

Junior Engineer Civil Mechanical and Electrical Examination 2023 Paper I

Exam Date	11/10/2023
Exam Time	5:00 PM - 7:00 PM
Subject	Junior Engineer 2023 Electrical Paper I

Section : General Intelligence and Reasoning

Q.1 Select the option that represents the correct order of the given words as they would appear in an English dictionary.

1. Magnification
2. Magnitude
3. Magnet
4. Maid
5. Magic

Ans ☒ 1. 5, 1, 3, 2, 4
☒ 2. 5, 3, 1, 2, 4
☒ 3. 5, 3, 1, 4, 2
☒ 4. 5, 3, 2, 1, 4

Q.2 In the following statements A, B, C, D and E denotes $+$, \times , \div and $=$ respectively, then which of the statement is correct?

Ans ☒ 1. 4A3C5D3E15B8
☒ 2. 4A3C5D3E15B6
☒ 3. 4A3C6D3E15B6
☒ 4. 4A3B5D3E15C6

Q.3 Select the option in which the given figure is embedded (rotation is NOT allowed).



Ans ☒ 1.

☒ 2.

☒ 3.

☒ 4.

Q.4 Select the option that is related to the third word in the same way as the second word is related to the first word. (The words must be considered as meaningful English words and must not be related to each other based on the number of letters/number of consonants/vowels in the word)

Metal : Ore :: Jewelry : ?

Ans ☒ 1. Necklace
☒ 2. Gold
☒ 3. Gold smith
☒ 4. Expensive

Q.5 In a certain code language, "XPCP" is written as "WOBE" and "LRVA" is written as "KQUZ". How will "BMWG" be written in that language?

- Ans
- ☒ 1. ANWG
 - ☒ 2. AMMH
 - ☒ 3. BMMH
 - ☒ 4. ALVF

Q.6 Which letter cluster will replace the question mark (?) to complete the given series?

SNR, QQN, OTJ, MWF, ?

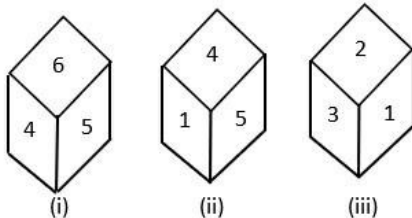
- Ans
- ☒ 1. KZC
 - ☒ 2. KYB
 - ☒ 3. KZB
 - ☒ 4. JZC

Q.7 Select the option in which the given figure is embedded (rotation is NOT allowed).



- Ans
- ☒ 1.
 - ☒ 2.
 - ☒ 3.
 - ☒ 4.

Q.8 Three different positions of the same dice are shown. Find the number on the face opposite to the face showing '6'.



- Ans
- ☒ 1. 3
 - ☒ 2. 2
 - ☒ 3. 4
 - ☒ 4. 1

Q.9 Select the combination of letters that when sequentially placed in the blanks of the given series, will complete the series.

S _ T _ XW _ UT _ X _ S _ TV _ WS _ _ VX _

- Ans
- ☐ 1. VUSWUJXTW
 - ☐ 2. VUSVJWXUTW
 - ☐ 3. UVSVJWXUTW
 - ☒ 4. UVSWUJXTW

Q.10 Select the word-pair that best represents a similar relationship to the one expressed in the pair of words given below. (The words must be considered as meaningful English words and must not be related to each other based on the number of letters/number of consonants/vowels in the word.)
Chicken : Strut

- Ans
- ☒ 1. Lion : Prowl
 - ☐ 2. Sparrow : Dive
 - ☐ 3. Mouse : Leap
 - ☐ 4. Deer : Glide

Q.11 In a certain code language, 'CRAZE' is written as '87' and 'MAIZE' is written as '86'. How will 'DEPART' be written in that language?

- Ans
- ☐ 1. 110
 - ☐ 2. 95
 - ☐ 3. 90
 - ☒ 4. 104

Q.12 Which of the following numbers will replace the question marks (?) in the given series?
112, 113, 117, ?, 142, 167, ?, 252, 316

- Ans
- ☐ 1. 133, 215
 - ☒ 2. 126, 203
 - ☐ 3. 132, 214
 - ☐ 4. 122, 224

Q.13 Select the option that is related to the fifth term in the same way as the second term is related to the first term and the fourth term is related to the third term.
38 : 555 :: 25 : 360 :: 17 : ?

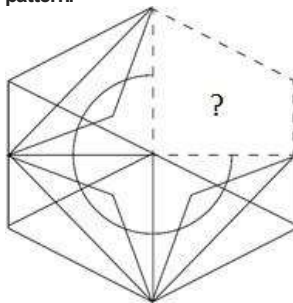
- Ans
- ☒ 1. 240
 - ☐ 2. 215
 - ☐ 3. 225
 - ☐ 4. 210

Q.14 Select the option that is related to the third word in the same way as the second word is related to the first word. (The words must be considered as meaningful English words and must not be related to each other based on the number of letters/number of consonants/vowels in the word)

Seismograph : Earthquake :: Anemometer : ?

- Ans
- ☐ 1. Humidity
 - ☐ 2. Light
 - ☐ 3. Current
 - ☒ 4. Wind

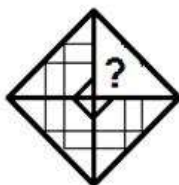
Q.15 Select the figure from the options that can replace the question mark (?) and complete the pattern.



Ans

- 1.
- 2.
- 3.
- 4.

Q.16 Select the figure from the options that can replace the question mark (?) and complete the given pattern.



Ans

- 1.
- 2.
- 3.
- 4.

Q.17 Select the option that indicates the correct arrangement of the given words in a logical and meaningful order.

1. Deer
2. Elephant
3. Mouse
4. Jackal
5. Cat

Ans ☒ 1. 3, 5, 4, 1, 2

☐ 2. 4, 5, 1, 2, 3

☐ 3. 5, 1, 3, 4, 2

☐ 4. 2, 5, 1, 3, 4

Q.18 Sarah departs from her house and walks 20 m towards East. She then turns left and walks 35 m. Now she turns left again and walks 27 m and stops. How far is she from a pole that is exactly 35 m north of her house? (Assuming that all turns are 90 degree turns only.)

