the second heaviest?

A. Q

B. U

C. S

D. R

Ans

(A)

Solution:

By given conditions, the correct decreasing order of their weights will be $U > Q > P > R > S$.

Q16.In a class Ram got the 13th rank from top and he was 41st from the bottom of the list of students passed. 10 students did not take the examination and 2 students failed. What is the total strength of the class?

A. 63

B. 62

C. 65

D. 66

Ans

(C)

Q17.Select the missing number/ letters from the given options.

ACE, GIK, BDF, ?

A. JHM

B. HJI

C. HJL

D. MJH

Ans

(C)

Solution:

In each group, there is a gap of one letter between the letters.

Q18.Select the missing number/ letters from the given options.

WBP, SGM, OLJ, ?

- A. NPH
- B. KQG
- C. LPG
- D. MQC

Ans

(B)

Solution:

From the group WBP, each letter is shifted -4, +5, -3 to get SGM. Similarly, from SGM, each letter is shifted -4, +5, -3 to get OLJ. So, applying same logic to OLJ, we get KQG.

Q19. Select the missing number/ letters from the given options.

1, 4, 10, 19, 31, ?

- A. 46
- B. 50
- C. 55
- D. 43

Ans

(A)

Solution:

The difference between the consecutive terms is 3, 6, 9, 12, 15 and so on.

Q20. Select the missing number/ letters from the given options.

EV, GT, JQ, ?

- A. OP
- B. LN
- C. NM
- D. MN

Ans

(C)

Solution:

The gap between E, G, J is +2, +3. Similarly, the gap between V, T, is -2, -3. So, new group will be +4 from J and -4 from . Hence, it will be NM.

Q21. Which one set of letters when sequentially placed at the gaps will complete the given letter series?

pqq_rppqq_rppqqp_rpq_

- A. pprq
- B. prqr
- C. qpqq
- D. qrqq

Ans

(A)

Solution:

The pattern here will be 'pqqrrpqqpr'

Q22. Which one set of letters when sequentially placed at the gaps will complete the given letter series?

_m_mnnm_nmnn_mn_n_

- A. mnnmmn
- B. mnnmmn
- C. mnnmmn
- D. mnnmmn

Ans

(A)

Solution:

The pattern here will be 'mnnmmn'.

Q23. If in a certain language, STUD is coded as TVXH, then how SING will be coded in the same language?

- A. TKQL
- B. TKJK
- C. TKQK
- D. TKQX

Ans

(C)

Solution:

The word STUD is coded by shifting its letters by +1, +2, +3, +4 to get TVXH. Similarly, SING can be coded as TKQK.

Q24.If in a certain code, **1925** is written as **ACE** and **36116** is written as **FAD**, the how will **DIE** be written in that code?

- A. 819259
- B. 168125
- C. 161825
- D. 16819

Ans

(B)

Solution:

The code is made by writing the square numbers of the alphabetical positions. In ACE, positions of A, C and E are 1, 3 and 5. So, its code is 1925. Similarly, DIE can be coded as 168125.

Q25.In question, which one of the given responses would be a meaningful order of the following words in ascending order?

1. Sapling 2. Tree 3. Plant 4. Seed
- A. 1, 3, 4, 2
 - B. 1, 4, 3, 2
 - C. 3, 4, 1, 2
 - D. 4, 1, 3, 2

Ans

(D)

Q26.In question, which one of the given responses would be a meaningful order of the following words in ascending order?

1. Multiplication 2. Addition 3. Subtraction 4. Division 5. Bracket
- A. 3, 2, 1, 4, 5
 - B. 5, 4, 1, 2, 3
 - C. 4, 3, 1, 5, 2
 - D. 5, 2, 1, 4, 3

Ans

(B)

Solution:

because from Rule BODMAS.

Q27.Statement :

Go by aeroplane to reach Delhi from Chennai quickly.

Conclusions:

- I. Chennai and Delhi are connected by aeroplane service.
 - II. There is no other means of going from Chennai to Delhi.
- A. Only conclusion I is implicit
 - B. Only conclusion II is implicit
 - C. Both conclusion I and II are implicit
 - D. Neither conclusion I nor II is implicit

Ans

(A)

Q28.In the series given below, count the number of 9s, each of which is not immediately preceded by 5 but is immediately followed by either 2 or 3. How many such 9s are there?

1 9 2 6 5 9 3 8 3 9 3 2 5 9 2 9 3 4 8 2 6 9 8

- A. One
- B. Three
- C. Five
- D. Six

Ans

(B)

Solution:

1 9 2 6 5 9 3 8 3 9 3 2 5 9 2 9 3 4 8 2 6 9 8

Q29. An application was received by inward clerk in the afternoon of a week day. Next day he forwarded it to the table of the senior clerk, who was on leave that day. The senior clerk next day evening put up the application to the desk officer. Desk officer studied the application and disposed off the matter on the same day, i.e. Friday. Which day was the application received by the inward clerk?

- A. Monday
- B. Tuesday
- C. Wednesday
- D. Earlier week's Saturday

Ans

(B)

Solution:

Tuesday is required day.

Q30. If 1st October is Sunday, then 1st November will be

- A. Monday
- B. Tuesday
- C. Wednesday
- D. Thursday

Ans

(C)

Solution:

Clearly 1st, 8th, 15th, 22nd and 29th October are Sundays.

So, 31st October is Tuesday.

1st November will be Wednesday

Q31. You go North, turn right, then right again and then go to the left. In which direction are you now?

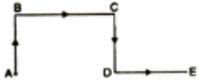
- A. North
- B. South
- C. East
- D. West

Ans

(C)

Solution:

The movements indicated are as shown in Fig. (A to B, B to C, C to D, D to E). Thus, the final movement is in the direction indicated by DE, which is east.



Q32. Find the odd numbers/letters/words from the given alternatives

- A. Frog
- B. Rabbit
- C. Lion
- D. Dog

Ans

(A)

Solution:

Except frog all animals live on land while Frog lives in water and land both.

Q33. Find the odd numbers/letters/words from the given alternatives

- A. Venus
- B. Mercury
- C. Mars
- D. Moon

Ans

(D)

Solution:

Except moon all are planets. Moon is a satellite.

Q34. Find the odd numbers/letters/words from the given alternatives

- A. NR
- B. SW

- C. RU
- D. PT

Ans

(C)

Solution:

Except RU, there is a gap of 4 letters between the two given letters.

Q35. Find the odd numbers/letters /words from the given alternatives

- A. 600
- B. 216
- C. 1296
- D. 36

Ans

(A)

Solution:

Except 600, all numbers can be expressed as 6 raised to power of some natural number

Q36. Find the odd numbers/letters /words from the given alternatives

- A. 4115
- B. 7211
- C. 5501
- D. 3461

Ans

(D)

Q37. Find the odd numbers/letters /words from the given alternatives

- A. 21-98
- B. 45-210
- C. 7-29
- D. 27-126

Ans

(C)

Solution:

From the division rule.

Q38. Find the missing character from among the given alternatives.



- A. 21
- B. 25
- C. 27
- D. 29

Ans

(D)

Q39. Find the missing character from among the given alternatives.

6	6	8
5	7	5
4	3	?
120	126	320

- A. 4
- B. 8
- C. 12
- D. 16

Ans

(B)

Solution:

In the first column, $6 \times 5 \times 4 = 120$.

In the second column, $6 \times 7 \times 3 = 126$.

Let the missing number be x. Then, in the third column, we have: $8 \times 5x \times X = 320 \Rightarrow x = 320/40 = 8$.

Q40. Find the missing character from among the given alternatives.

17	19	23
15	16	19
128	210	?

- A. 336
- B. 84
- C. 168
- D. 1008

Ans

(A)

Solution:

from calculation:

$$17^2 - 15^2 = 64 * 2 = 128;$$

$$19^2 - 16^2 = 105 * 2 = 210;$$

$$23^2 - 19^2 = 168 * 2 = 336$$

Q41. Town D is towards East of town F. Town B is towards North of town D. Town H is towards South of town D. Towards which direction is town H from town F ?

- A. East
- B. South-East
- C. North-East
- D. Data inadequate

Ans

(B)

Q42. Puja is mother of Q and R. Q is the daughter of Puja. But R is not the daughter of Puja. How is R related to Puja?

- A. Nephew
- B. Son-in-law
- C. Son
- D. Granddaughter

Ans

(C)

Q43. If $2@5=133$; $1@4=65$, then $2@8=?$

- A. 516
- B. 520
- C. 68
- D. 72

Ans

(B)

Solution:

$$2^3 + 5^3 = 133, 1^3 + 4^3 = 65 \text{ similarly } 2^3 + 8^3 = 520$$

Q44. In each of the questions below are given three statements followed by three conclusions numbered I, II and III. You have to take the given statements to be true even if they seem to be at variance from commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follows from the given statements disregarding commonly known facts.

Statements:

- Some wires are telephones.
- All telephones are mirrors.
- All mirrors are desks.

Conclusions:

- I. Some wires are desks.
 - II. Some wires are mirrors.
 - III. Some desks are telephones.
- A. Only I and II follow
 - B. Only I and III follow
 - C. Only II and III follow

D. All follow

Ans

(D)

Q45. In each of the questions below are given three statements followed by three conclusions numbered I, II and III. You have to take the given statements to be true even if they seem to be at variance from commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follows from the given statements disregarding commonly known facts.

Statements:

All furniture are woods.

No wood is road.

Some roads are hills.

Conclusions:

I. Some roads are furniture.

II. Some woods are furniture.

III. Some hills are wood.

A. Only I follows

B. Only II follows

C. Only III follows

D. Only I and II follow

Ans

(B)

Q46. How many rectangles, which are not squares, are there in the following figure?



A. 12

B. 16

C. 18

D. 14

Ans

(B)

Q47. Which one of the answer figures will complete the question figure?

Question figure:



Answer Figures:



(a)

(b)

(c)

(d)

A. A

B. B

C. C

D. D

Ans

(A)

Q48. In the below question figures, there is relation between the first two figures. Following this relation, which of the answer figures can be derived from third figure among question figures?

Question Figures:



Answer Figures:



(a)

(b)

(c)

(d)

A. A

B. B

- C. C
 - D. D
- Ans**
(B)

Q49. A sheet of paper is folded in particular manner, punched once and then unfolded, the punched unfolded paper appear as a given figures. Find out the manner in which the paper was folded and punched by choosing the correct answer.

Question Figures:



Answer Figures:



- (a)
- (b)
- (c)
- (d)

- A. A
 - B. B
 - C. C
 - D. D
- Ans**
(B)

Q50. A word is represented by only set of numbers as given in any of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as in the 2 matrices given below. The columns and rows of matrix I are numbered from 0 to 4 and that of matrix II from 5 to 9. A letter from these matrices can be column number. e.g. S can be represented by 10, 41 etc.

Dis-similar identifies the set for the word 'MIST'.

Matrix -I

	0	1	2	3	4
0	F	O	M	S	R
1	S	R	F	O	M
2	O	M	S	R	F
3	R	F	O	M	S
4	M	S	R	F	O

Matrix -II

	5	6	7	8	9
5	A	T	D	I	P
6	I	P	A	T	D
7	T	D	I	P	A
8	P	A	T	D	I
9	D	I	P	A	T

- A. 21,96,34,68
- B. 21,65,22,98
- C. 40,77,56,68
- D. 02,89,65,75

Ans
(A)

Q51. The covering or protective tissues in the animal body are called.....

- A. Connective tissue
- B. Nervous tissue
- C. Epithelial tissue
- D. Meristematic

Ans
(C)

Q52. A boat will submerge when it displaces water equal to its own -

- A. volume
- B. weight
- C. surface
- D. density

Ans
(B)

Q53. Before X-ray examination (coloured X-ray) of the stomach, patients are given suitable salt of barium because.