Ans ☐ 1. 12 m

☐ 2. 10 m

☐ 3. 47 m

☒ 4. 7 m

Q.19 Select the option that is related to the third word in the same way as the second word is related to the first word. (The words must be considered as meaningful English words and must not be related to each other based on the number of letters/number of consonants/vowels in the word)

Timid : Bold :: Aggressive : ?

Ans ☐ 1. Brave

☐ 2. Violent

☒ 3. Docile

☐ 4. Indifferent

Q.20 If
'Z @ S' means 'Z is the father of S',
'Z * S' means 'Z is the brother of S',
'Z x S' means 'Z is the father's sister of S',
'Z # S' means 'Z is the sister of S',
'Z \$ S' means 'Z is the daughter of S', and
'Z = S' means 'Z is the mother of S',
then how is P related to U in the following expression?
P x Q \$ R @ S * T \$ U

Ans ☐ 1. Daughter

☒ 2. Husband's sister

☐ 3. Brother's son

☐ 4. Brother

Q.21 In a certain code language, 'SHELF' is coded as '110', and 'TABLE' is coded as '120'. How will 'DESK' be coded in that language?

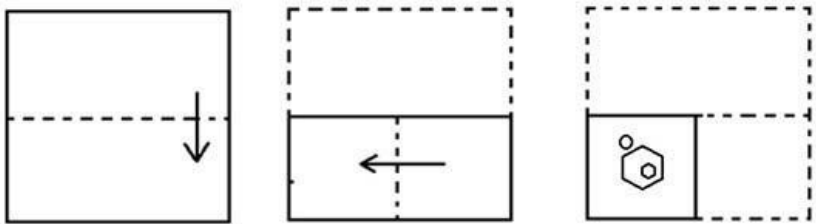
Ans ☒ 1. 85

☐ 2. 69

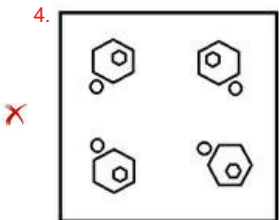
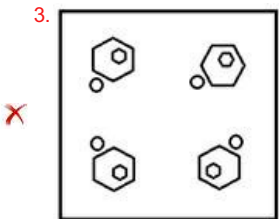
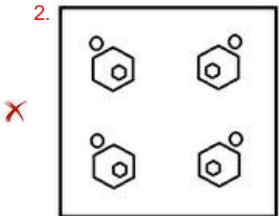
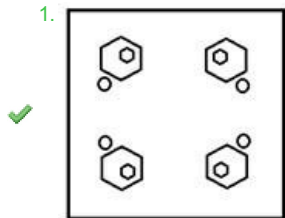
☐ 3. 10

☐ 4. 73

Q.22 The sequence of folding a piece of paper and the manner in which the folded paper has been cut is shown below. Choose a figure which would most closely resemble the unfolded form of the paper.



Ans



Q23 If A denotes '+', B denotes 'x', C denotes '-', and D denotes '÷', then what will be the value of the following equation?
 $22 \text{ B } 13 \text{ C } 120 \text{ D } 30 \text{ A } 42 = ?$

- Ans ☒ 1. 324
☒ 2. 325
☒ 3. 352
☒ 4. 342

Q24 Eight people are sitting in two parallel rows with four people each in such a way that there is equal distance between adjacent persons.
 In row I – E, F, G and H are seated and all of them are facing south.
 In row II – U, V, W and X are seated and all of them are facing north.
 G sits exactly opposite U, who sits second from the right end of their row. F sits at the extreme right end of their row and is exactly opposite X. E sits between F and G and is exactly opposite V.
 Who sits at the extreme left end of the row of people facing South?

- Ans ☒ 1. H
☒ 2. G
☒ 3. F
☒ 4. E

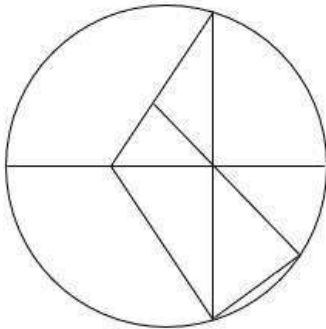
Q25 Sonia starts walking from her home and goes 7 m east. From there she turns right and walks a certain distance called P m. Then, she turns left and walks 5 m, now she turns left again and walks 8 m. After that she takes another left turn and walks 12 m. If Sonia's current position is 22 m south of her home, then what is the value of P?

- Ans ☒ 1. 34
☒ 2. 30
☒ 3. 22
☒ 4. 28

Q26 In a code language, 'BROWN' is coded as CTRUM and 'ENTER' is coded as FPWCQ. How will 'NOISE' be coded in the same language?

- Ans ☒ 1. OQLQD
☒ 2. OPKQD
☒ 3. OQLPD
☒ 4. OQMPD

Q27 How many triangles are there in the given figure?



- Ans ☒ 1. 8
☒ 2. 6
☒ 3. 5
☒ 4. 7

Q28 Select the option that is related to the third term in the same way as the second term is related to the first term and the sixth term is related to the fifth term.
 $42 : 12 :: 77 : ? :: 91 : 19$

- Ans ☒ 1. 14
☒ 2. 19
☒ 3. 15
☒ 4. 17

Q.29 Each of the seven friends, Kirti, Siya, Amita, Preeti, Deepika, Jeet and Pari, has scored different marks in an exam. Pari has scored more than Kirti but less than Siya. Deepika has scored less than Preeti but more than Amita. Kirti has scored more than Preeti but less than Pari. Siya is not the highest scorer.

Who has scored the highest marks?

- Ans
- ☐ 1. Pari
 - ☐ 2. Amita
 - ☐ 3. Preeti
 - ☒ 4. Jeet

Q.30 Select the set in which the numbers are related in the same way as are the numbers of the following set.
(NOTE : Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. Eg. 13 - Operations on 13 such as adding /subtracting /multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

(20, 8, 4)

(12, 3, 6)

- Ans
- ☐ 1. (44, 2, 24)
 - ☐ 2. (32, 4, 14)
 - ☒ 3. (8, 1, 6)
 - ☐ 4. (22, 3, 9)

Q.31 Which letter cluster will replace the question mark (?) to complete the given series?