- A. barium is a good absorber of X-rays and helps stomach to appear clearly
- B. barium salts are white in colour and this helps stomach to appear clearly
- C. barium allows X-rays to pass through the stomach
- D. barium salts are easily available

Ans

(A)

Q54. Which organ of Human body is affected by Alzheimer disease?

- A. Brain
- B. Bone Marrow
- C. Lung
- D. Intestine

Ans

(A)

Q55. The 'du-aspa' and 'she-aspa' rank in Mansabdari system was first introduced during the reign of

- A. Akbar
- B. Jahangir
- C. Shahjahan
- D. Aurangzeb

Ans

(B)

Q56. Grid is a network of -

- A. The North pole and the South pole
- B. The Tropic of Cancer and the Tropic of Capricorn
- C. Parallels of latitudes and Meridians of longitudes
- D. Equator and other latitudes

Ans

(C)

Q57. Cactus and Keekar trees are found in -

- A. Thorny Bushes
- B. Mangrove Forests
- C. Tropical deciduous forests
- D. Tropical evergreen forest

Ans

(A)

Q58. According to modern thinking, the law of diminishing returns applies to -

- A. agriculture
- B. industry
- C. mining
- D. all fields of production

Ans

(D)

Q59. Which among the following subjects is not an aim of the monetary policy of the Reserve Bank of India?

- A. Giving impetus to ec
- B. Direct credit with objective criteria
- C. To control pressure of inflation
- D. To ensure social justice

Ans

(D)

Q60. According to Keynesian theory of income determination, at full employment, a fall in aggregate demand causes -

- A. a fall in prices of output and resources
- B. a fall in real Gross National product and employment
- C. a rise in real Gross National product and investment
- D. a rise in prices of output and resources

Ans

(A)

Q61. The term mutation was first coined by -

- A. Morgan
- B. Mendal

- C. Boveri
- D. Hugo de Vries

Ans

(D)

Q62. When aggregate supply exceeds aggregate demand –

- A. unemployment falls
- B. unemployment falls
- C. inventories accumulate
- D. unemployment develops

Ans

(C)

Q63. If the length of a simple pendulum is halved then its period of oscillation is –

- A. doubled
- B. halved
- C. increased by a factor $\sqrt{2}$
- D. decreased by a factor $\sqrt{2}$

Ans

(D)

Q64. Operating Surplus arises in the –

- A. Government Sector
- B. Production for self-consumption
- C. Subsistence farming
- D. Enterprise Sector

Ans

(A)

Q65. What is the chemical name of vitamin E?

- A. Calciferol
- B. Tocopherol
- C. Riboflavin
- D. Phylloquinone

Ans

(B)

Q66. What is the common name of *Periplaneta Americana* ?

- A. Earthworm
- B. Cockroach
- C. Frogs
- D. None of these

Ans

(B)

Q67. Common carp is the variety of –

- A. Goat
- B. Dog
- C. Fish
- D. Crab

Ans

(C)

Q68. Labourers who do hard manual labour develop thick skin on their palms and soles due to –

- A. thick epidermis
- B. thick dermis
- C. thick subcutaneous tissue
- D. all of these

Ans

(D)

Q69. Which of the following alloy is used in making magnet?

- A. Duralumin
- B. Stainless steel
- C. Alnico
- D. Magnalium

Ans

(C)

Q70.If the velocity-time graph of a particle is represented by $y = mt + c$ then the particle is moving with -

- A. constant speed
- B. constant velocity
- C. constant acceleration
- D. varying acceleration

Ans

(C)

Q71.When a vehicle passes, TV reception gets distorted. This is because -

- A. metal reflects radiowaves
- B. spark plug creates electromagnetic disturbances
- C. vehicle pollution affects the performance of the TV components
- D. modern vehicles use electro-ignition

Ans

(B)

Q72.Central Tobacco Research Institute is located at -

- A. Coimbatore
- B. Rajahmundry
- C. Panaji
- D. Mysore

Ans

(B)

Q73.'Van Mahotsav' is associated with -

- A. Increase in crop
- B. Protection of plants
- C. Planting trees
- D. Cutting trees

Ans

(C)

Q74.Window 7, the latest operating system from Microsoft Corporation has Indian languages fonts.

- A. 14
- B. 26
- C. 37
- D. 49

Ans

(D)

Q75.Kalinga Prize is given in which of the following fields?

- A. Arts
- B. Medicine
- C. Creative writing
- D. Science

Ans

(D)

Q76.A plane glass slab is kept over coloured letters the letter which appears least raised is

- A. Violet
- B. Red
- C. Green
- D. Blue

Ans

(B)

Q77. Which of the following is the best indicator of pollution ?

- A. Bryophyte
- B. Pteridophyte
- C. Algae
- D. Lichen

Ans

(D)

Q78. Where is Brabourne Stadium located ?

- A. Kolkata
- B. Cuttack
- C. Mumbai
- D. Jamshedpur

Ans

(C)

Q79. The first National Park of India is -

- A. Corbett national Park
- B. Dachigam Wild Life Sanctuary
- C. Simlipal National Park
- D. Hazaribagh National Park

Ans

(A)

Q80. Which country earned the title "The Queen of Seas"?

- A. Germany
- B. Italy
- C. France
- D. Britain

Ans

(C)

Q81. The Earth is nearest to the Sun on -

- A. 23 September
- B. 21 March
- C. 3 January
- D. 4 July

Ans

(C)

Q82. A sufficiently large scale map indicating the detailed surface features of an area including relief is called -

- A. Relief map
- B. Chorographical map
- C. Wall map
- D. Topographical map

Ans

(D)

Q83. Reserve Bank of India was nationalized in -

- A. 1947
- B. 1948
- C. 1945
- D. 1949

Ans

(B)

Q84. Aggregate Monetary Resources is -

- A. M4
- B. M3
- C. M1
- D. M2

Ans

(B)

Q85. The Great Bath was found at –

- A. Mohenjodaro
- B. Chanhudaro
- C. Lothal
- D. Harappa

Ans

(A)

Q86. Which gas is responsible for depletion ozone layer around earth which protect u from harmful ultra-violet rays ?

- A. Chlorofluro carbons
- B. Nitrogen
- C. Oxygen
- D. Nitrogen oxide

Ans

(A)

Q87. India's 1st Hi-Speed Rural Broad ba Network has been commissioned in district of –

- A. Telangana
- B. Andhra Pradesh
- C. Kerala
- D. Karnataka

Ans

(C)

Q88. The World Environment Day is celebrated on –

- A. August 6
- B. April 7
- C. June 5
- D. June 16

Ans

(C)

Q89. Penicillin was discovered by –

- A. Louis Pasteur
- B. Alexander Fleming
- C. Ian Fleming
- D. Edward Jenner

Ans

(B)

Q90. Amjad Ali Khan is associated with which of the following musical instruments?

- A. Sarod
- B. Violin
- C. Veena
- D. Sitar

Ans

(A)

Q91. Which of the following species is locally extinct in India?

- A. The Gyps vulture
- B. White Bellied Heron
- C. Forest Owlet
- D. Siberian Crane

Ans

(C)

Q92. Who was the first to use the term "Micro" and "Macro" in Economics in 1933 ?

- A. James Tobin
- B. Ragnar Frisch

C. I. Fischer
D. Gurly

Ans

(B)

Q93. Which of the following regulates the working of share market in India?

A. MRTP Act

B. BIFR

C. FERA

D. SEBI

Ans

(D)

Q94. The two components of an eco-system are -

A. Plants and light

B. Plants and animals

C. Biotic and abiotic

D. Weeds and micro-organisms

Ans

(C)

Q95. ICMP is used for -

A. Addressing

B. Multicasting

C. Forwarding

D. Error reporting

Ans

(D)

Q96. Who is the founder of Homeopathy?

A. Wakesman

B. Lainnec

C. Domagk

D. Hahnemann

Ans

(D)

Q97. The most stable measure of central tendency is -

A. Mode

B. Median

C. Mean

D. Range

Ans

(B)

Q98. The last dynasty of the Delhi Sultanate was the -

A. Khilji dynasty

B. Slave dynasty

C. Syed dynasty

D. Lodi dynasty

Ans

(D)

Q99. Who was the first Deputy Prime Minister of India?

A. Maulana Abul Kalam Azad

B. Sardar Vallabhahai Patel

C. Gulzarilal Nanda

D. Jawaharla Nehru

Ans

(B)

Q100. Which of the following is observed as Sports day every year?

- A. 22 April
- B. 29 August
- C. 2 October
- D. 26 July

Ans

(B)

Q101. In a solid or liquid dielectric with externally applied electric field, as the interatomic distance increases the internal field E_i ,

- A. Increases
- B. Decreases
- C. Remains unaltered
- D. Increases or decreases based on temperature

Ans

(B)

Q102. In a network made up of linear resistors and ideal voltage sources, values of all resistors are doubled. Then the voltage across each resistor is

- A. Doubled
- B. Halved
- C. Decreases four times
- D. not changed

Ans

(D)

Q103. Decibel scale is useful while measuring voltages covering

- A. Wide frequency ratio
- B. Wide voltage ratio
- C. Narrow frequency range
- D. Narrow voltage range

Ans

(A)

Q104. A standard resistance is made 'Bifilar' type of eliminate

- A. Stray capacitance
- B. Temperature effect
- C. Inductive effect
- D. Skin effect

Ans

(B)

Q105. The difference between the indicated value and the true value of a quantity is

- A. Gross error
- B. Absolute error
- C. Dynamic error
- D. Relative error

Ans

(B)

Q106. Vibration galvanometers, tunable amplifiers and head phones are used in

- A. d.c bridges
- B. a.c bridges
- C. Both d.c and a.c bridges
- D. Kelvin double bridges

Ans

(B)

Q107. The capacitance and loss angle of a given capacitor specimen are best measured by

- A. Wheatstone bridge
- B. Maxwell bridge
- C. Anderson bridge
- D. Schering bridge

Ans

(D)

Q108. The energy capacity of a storage battery is rated in

- A. kwh
- B. kw
- C. Ampere hours
- D. Joules

Ans

(C)

Q109. The pressure coil of an induction type energy meter is

- A. Highly resistive
- B. Highly inductive
- C. Purely resistive
- D. Purely inductive

Ans

(B)

Q110. Pair of active transducers is

- A. Thermistor: Solar cell
- B. Thermocouple: Thermistor
- C. Thermocouple: Solar cell
- D. Solar cell: LVDT

Ans

(C)

Q111. What should be the main characteristic(s) of the null detector in a bridge measurement?

- 1. Accuracy
- 2. Precision
- 3. Sensitivity
- 4. Resolution

Select the correct answer using the code given below:

Code:

- A. Only 1 and 2
- B. Only 2 and 3
- C. Only 3 and 4
- D. Only 3

Ans

(D)

Q112. Maxwell's inductance-capacitance bridge is used for measurement of inductance of

- A. Low Q coils only
- B. medium Q coils only
- C. High Q coils only
- D. low and medium Q coils

Ans

(B)

Q113. In free space, if $\rho=0$ the Poisson's equation becomes

- A. Maxwell's divergence equation $\nabla \cdot \mathbf{B} = 0$
- B. Laplacian equation $\nabla^2 V = 0$
- C. Kirchhoff's voltage equation $\sum V = 0$
- D. None of these

Ans

(B)

Q114. Equation $\nabla \cdot \mathbf{B} = 0$ is based on

- A. Gauss's Law
- B. Lenz's Law
- C. Ampere's Law
- D. Continuity Equation

Ans

(D)

Q115. Which of the following is zero as applied to electromagnetic fields?