NGC, PJH, RMM, TPR, ?

- Ans
- ☐ 1. VTX
 - ☒ 2. VSW
 - ☐ 3. USW
 - ☐ 4. UTY

Q.32 Select the correct option that indicates the arrangement of the following words in a logical and meaningful order.

1 Cocoon
2 Egg
3 Butterfly
4 Caterpillar

- Ans
- ☒ 1. 2, 4, 1, 3
 - ☐ 2. 2, 1, 3, 4
 - ☐ 3. 2, 4, 3, 1
 - ☐ 4. 2, 3, 1, 4

Q.33 G is the brother of F. F is B's daughter. D is A's son and C's brother. B is the brother of C. How is B related to A?

- Ans
- ☐ 1. Father's mother
 - ☒ 2. Son
 - ☐ 3. Father
 - ☐ 4. Mother

Q.34 Select the option that is related to the fourth term in the same way as the first term is related to the second term and the fifth term is related to the sixth term?

16 : 1 :: ? : 3 :: 54 : 2

- Ans
- ☐ 1. 135
 - ☒ 2. 128
 - ☐ 3. 142
 - ☐ 4. 108

Q.35 If '+' means '÷', '-' means '+', 'x' means '-', and '÷' means 'x', then what will be the value of the following expression?

$$[[(25 \times 16) - (3 \div 2)] + (3 - 2)] \div 5$$

- Ans
- ☐ 1. 10
 - ☐ 2. 18
 - ☒ 3. 15
 - ☐ 4. 20

Q.36 Which of the following numbers will replace the question mark (?) in the given series?

47, 41, 53, ?, 59, 29

- Ans
- ☐ 1. 39
 - ☒ 2. 35
 - ☐ 3. 55
 - ☐ 4. 57

Q.37 Select the option that represents the letters which, when sequentially placed from left to right in the blanks below, will complete the letter series.

Z _ _ O _ _ MY _ AZ _ YOA

- Ans
- ☐ 1. YOMZAO
 - ☐ 2. AOZMYM
 - ☒ 3. MYAZOM
 - ☐ 4. ZAMOMY

Q.38 Select the option that is related to the third term in the same way as the second term is related to the first term and the sixth term is related to the fifth term.

784 : 26 :: 961 : ? :: 529 : 21

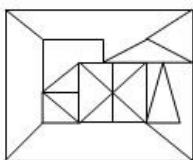
- Ans
- ☐ 1. 27
 - ☒ 2. 29
 - ☐ 3. 31
 - ☐ 4. 33

Q.39 If A denotes '+', B denotes 'x', C denotes '-', and D denotes '÷', then what will come in place of '?' in the following equation?

81 D 9 B 3 C 27 = ?

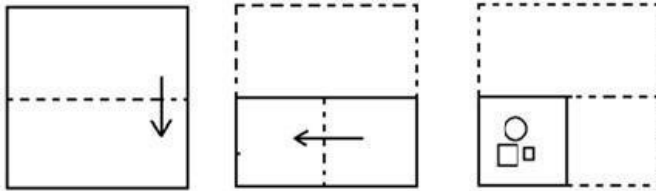
- Ans
- ☐ 1. 9
 - ☐ 2. 216
 - ☒ 3. 0
 - ☐ 4. 3

Q.40 Select the option figure which is embedded in the given figure as its part (rotation is NOT allowed).

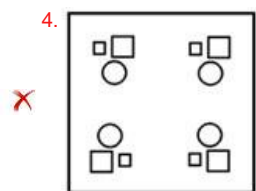
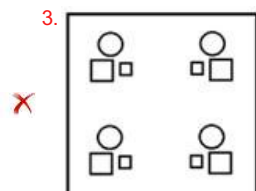
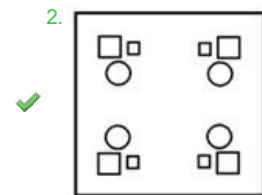
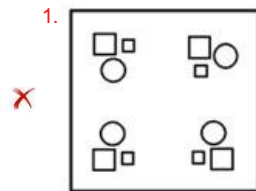


- Ans
- ☐ 1.
 - ☐ 2.
 - ☒ 3.
 - ☐ 4.

Q41 The sequence of folding a piece of paper and the manner in which the folded paper has been cut is shown below. Choose a figure which would most closely resemble the unfolded form of the paper.



Ans



Q42 Two statements are given followed by two conclusions numbered I and II. Assuming the statements to be true, even if they seem to be at variance with commonly known facts, decide which of the conclusions logically follow(s) from the statements.

Statements:

Some doctors are scientists.

Some scientists are engineers.

Conclusions:

I. All engineers are doctors.

II. Some doctors are engineers.

- Ans
- ✗ 1. Only conclusion II follows
 - ✗ 2. Only conclusion I follows
 - ✓ 3. Neither conclusion I nor II follows
 - ✗ 4. Both conclusions I and II follow

Q43 In this question, three statements are given, followed by two conclusions numbered I and II. Assuming the statements to be true, even if they seem to be at variance with commonly known facts, decide which of the conclusion(s) logically follows/follow from the statements.

Statements:

Some pens are sharpeners.

Some sharpeners are pencils.

All pencils are erasers.

Conclusions:

I. Some erasers are sharpeners.

II. Some pens are erasers.

- Ans ☐ 1. Both conclusions I and II follow.
- ☐ 2. Neither conclusion I nor II follows.
- ☐ 3. Only conclusion II follows.
- ☒ 4. Only conclusion I follows.

Q44 Select the number from among the given options that can replace the question mark (?) in the following series.

1, 6, 13, 26, 51, 96, ?

- Ans ☐ 1. 108
- ☐ 2. 118
- ☒ 3. 171
- ☐ 4. 180

Q45 Select the combination of letters that when sequentially placed in the blanks of the given series, will complete the series.