- A. grad div A
- B. div grad V
- C. div curl A
- D. curl curl A

Ans

(C)

Q116. Image theory is applicable to problems involving

- A. Electro static field only
- B. Magneto static field only
- C. Both electrostatic and magneto static fields
- D. Neither electrostatic nor magneto-static field

Ans

(C)

Q117. Where is the Laplace's equation valid?

- A. Only in free space
- B. Only in conductors
- C. Only in charge free dielectric regions
- D. Only in cavities bounded on all sides by conducting walls

Ans

(C)

Q118. Equipotential surfaces about a pair of equal and opposite linear charges exist in what form?

- A. Concentric spheres
- B. Concentric cylinders
- C. Non-concentric cylinders
- D. Planes

Ans

(D)

Q119. What does the function $f(x-v_0t)$ represent?

- A. A stationary wave
- B. A wave motion in a reverse direction
- C. A wave motion in a forward direction
- D. Not a travelling wave

Ans

(C)

Q120. In an intrinsic semiconductor, the number of electrons is equal to the number of holes at which temperature?

- A. 0 K
- B. 0°C
- C. High temperature
- D. All temperatures

Ans

(A)

Q121. Elements can reach a stable atomic structure by

- A. Losing electrons only
- B. Gaining electrons only
- C. Losing or gaining or sharing electrons
- D. Collisions between atoms

Ans

(C)

Q122. III-V alloy semiconductor crystallizes in what form?

- A. Simple cubic structure
- B. Body-centered cubic structure

- C. Zinc blende structure
- D. Wurtzite structure

Ans

(D)

Q123.The effect of tachometer feedback in a control system is to reduce

- A. Only time constant
- B. only gain
- C. damping
- D. both gain and time constant

Ans

(D)

Q124.In a series R-L-C circuit, the maximum voltage across the capacitor occurs at a frequency

- A. Double the resonant frequency
- B. Equal to resonant frequency
- C. times the resonant frequency
- D. Below the resonant frequency

Ans

(D)

Q125.Piezo-electric crystal is generally employed for the measurement of which one of the following?

- A. Flow
- B. Velocity
- C. Acceleration
- D. Temperature

Ans

(C)

Q126.In microwave telemetry, repeater stations are required at every

- A. 2 km
- B. 5 km
- C. 40 km
- D. 100 km

Ans

(C)

Q127.Data acquisition systems are usually of

- A. Analog type
- B. digital type
- C. Integrating type
- D. hybrid type

Ans

(D)

Q128.If a very flexible wire is laid out in the shape of a hairpin with its two ends secured, what shape will the wire tend to assume if a current is passed through it?

- A. Parabolic
- B. Straight line
- C. Circle
- D. Ellipse

Ans

(D)

Q129.Superconducting metal in super-conducting is state has relative permeability of

- A. More than one
- B. one
- C. Zero
- D. negative

Ans

(D)

Q130. Which of the following exhibit hysteresis?

- A. Ferromagnetic materials only
- B. Ferroelectric materials only
- C. Ferrielectric materials only
- D. Both ferroelectric and ferrielectric materials

Ans

(B)

Q131. The lightning arrester is connected:

- A. In series with the line
- B. Between line and earth
- C. To a pole near the line
- D. To circuit breaker

Ans

(B)

Q132. To increase the range of a Voltmeter:

- A. A low resistance is connected in series
- B. A low resistance is connected in parallel
- C. A high resistance is connected in series
- D. A high resistance is connected in parallel

Ans

(C)

Q133. The ratio of the puncture voltage to the flashover voltage of an insulator is :

- A. Equal to one
- B. lower than one
- C. Zero
- D. greater than one

Ans

(D)

Q134. Which of the following motor is used in household refrigerator?

- A. Synchronous motor
- B. D.C. shunt motor
- C. 3-phase induction motor
- D. I-phase induction motor

Ans

(D)

Q135. The temperature co-efficient of an intrinsic semiconductor is:

- A. Zero
- B. Positive
- C. Negative
- D. Like that of metals

Ans

(C)

Q136. Advantage of transmitting power at high voltage is:

- A. Magnitude of current will be small
- B. Power loss will be less
- C. It will reduce the voltage drop in the line impedance
- D. All the above

Ans

(B)

Q137. The value of diversity factor is:

- A. Less than one
- B. greater than one
- C. Equal to one
- D. any one of the above

Ans

(B)

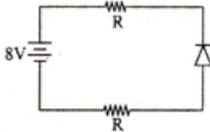
Q138. The moderator used in fast breeder reactor is:

- A. Heavy water
- B. Graphite
- C. Ordinary water
- D. Any of these

Ans

(D)

Q139. The value of voltage across the diode in figure given below:



- A. Zero volt
- B. 4V
- C. 8V
- D. Depends upon the value of R

Ans

(C)

Solution:

Since diode is in reversed biased condition, no current flows through it and $V_D = 8V$

Q140. A three phase power transformer is provided with star-delta connection for current Transformer should be in :

- A. Star-star
- B. Delta-star
- C. Delta-Delta
- D. Star-delta

Ans

(B)

Q141. An electric motor may give noise due to:

- A. Magnetic effect
- B. defective bearing
- C. Cooling air
- D. all the above

Ans

(D)

Q142. A single phase motor is made self-starting by the addition of a/an:

- A. Running winding
- B. Starting winding
- C. Electric starter
- D. Autotransformer

Ans

(B)

Q143. The earth's potential is taken as:

- A. Infinite
- B. supply voltage
- C. 1 volt
- D. zero

Ans

(D)

Q144. Swamping resistance is used to compensate error due to:

- A. Stray magnetic field
- B. Large supply voltage
- C. Large supply frequency

D. Temperature variations

Ans

(D)

Q145. The tariff most suitable for large industrial consumers is:

A. Flat demand rate

B. Block meter rate

C. Two part tariff

D. All the above

Ans

(C)

Q146. A wire has a resistance 10. It is stretched by one-tenth of its original length. Then its resistance will be:

A. 10 Ω

B. 12.1 Ω

C. 9 Ω

D. 11 Ω

Ans

(B)

Solution:

$$R = \frac{\rho l}{A}$$

Since volume remains same

$$lA = l'A'$$

$$\Rightarrow lA = (1.1)lA'$$

$$\Rightarrow A' = \frac{A}{1.1}$$

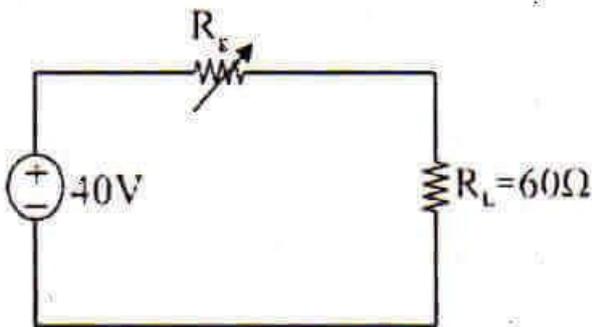
$$\text{Now } R' = \frac{\rho l'}{A'} = \frac{\rho(1.1l)}{\frac{A}{1.1}}$$

$$= \frac{\rho l}{A} (1.1)^2$$

$$= R \times 1.21$$

$$\Rightarrow R' = 1.21 \times 10 = 12.1 \Omega$$

Q147. If R_g in the circuit shown in figure I is variable between 20 Ω and 80 Ω then maximum power transferred to the load R_L will be:



A. 15 W

B. 13.33 W

C. 6.67 W

D. 2.4 W

Ans

(C)

Solution:

For maximum power transfer

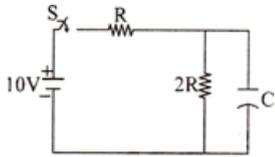
$$R_L = R_g = 60\Omega$$

$$\text{Then, } I = \frac{40}{R_L + R_g} = \frac{40}{120} = \frac{1}{3} \text{ A}$$

$$\text{Power transferred} = I^2 \times R_L$$

$$= \left(\frac{1}{3}\right)^2 \times 60 = 6.67 \text{ W}$$

Q148. Time constant of the network shown in figure is :



- A. 2 RC
- B. 3 RC
- C. RC/2
- D. 2RC/3

Ans

(D)

Solution:

$$\text{Time constant } \tau = \left(\frac{2R \cdot R}{2R + R} \right) \cdot C = \frac{2RC}{3}$$

Q149. Two sinusoidal equations are given as:

$$e_1 = A \sin \left(\omega t + \frac{\pi}{4} \right) \text{ and } e_2 = B \sin \left(\omega t - \frac{\pi}{6} \right)$$

The phase difference between the two quantities is:

- A. 75°
- B. 60°
- C. 105°
- D. 15°

Ans

(A)

Solution:

$$\phi_1 = \frac{\pi}{4}, \phi_2 = -\frac{\pi}{6}$$

$$\Delta\phi = \phi_1 - \phi_2 = \frac{\pi}{4} + \frac{\pi}{6} = \frac{5\pi}{12} = 75^\circ$$

Q150. While starting synchronous motor its field winding should be:

- A. Kept open
- B. Connected to a dc source
- C. Connected to ac source
- D. Kept short circuited

Ans

(A)

Q151. Electronic switching are becoming more and more popular because of:

- A. Noiseless operation
- B. Long life
- C. Smaller size and weight
- D. All the above

Ans

(D)

Q152. A FET is essentially a:

- A. Current driven device
- B. Voltage driven device
- C. Power driven source
- D. Solar device

Ans

(B)

Q153. Permanence is analogous to:

- A. Conductance
- B. Reluctance
- C. Inductance
- D. Resistance

Ans

(C)

Q154. Potential transformers are used

- A. to measure high a.c. voltage

- B. to measure high d.c. voltage
- C. both (A) and (B)
- D. as protective device in high voltage circuits

Ans

(A)

Q155. The knowledge of diversity factor helps in computing:

- A. plant capacity
- B. average load
- C. units generated
- D. peak demand

Ans

(A)

Q156. Laboratory wattmeters are:

- A. Induction type
- B. Moving iron type
- C. Electrostatic type
- D. Electro-dynamometer type

Ans

(D)

Q157. Variation in de excitation of a synchronous motor causes variation in :

- A. Speed of motor
- B. power factor
- C. Armature current
- D. both (B) and (C)

Ans

(D)

Q158. For a 3-phase, 4-pole, 50 Hz synchronous motor the frequency, no. of poles, and the load torque are all halved. The motor speed will be

- A. 375 rpm
- B. 75 rpm
- C. 1500 rpm
- D. 3000 rpm

Ans

(C)

Solution:

$$n' = \frac{120f'}{P'} = \frac{120 \times (f/2)}{(\frac{P}{2})} = \frac{120f}{P}$$

$$= \frac{120 \times 50}{4} = 1500$$

Q159. A transformer is working at its full load and its efficiency is also maximum. The iron loss is 1000 watts. Then, its copper loss at half of full load will be:

- A. 250 watt
- B. 300 watt
- C. 400 watt
- D. 500 watt

Ans

(A)

Solution:

At maximum efficiency $k^2 P_{cu} = P_i$

Here $k = 1$, $P_{cu} = P_i = 1000W$

At $k = \frac{1}{2}$, $P_{cu} = k^2 \times 1000$

$$= \left(\frac{1}{2}\right)^2 \times 1000 = 250W$$

Q160. The advantage of electric breaking is :

- A. It is instantaneous
- B. More heat is generated during breaking
- C. It avoids wear of track
- D. Motor continue to remain loaded during breaking

Ans

(C)

Q161. The errors introduced by an instrument fall in which category?

- A. Systematic error
- B. Random errors
- C. Gross error
- D. Environmental errors

Ans

(A)

Solution:

Systematic error is introduced by an instrument.

Q162. What is clamp-on ammeter used for?