R _ J K _ H _ Q J _ I _ R _ J K _ H _ Q J _ I H

- Ans ☐ 1. QJRKHQRIK
- ☐ 2. QJKRHQIRK
- ☒ 3. QIRKHQIRK
- ☐ 4. QJRKQHIRK

Q46 Six friends are sitting in a circle. All of them are facing the centre. Samir is an immediate neighbour of Kiran. Gagan is an immediate neighbour of Pran and Vyom. Suman sits second to the right of Gagan. Kiran sits second to the right of Vyom.

Who sits fourth to the left of Vyom?

- Ans ☐ 1. Samir
- ☒ 2. Kiran
- ☐ 3. Pran
- ☐ 4. Suman

Q47 Select the option that represents the correct order of the given words as they would appear in an English dictionary.

1. Informer

2. Infested

3. Inferior

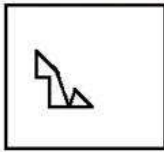
4. Infinity

5. Infirmary

6. Inflated

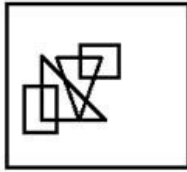
- Ans ☐ 1. 3, 2, 5, 4, 6, 1
- ☒ 2. 3, 2, 4, 5, 6, 1
- ☐ 3. 2, 3, 4, 5, 6, 1
- ☐ 4. 2, 3, 4, 5, 1, 6

Q48 Select the option in which the given figure is embedded (rotation is NOT allowed).

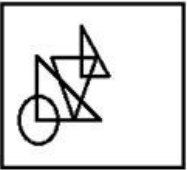


Ans

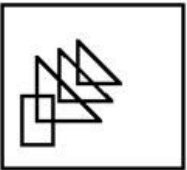
1.



2.



3.



4.



Q49 Select the option that is related to the third word in the same way as the second word is related to the first word. (The words must be considered as meaningful English words and must not be related to each other based on the number of letters/number of consonants/vowels in the word)

Drone : Bee :: Colt : ?

Ans

✗ 1. Doe

✗ 2. Vixen

✓ 3. Filly

✗ 4. Cow

Q50 Select the word-pair that best represents a similar relationship to the one expressed in the pair of words given below. (The words must be considered as meaningful English words and must not be related to each other based on the number of letters/number of consonants/vowels in the word.)
Bear : Boar

Ans

✗ 1. Ox : Cow

✓ 2. Chicken : Rooster

✗ 3. Goose : Geese

✗ 4. Sheep : lamb

Section : General Awareness

Q.1 Who among the following Bengal Nawabs transferred his capital from Murshidabad to Monghyr?

Ans

✗ 1. Mr Jafar

✗ 2. Siraj-ud-Daulah

✓ 3. Mr Kasim

✗ 4. Alivardi Khan

Q.2 Chhau is a recognised dance form, for which Shashidhar Acharya received the Padma Shri. To which part of the country does this dance form belong?

- Ans**
- ☒ 1. Eastern
 - ☐ 2. Southern
 - ☐ 3. Western
 - ☐ 4. Central

Q.3 Which of the following connects the continental shelf and the ocean basins?

- Ans**
- ☒ 1. Continental slope
 - ☐ 2. Mid oceanic ridges
 - ☐ 3. Seamount
 - ☐ 4. Deep sea plains

Q.4 Which of the following statements is **INCORRECT** with respect to Special Capital Linked Subsidy Scheme for Service Sector?

- Ans**
- ☐ 1. Capital subsidy of 25% will be provided for procurement of Plant & Machinery and service equipment's through institutional credit to the SC-ST MSEs.
 - ☒ 2. It has been launched in 2022.
 - ☐ 3. The Ministry of MSME is the implementing ministry for the scheme.
 - ☐ 4. It was launched from Guwahati.

Q.5 In September 2022, who among the following was elected as President of Hockey India?

- Ans**
- ☐ 1. Surender Kumar
 - ☒ 2. Dilip Tirkey
 - ☐ 3. Harmanpreet Singh
 - ☐ 4. Dhanraj Pillay

Q.6 In which state of India is the Bhadla Solar Power Park established?

- Ans**
- ☐ 1. Madhya Pradesh
 - ☐ 2. Odisha
 - ☒ 3. Rajasthan
 - ☐ 4. Gujarat

Q.7 Which of following was established in Madras in 1864?

- Ans**
- ☐ 1. Arya Mahila Samaj
 - ☒ 2. Veda Samaj
 - ☐ 3. Singh Sabha Samaj
 - ☐ 4. Brahmo Samaj

Q.8 Which of the following countries is the host of the Asian boxing Championship 2022?

- Ans**
- ☒ 1. Jordan
 - ☐ 2. Russia
 - ☐ 3. Kazakhstan
 - ☐ 4. Iran

Q.9 Acidified KMnO_4 can be used:

- Ans**
- ☐ 1. to get alcohol directly from carboxylic acids
 - ☒ 2. to get carboxylic acids directly from alcohol
 - ☐ 3. to get formic acid from formaldehyde
 - ☐ 4. to get glycerol from glucose

Q.10 The question consists of two statements, namely, Assertion (A) and Reason (R). Use them to choose the correct alternative. Read the following statements and select the correct alternative
Assertion (A): Expenditure on interest payment is a capital expenditure
Reason (R): Interest payments neither creates any assets nor causes a reduction in liabilities of the government.

- Ans**
- ☐ 1. A is true and R is false
 - ☒ 2. A is false but R is true
 - ☐ 3. Both A and R are true, and R is the correct explanation of A
 - ☐ 4. Both A and R are true, but R is not the correct explanation of A

Q.11 Which are the two most common minerals found in rocks?

- Ans
- ☐ 1. Bauxite and Calcite
 - ☒ 2. Feldspar and quartz
 - ☐ 3. Mica and calcite
 - ☐ 4. Amphibole and olivine
-

Q.12 The Board of Control established to control company affairs had how many members?

- Ans
- ☐ 1. Five
 - ☐ 2. Three
 - ☒ 3. Six
 - ☐ 4. Four
-

Q.13 Which of the following statements is INCORRECT about vinegar?

- Ans
- ☐ 1. Vinegar is a combination of acetic acid and water.
 - ☐ 2. It can be used as a food preservative.
 - ☐ 3. It is produced by 2-step fermentation.
 - ☒ 4. It is a combination of acetic acid and formic acid.
-

Q.14 Who studied ecological succession in the Indiana Dunes of Northwest Indiana in the 1890s?

- Ans
- ☐ 1. G Evelyn Hutchinson
 - ☒ 2. Henry Chandler Cowles
 - ☐ 3. Frederic Clements
 - ☐ 4. Charles Elton
-

Q.15 A financial institution can be a banking institution only when it _____.

- Ans
- ☐ 1. neither performs the function of 'accepting deposits' nor of 'advancing loans'
 - ☒ 2. performs both the functions of 'accepting deposits' and 'advancing loans'
 - ☐ 3. performs the function of 'advancing loans' and not 'accepting deposits'
 - ☐ 4. performs the function of 'accepting deposits' and not 'advancing loans'
-

Q.16 Identify the INCORRECT statement about fermentation.

- Ans
- ☐ 1. It is the process of breaking down sugar into alcohol.
 - ☒ 2. Fermentation occurs only in fungal cells.
 - ☐ 3. Yeast is used in fermentation technology to prepare alcohol.
 - ☐ 4. The fermentation technique is used to make breads.
-

Q.17 Which option allows you to import recipient addresses from a spreadsheet when creating mailing labels in MS Word?

- Ans
- ☐ 1. Create Labels
 - ☒ 2. Mail Merge Wizard
 - ☐ 3. Merge and Print
 - ☐ 4. Import Data
-

Q.18 What is the percentage increase in the total literacy rate in 2011 over 2001?

- Ans
- ☐ 1. 8.99%
 - ☐ 2. 8.67%
 - ☐ 3. 7.90%
 - ☒ 4. 9.21%
-

Q.19 What architecture is the famous black pagoda temple situated in Konark?

- Ans
- ☐ 1. Dravid architecture
 - ☒ 2. Kalinga architecture
 - ☐ 3. Champa architecture
 - ☐ 4. Gadaga architecture
-

Q20 What was the motto of the National Games of India 2022?

- Ans
- ☐ 1. Celebrating diversity through sports
 - ☐ 2. Celebrating brotherhood through sports
 - ☐ 3. Celebrating sports through unity
 - ☒ 4. Celebrating unity through sports

Q21 How can using templates benefit users when creating a PowerPoint presentation?

- Ans
- ☒ 1. Templates provide a consistent design and save time in formatting.
 - ☐ 2. Templates allow users to insert audio and video clips into slides.
 - ☐ 3. Templates enable real-time collaboration with multiple users.
 - ☐ 4. Templates automatically generate slide content and animations.

Q22 What is the unemployment rate (in percent) in urban area as per the report of Periodic Labor Force Survey (PLFS) 2020-21?

- Ans
- ☒ 1. 6.7
 - ☐ 2. 7.2
 - ☐ 3. 4.0
 - ☐ 4. 10.8

Q23 The 'PRASHAD' scheme of the Government of India is associated with which ministry of the government?

- Ans
- ☐ 1. Education
 - ☐ 2. Culture
 - ☒ 3. Tourism
 - ☐ 4. Tribal Affairs

Q24 Which of the following Articles of the Indian Constitution mentioned that the Prime Minister is appointed by the President of India?

- Ans
- ☒ 1. 75
 - ☐ 2. 71
 - ☐ 3. 70
 - ☐ 4. 57

Q25 Which of the following is a hydroxybenzaldehyde that possesses a hydroxy substituent at position 2 extracted from the herb 'meadow sweet'?

- Ans
- ☒ 1. Salicylaldehyde
 - ☐ 2. Formaldehyde
 - ☐ 3. Acetaldehyde
 - ☐ 4. Cinnamaldehyde

Q26 According to _____ of the Constitution of India, no person shall be compelled to pay any taxes for the promotion of a particular religion.

- Ans
- ☒ 1. Article 27
 - ☐ 2. Article 25
 - ☐ 3. Article 28
 - ☐ 4. Article 26

Q27 Which of the following is the correct match of the column-A with column-B?

Column-A (Lake)	Column-B (Continent)
i. Lake Victoria	a. North America
ii. Lake Superior	b. Australia
iii. Caspian Sea	c. Africa
iv. Lake Eyre	d. Asia

- Ans
- ☐ 1. i-c, ii-d, iii-a, iv-b
 - ☐ 2. i-d, ii-c, iii-b, iv-a
 - ☒ 3. i-c, ii-a, iii-d, iv-b
 - ☐ 4. i-c, ii-d, iii-b, iv-a

Q.28 Domingo Paes was a _____ traveller, who visited the Vijayanagara empire in the 16th century.

- Ans ☒ 1. Portuguese
☐ 2. Spanish
☐ 3. Italian
☐ 4. Russian

Q.29 Which of the following groups of rivers is placed in the correct sequence from north to south of the Peninsular River?

- Ans ☒ 1. Mahanadi-Godavari-Krishna-Kaveri
☐ 2. Godavari-Krishna-Kaveri-Mahanadi
☐ 3. Godavari-Krishna-Mahanadi-Kaveri
☐ 4. Godavari-Mahanadi-Krishna-Kaveri

Q.30 Which of the following musical instruments was played by Ustad Bismillah Khan on the eve of India's independence in the year 1947?

- Ans ☐ 1. Bugle
☐ 2. Sarangi
☒ 3. Shehnai
☐ 4. Bansuri

Q.31 Which is the least populated state according to the census of 2011?

- Ans ☒ 1. Sikkim
☐ 2. Arunachal Pradesh
☐ 3. Tripura
☐ 4. Nagaland

Q.32 What work was published by John Dalton in 1808 that provided a physical picture of how elements combine to form compounds and an unprecedented reason to believe that atoms exist?

- Ans ☐ 1. Lessons in Chemical Philosophy
☐ 2. From Chemical Philosophy to Theoretical Chemistry
☒ 3. A New System of Chemical Philosophy
☐ 4. Introduction to the Study of Chemical Philosophy

Q.33 India's drainage system is divided on the basis of the size of the watershed. Which of the following is NOT a part of the drainage basin of India?