- A. Low A.C. current
- B. High A.C. current
- C. Low D.C. current
- D. High D.C. current

Ans

(B)

Solution:

Clamp-on ammeter used for high A.C. current or clamp-on ammeter has current transformer.

Q163. Which one of the following is used for measurement of 3-phase power factor?

- A. Power factor meter
- B. Crossed coil power factor meter
- C. Phase-angle watt hour meter
- D. Polarized-vane power factor meter

Ans

(D)

Solution:

Crossed coil is used for 1- supply, polarized vane power factor meter needs rotating field so primarily used for 3- ϕ .

Q164. Due to which one of the following reasons bearings of PMMC are made of jewel?

- A. To avoid wear and tear of moving system
- B. To provide a small support
- C. It can be easily replaced
- D. To make the system robust

Ans

(A)

Solution:

To avoid wear and tear of moving system.

Q165. The imperfect capacitance which is shunted by a resistance can be measured by which one of the following?

- A. Carey foster bridge
- B. Owen's bridge
- C. Schering bridge
- D. Wien's bridge

Ans

(C)

Solution:

The imperfect capacitance which is shunted by a resistance can be measured by Schering bridge.

Q166. What is differential transformer?

- A. Constant pressure transducer
- B. Variable pressure transducer
- C. Constant displacement transducer
- D. Variable inductance transducer

Ans

(D)

Solution:

Differential transformer is variable inductance transducer.

Q167. A 0 to 300 V voltmeter has an error of $\pm 20\%$ of f.s.d. What is the range of readings if true voltage is 30V?

- A. 24V - 36V
- B. 20V - 40V
- C. 29.4V - 30.6V
- D. 20V - 30V

Ans

(A)

Solution:

$$\text{Error} = \frac{2}{100} \times \text{F. S. D.} = \frac{2}{100} \times 300 = 6V$$

$$\therefore \text{Range for 30V} = 30 \pm 6 = 24V - 36V$$

Q168. In a digital voltmeter, the oscillator frequency is 400 KHz. The Ramp voltage falls from 8V to 0V in 20 ms. What is the number of pulses Counter by counter?

- A. 8000
- B. 4000
- C. 3200
- D. 1600

Ans

(A)

Solution:

$$\begin{aligned} \text{No. of pulses} &= 400 \times 10^3 \times 20 \times 10^{-3} \\ &= 8000 \end{aligned}$$

Q169. Which among the following is a frequency sensitive bridge?

- A. De-sauty bridge
- B. Schering bridge
- C. Wien's bridge
- D. Maxwell's bridge

Ans

(C)

Solution:

Wien's bridge is a frequency sensitive bridge.

Q170. If the band width of an oscilloscope is given as direct current to 10 MHz, what is the latest rise time a sine wave can have to be produced accurately by the oscilloscope?

- A. 35 sec
- B. 10 sec
- C. 3.5 sec
- D. 0.035 sec

Ans

(A)

Q171. Which one of the following not a criteria used to select potentiometer in control system?

- A. Accuracy
- B. Noise
- C. Time Response
- D. Frequency Response

Ans

(B)

Solution:

Noise is not a criterion used to select potentiometer in control system.

Q172. The dead zone in a pyranometer is 0.12% of a span. The instrument is calibrated from 500° C to 2000° C. What temperature change must occur before it can be detected in °C?

- A. 187.5
- B. 1.875
- C. 18.75
- D. 0.1875

Ans

(B)

Solution:

$$\begin{aligned} \text{Spam} &= 2000 - 50 = 1500^\circ\text{C} \\ \therefore \text{Temperature change} &= \frac{0.12}{100} \times 1500 \\ &= 1.875^\circ\text{C} \end{aligned}$$

Q173. The strain Gauge with resistance of 250 Ω . Undergoes a change of 0.15 ohm. During a test the strain is 1.5×10^{-4} what is the gauge factor?

- A. 4.7
- B. 4.0
- C. 3.5
- D. 2.0

Ans

(B)

Solution:

$$\text{Gauge factor} = \frac{\frac{\Delta R}{R}}{\frac{\Delta l}{l}} = \frac{\frac{0.15}{250}}{1.5 \times 10^{-4}} = 4$$

Q174. Which one of the following bridge will be used for the measurement of very low resistance?

- A. Kelvin bridge
- B. Maxwell's bridge
- C. Wheat stone bridge
- D. Hay's bridge

Ans

(A)

Solution:

Kelvin bridge is used for the measurement of very low resistance.

Q175. Dissipation factor, tan of a capacitance is measured by which bridge?

- A. Anderson bridge
- B. Hay's bridge
- C. Schering bridge
- D. Wien's bridge

Ans

(C)

Solution:

Dissipation factor, tan of a capacitance is measured by schering bridge.

Q176. A D' arsonval galvanometer, 1 mA, 50 ohm, is to be converted to a 5 Amp-ammeter. What is the value of the shunt resistor, R_s h?

- A. 10 ohm
- B. 1 ohm
- C. 0.01 ohm
- D. 100 ohm

Ans

(C)

Solution:

$$\begin{aligned} R_{sh} &= \left(\frac{I_m}{I - I_m} \right) R_m \\ &= \left(\frac{1 \times 10^{-3}}{5 - 10^{-3}} \right) \times 50 = 0.1 \Omega \end{aligned}$$

Q177. A 4-digit DVM (Digital voltmeter) with a 100 mV longest full-scale range would have sensitivity of how much value while resolution of this DVM is 0.001?

- A. 0.1 mV
- B. 10 mV
- C. 0.10 mV
- D. 0.01 mV

Ans

(B)

Q178. The sensitivity of 200 μA meter movement when it is used as a D.C. voltmeter is given by

- A. 500 Ω/mV
- B. 5 Ω
- C. 0.5 Ω/V

D. $5\Omega/\text{mV}$

Ans

(D)

Solution:

$$S_v = \frac{1}{I_m} = \frac{1}{200 \times 10^6}$$
$$S_v = 5\Omega/\text{mV}.$$

Q179. A voltage source having an internal impedance of $(8 + j6)$ ohms supplied power to a resistive load. What should be the load resistance for maximum power transferred to it?