- Ans ☒ 1. Average river basin
☐ 2. Medium river basin
☐ 3. Major river basin
☐ 4. Minor river basin

Q.34 The idea of Fundamental Duties has been borrowed from the Constitution of:

- Ans ☐ 1. The UK
☐ 2. Ireland
☐ 3. The US
☒ 4. USSR

Q.35 Which is a circular basin covering an area of 5.427 million square miles surrounded by North America and Eurasia?

- Ans ☐ 1. Pacific Ocean
☐ 2. Indian Ocean
☐ 3. Atlantic Ocean
☒ 4. Arctic Ocean

Q.36 According to the Census of India 2011, identify the least literate state.

- Ans ☐ 1. Madhya Pradesh
☒ 2. Bihar
☐ 3. Uttar Pradesh
☐ 4. Rajasthan

Q.37 In which century was the Kuchipudi style of Yakshagaana conceived by Siddhendra Yogi?

- Ans
- ☐ 1. 14th
 - ☐ 2. 15th
 - ☒ 3. 17th
 - ☐ 4. 16th

Q.38 In which of the following states of India is the legislative assembly election was held in late 2022?

- Ans
- ☒ 1. Himachal Pradesh
 - ☐ 2. Rajasthan
 - ☐ 3. Nagaland
 - ☐ 4. Karnataka

Q.39 Sulochana Chavan is associated with _____ folk music.

- Ans
- ☐ 1. Bihu Geet
 - ☐ 2. Baul
 - ☒ 3. Lavani Geet
 - ☐ 4. Pandavani

Q.40 Who used to supervise the work of collection of revenue in the Mauryan Kingdom?

- Ans
- ☐ 1. Rajuka
 - ☒ 2. Samaharta
 - ☐ 3. Prativadak
 - ☐ 4. Sannidhata

Q.41 Which of the following food additives are helpful to combine products containing immiscible food ingredients, such as oil and water, with one another?

- Ans
- ☐ 1. Food sweeteners
 - ☐ 2. Food preservatives
 - ☒ 3. Food emulsifiers
 - ☐ 4. Food stabilisers

Q.42 In order to claim the accumulation of income, trusts or charitable institutions must file Form 9A and Form 10 at least _____ prior to the deadline for filing the return of income as per Finance Bill 2023.

- Ans
- ☒ 1. 2 months
 - ☐ 2. 1 month
 - ☐ 3. 6 months
 - ☐ 4. 3 months

Q.43 Which of the following articles guarantees that no person shall be punished on the basis of laws enacted after a crime has been committed?

- Ans
- ☐ 1. Article 19
 - ☐ 2. Article 22
 - ☐ 3. Article 21
 - ☒ 4. Article 20

Q.44 Burnpur in West Bengal is famous for which of the following industries?

- Ans
- ☐ 1. Aeronautics industry
 - ☐ 2. Ship building industry
 - ☐ 3. Software industry
 - ☒ 4. Iron and steel industry

Q.45 Which of the following food groups is rich source of Vitamin B12?

- Ans
- ☐ 1. Fruits and vegetables
 - ☐ 2. Pulses and legumes
 - ☒ 3. Milk and meat products
 - ☐ 4. Cereals and grains products

Q46 Which period best defines the period of the first Green Revolution in India?

- Ans
- ☐ 1. Md 1980s to early 1990s
 - ☐ 2. Md 1950s to early 1960s
 - ☐ 3. Md 1990s to early 2010s
 - ☒ 4. Md 1960s to early 1980s

Q47 The salaries and allowances of the Speaker and the Deputy Speaker of the Legislative Assembly and Chairman and Deputy Chairman of the State Legislative Council are fixed by the _____.

- Ans
- ☒ 1. State legislature
 - ☐ 2. State Cabinet
 - ☐ 3. Governor of the State
 - ☐ 4. Chief Minister

Q48 Which of the following statements is NOT correct about angiosperms?

- Ans
- ☐ 1. These plants have covered seeds.
 - ☐ 2. These are also called flowering plants.
 - ☒ 3. These are seedless plants.
 - ☐ 4. Double fertilisation is a characteristic of angiosperms.

Q49 Which of the following is Mohr's salt, used in analytical chemistry as a preferred source of ferrous ions?

- Ans
- ☐ 1. $C_4H_2FeO_4 \cdot 6H_2O$
 - ☐ 2. $K_4[Fe(CN)_6] \cdot 6H_2O$
 - ☒ 3. $FeSO_4 \cdot (NH_4)_2SO_4 \cdot 6H_2O$
 - ☐ 4. $FeC_2O_4 \cdot 6H_2O$

Q50 In June 2022, who among the following took an oath as Delhi High Court Chief Justice?

- Ans
- ☒ 1. Justice Satish Chandra Sharma
 - ☐ 2. Justice Dhirubhai Naranbhai Patel
 - ☐ 3. Justice Sanjay Karol
 - ☐ 4. Justice Vipin Sanghi

Section : General Engineering Electrical

Q.1 What is the magnetising current of a transformer?

- Ans
- ☐ 1. The current flowing through the insulation between the primary and secondary windings.
 - ☒ 2. The current drawn by the primary winding when the secondary is on open circuit.
 - ☐ 3. The current drawn by the secondary winding when a load is connected.
 - ☐ 4. The current flowing through the ferromagnetic core.

Q.2 Which of the following is NOT an application of shaded-pole induction motor?

- Ans
- ☐ 1. Table fan
 - ☐ 2. Hair drier
 - ☒ 3. A lift of a building
 - ☐ 4. Fans for refrigeration

Q.3 What kind of metal does continuous bus bar wire typically consist of?

- Ans
- ☐ 1. Plastic
 - ☐ 2. Neither copper nor aluminium
 - ☐ 3. Iron
 - ☒ 4. Copper or aluminium

Q.4 Find the ripple frequency of half wave rectifier if the input operating frequency is 50 Hz.

- Ans
- ☒ 1. 500 Hz
 - ☒ 2. 100 Hz
 - ☒ 3. 50 Hz
 - ☒ 4. 25 Hz

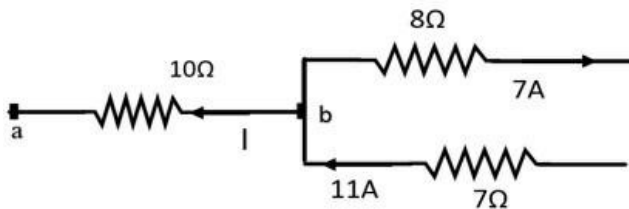
Q.5 What inductance would be needed to store 2kWh of energy in a coil carrying a 100A current?

- Ans
- ☒ 1. 1440 H
 - ☒ 2. 100 H
 - ☒ 3. 0.4 H
 - ☒ 4. 4 H

Q.6 Current (I) expression of a diode is given by: (where symbols have usual meaning)

- Ans
- 1.
☒ $I = I_0(e^{\frac{qv}{\eta T}} - 1)$
 - 2.
☒ $I = I_0(e^{\frac{qv}{\eta kT}} - 2)$
 - 3.
☒ $I = I_0(e^{\frac{v}{\eta kT}})$
 - 4.
☒ $I = I_0(e^{\frac{qv}{\eta kT}} - 1)$

Q.7 The value of voltage V_{ab} in the figure shown below is:

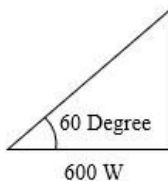


- Ans
- ☒ 1. 0 V
 - ☒ 2. -40 V
 - ☒ 3. -190 V
 - ☒ 4. 40 V

Q.8 In a PMMC instrument, if the controlling torque is too high, what effect will it have on the accuracy of the instrument?

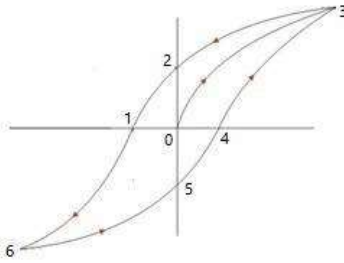
- Ans
- ☒ 1. The instrument will stop working.
 - ☒ 2. The accuracy of the instrument will decrease.
 - ☒ 3. The accuracy of the instrument will increase.
 - ☒ 4. The accuracy of the instrument will remain unaffected.

Q.9 What will be the reactive power in the given power triangle?



- Ans
- ☒ 1. 1039 VAR Leading
 - ☒ 2. 1200 VAR Leading
 - ☒ 3. 1039 VAR Lagging
 - ☒ 4. 1200 VAR Lagging

Q10 Which of the following portions represents retentivity in the BH curve shown below?



- Ans
- ☒ 1. 1
 - ☒ 2. 3
 - ☒ 3. 2
 - ☒ 4. 6

Q11 Which of the following options shows the correct proportion of helium and neon gases in the mixture for helium neon laser?

- Ans
- ☒ 1. 90% of helium and 10% of neon
 - ☒ 2. 20% of helium and 20% of neon
 - ☒ 3. 10% of helium and 90% of neon
 - ☒ 4. 80% of helium and 20% of neon

Q12 Which of the following parts is NOT present in a typical brushless DC motor?

- Ans
- ☒ 1. Fixed armature
 - ☒ 2. Commutator
 - ☒ 3. Permanent magnet
 - ☒ 4. Electronic controller

Q13 FET is like a switched on condition when it operates in _____ mode.

- Ans
- ☒ 1. ohmic
 - ☒ 2. inversion
 - ☒ 3. saturation
 - ☒ 4. cut off

Q14 Select the INCORRECT statement(s) regarding squirrel-cage induction generators used in wind power plants.

- A) They can be used in both constant-speed and variable-speed applications.
- B) They work within a narrow speed range, which is slightly above the synchronous speed.
- C) Squirrel-cage induction generators are more expensive than wound-rotor induction generators.

- Ans
- ☒ 1. Only A
 - ☒ 2. Only C
 - ☒ 3. Only B
 - ☒ 4. A and B

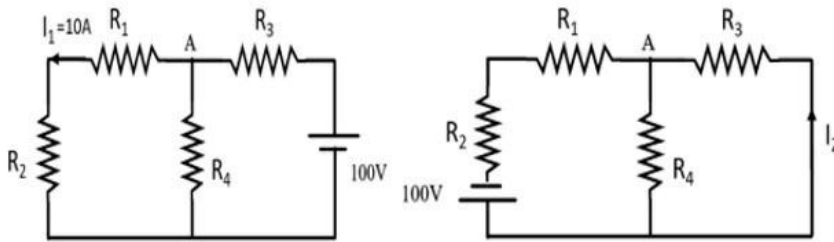
Q15 The permanent magnet synchronous motor has a configuration almost identical to the conventional synchronous machine with the absence of _____.

- Ans
- ☒ 1. air gap between stator and rotor
 - ☒ 2. field winding and slip ring
 - ☒ 3. stationary magnetic field
 - ☒ 4. field winding and rotating magnetic field

Q16 Which of the following lamps is suitable for highway lighting?

- Ans
- ☒ 1. Sodium vapour light
 - ☒ 2. Neon lamp
 - ☒ 3. Fluorescent lamp
 - ☒ 4. Incandescent lamp

Q17 The value of the current I_2 if I_1 is equal to 10A, is:



- Ans
- ☒ 1. 0 A
 - ☒ 2. $\frac{100}{R_3}$ A
 - ☒ 3. $\frac{100}{R_2}$ A
 - ☒ 4. 10 A

Q18 In radial distribution system, separate feeder radiates from single substation and feeds the distributors at _____.

- Ans
- ☒ 1. one end only
 - ☒ 2. three ends
 - ☒ 3. two ends
 - ☒ 4. four ends

Q19 Which of the following statements is true regarding the voltage drop due to armature reaction for leading power factors in an alternator?

- Ans
- ☒ 1. The voltage drop remains constant irrespective of the power factor.
 - ☒ 2. The voltage drop is not affected by the power factor.
 - ☒ 3. The voltage drop increases with an increase in power factor.
 - ☒ 4. The voltage drop decreases with an increase in power factor.