- A. 8 ohms
- B. 6 ohms
- C. 10 ohms
- D. $\sqrt{10}$ ohms

Ans

(C)

Solution:

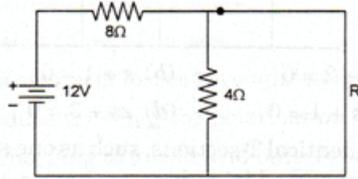
For maximum power transfer

$$Z_L = Z_s^*$$

$$R_L = \sqrt{R_s^2 + X_s^2} = \sqrt{8^2 + 6^2} = 10\Omega$$

Q180. Considered the following circuit:

What should be the value of the resistor R in the above circuit if it has to absorb the maximum power from the source?



- A. $8/3$ ohms
- B. $3/8$ ohms
- C. 4 ohms
- D. 8 ohms

Ans

(A)

Solution:

R = Required (from maximum power transfer theorem, applying on circuit).

Q181. The AC bridge used for measurement of dielectric loss of capacitor is

- A. Anderson bridge
- B. Schering bridge
- C. Wien bridge
- D. Hay's bridge

Ans

(B)

Q182. In electro-dynamometer ammeter, the deflection of the pointer is proportional to

- A. mean of currents in fixed coil and moving coil
- B. square of the current in moving coil
- C. RMS value of current in fixed coil
- D. mean-square of currents in fixed coil and moving coil

Ans

(D)

Q183. In which of the following transformers, is the secondary winding always kept closed?

- A. Current transformer
- B. Potential transformer
- C. Power transformer
- D. Distribution transformer

Ans

(A)

Q184. Two holes are drilled in the disc on a diameter of energy-meter to

- A. increase ventilation
- B. reduce the weight of disc
- C. eliminate creeping on no-load
- D. increase deflecting torque

Ans

(C)

Q185. Which of the following instruments has the highest torque/weight ratio among the given instruments?

- A. Attraction type MI instrument
- B. Repulsion type MI instrument
- C. Permanent magnet moving coil instrument
- D. Electrodynamometer instrument

Ans

(C)

Q186. If current through the operating coil of a moving iron instrument is doubled, the operating force becomes

- A. one and a half times
- B. 2 times
- C. 3 times
- D. 4 times

Ans

(D)

Q187. In moving iron instruments, the iron moves in a direction to cause

- A. Coil inductance to be constant
- B. Mutual inductance to be minimum
- C. Minimum reluctance path
- D. Decrease in the flux passing through it

Ans

(C)

Q188. A moving coil instrument has a resistance of $10\ \Omega$ and gives full scale deflection at $0.5\ \text{V}$ potential difference across it. How can it be adapted to measure a current upto $100\ \text{A}$?

- A. By connecting shunt resistance of $0.005\ \Omega$ across the meter
- B. By connecting shunt resistance of $0.05\ \Omega$ across the meter
- C. By connecting shunt resistance of $5\ \Omega$ across the meter
- D. By connecting shunt resistance of $10\ \Omega$ across the meter

Ans

(A)

Q189. The multiplying power of the shunt of a milliammeter is 8. If the circuit current is $200\ \text{mA}$, then current through the meter is

- A. $25\ \text{mA}$
- B. $200\ \text{mA}$
- C. $1600\ \text{mA}$
- D. $3200\ \text{mA}$

Ans

(A)

Q190. The material to be used in the manufacture a standard resistor should be of

- A. Low resistivity
- B. High resistivity and low temperature is coefficient
- C. High temperature coefficient
- D. Low resistivity and high temperature coefficient

Ans

(B)

Q191. In a-3 phase induction motor crawling happens at

- A. Any speed
- B. No-load speed
- C. Odd multiples of fundamental

D. Even multiples of fundamental

Ans

(C)

Q192. A 4-pole, 3-phase induction motor runs at 1440 rpm on a 50 Hz supply. Find the slip speed.

A. 2940 rpm

B. 1500 rpm

C. 1440 rpm

D. 60 rpm

Ans

(D)

Q193. Low voltage windings are placed nearer to the core in the case of concentric windings because

A. It reduces hysteresis loss

B. It reduces eddy current loss

C. It reduces insulation requirement

D. It reduces leakage fluxes

Ans

(C)

Q194. If K is the phase-to-phase voltage ratio, then the line-to-line voltage ratio in a 3-phase Y – transformer is

A. K

B. $K / \sqrt{3}$

C. $\sqrt{3} K$

D. $\sqrt{3} / K$

Ans

(C)

Q195. In an autotransformer of voltage ratio $\frac{V_1}{V_2}$, $V_1 > V_2$, the fraction of power transferred inductively is proportional to

A. $V_1 / (V_1 + V_2)$

B. V_2 / V_1

C. $(V_1 - V_2) / (V_1 + V_2)$

D. $(V_1 - V_2) / V_1$

Ans

(D)

Q196. Stepped core is used in transformers in order to reduce

A. Volume of iron

B. volume of copper

C. Iron loss

D. reluctance of core

Ans

(B)

Q197. Commutation conditions at full load for large DC machines can be efficiently checked by the

A. Brake test

B. Swinburne's test

C. Hopkinson's test

D. Field test

Ans

(C)

Q198. The emf induced in a DC shunt generator is 230 V. The armature resistance is 0.1 Ω . If the armature current is 200 A, the terminal voltage will be

A. 200 V

B. 210 V

C. 230 V

D. 250 V

Ans

(B)

Q199. The commutator of a DC generator acts as,

- A. An amplifier
- B. a rectifier
- C. A load
- D. a multiplier

Ans

(B)

Q200. Fleming's left hand rule is applicable to

- A. DC generator
- B. DC motor
- C. Alternator
- D. Transformer

Ans

(B)