Q20 In applications such as drink and food mixers and sewing machines _____ is used.

- Ans
- ☒ 1. AC series motor
 - ☒ 2. split-phase IM motor
 - ☒ 3. universal motor
 - ☒ 4. repulsion motor

Q21 A resistor of resistance $R\Omega$ is connected in series with a coil having an inductance of L henry. If X_L is the value of inductive reactance, what is the value of net impedance of the circuit?

- Ans
- ☒ 1. $\frac{\sqrt{R}}{X_L}$
 - ☒ 2. $\sqrt{R^2 + X_L^2}$
 - ☒ 3. $\sqrt{R^2 - X_L^2}$
 - ☒ 4. $\frac{\sqrt{X_L}}{R}$

Q22 Which of the following motors DO/DOES NOT use three-point starters?

- Ans
- ☒ 1. Both DC shunt and compound motors
 - ☒ 2. DC series motor
 - ☒ 3. DC shunt motor
 - ☒ 4. DC compound motor

Q.23 Because of their high efficiency and high speed, synchronous motors are well suited for _____.

- Ans
- ☒ 1. blowers
 - ☐ 2. electric tractions
 - ☐ 3. ceiling fans
 - ☐ 4. mixer grinders

Q.24 A coil consists of 1000 turns having a cross-sectional area of 0.4 mm^2 . The mean length per turn is 40 cm and the resistivity of the wire is $0.02 \mu\Omega\text{-m}$. The resistance of the coil is _____.

- Ans
- ☐ 1. 40Ω
 - ☐ 2. 200Ω
 - ☒ 3. 20Ω
 - ☐ 4. $20\mu\Omega$

Q.25 What will be the direction of deflecting torque in a moving iron instrument if the direction of current in the coil is reversed at the same magnitude?

- Ans
- ☐ 1. Reverse direction
 - ☐ 2. Reduced to zero
 - ☒ 3. Same direction
 - ☐ 4. Reduced by half

Q.26 Which of the following statements is/are true regarding all day efficiency of a transformer?

- (i) All day efficiency is also called as commercial efficiency.
- (ii) All day efficiency primarily depends on the duration of load and amount of load.
- (iii) All day efficiency is achieved when the iron losses are less.

- Ans
- ☐ 1. Only (ii) is true
 - ☒ 2. Both (ii) and (iii) are true
 - ☐ 3. Both (i) and (iii) are true
 - ☐ 4. Only (i) is true

Q.27 A wind turbine with a rotor diameter of 60 m is installed in an area with an average wind speed of 4 m/s. Find the wind power density in watts per square metre, assuming that the air density in the area is 1.5 kg/m^3 .

- Ans
- ☐ 1. 542.6 KW/m^2
 - ☐ 2. 736.45 KW/m^2
 - ☒ 3. 271.3 KW/m^2
 - ☐ 4. 135.67 KW/m^2

Q.28 In electrical applications, the coil of an infrared lamp is made up of _____.

- Ans
- ☐ 1. copper
 - ☒ 2. tungsten
 - ☐ 3. iron
 - ☐ 4. nichrome

Q.29 In case of electrical energy, the joule is also expressed as the _____.

- Ans
- ☐ 1. joule-second
 - ☐ 2. meter-second
 - ☐ 3. newton-second
 - ☒ 4. watt-second

Q.30 What is core-stepping in core-type transformers?

- Ans
- ☒ 1. A method to reduce the length of the mean turn
 - ☐ 2. A method to increase the length of the mean turn
 - ☐ 3. A method to increase the R loss
 - ☐ 4. A method to reduce the space factor

Q.31 Which of the following CANNOT be caused due to excessive voltage drop in an electric distribution system?

- Ans
- ☐ 1. Electric heaters to heat poorly
 - ☐ 2. Electric lights to burn dimly
 - ☒ 3. Electric motors to run colder than normal
 - ☐ 4. Electric lights to flicker

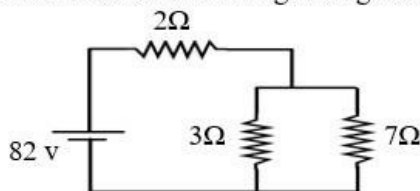
Q.32 When two or more sinusoidal waves are precisely in step with one another, they are said to be:

- Ans
- ☒ 1. in phase
 - ☐ 2. out of phase
 - ☐ 3. 60 degrees lagging
 - ☐ 4. 60 degrees leading

Q.33 In the split-phase induction motor, the starting torque of the resistance start motor is about _____ the full load torque.

- Ans
- ☐ 1. 0.15 times
 - ☒ 2. 1.5 times
 - ☐ 3. 15 times
 - ☐ 4. 150 times

Q.34 Find the current flowing through the 7Ω resistor.



- Ans
- ☒ 1. 6 A
 - ☐ 2. 14 A
 - ☐ 3. 20 A
 - ☐ 4. 7 A

Q.35 The shaded-pole induction motors are of _____.

- Ans
- ☒ 1. low cost
 - ☐ 2. very high cost
 - ☐ 3. high cost
 - ☐ 4. zero cost

Q.36 Which of the following is the application of soft magnetic materials?

- Ans
- ☐ 1. Microphones
 - ☐ 2. Permanent magnets
 - ☐ 3. Speakers
 - ☒ 4. Electromagnets

Q.37 What is the reason for providing corrugated or radiators on the sides of transformer tanks?

- Ans
- ☐ 1. To increase the dielectric strength of the oil
 - ☒ 2. To provide sufficient cooling area
 - ☐ 3. To reduce the size of the transformer tank
 - ☐ 4. To provide very small surface area to dissipate heat generated

Q.38 Which of the following is NOT the requirement of a DC servomotor?

- Ans
- ☐ 1. High accuracy
 - ☐ 2. Linear torque-speed characteristics
 - ☒ 3. Less torque to weight ratio
 - ☐ 4. Better precision

Q.39 Which of the following points clearly describe the need for a back-to-back converter connected to the rotor of a doubly fed induction generator [DFIG] used in wind power plants?

- (i) It feeds the rotor with currents of fixed frequency and thus, helps in achieving a fixed range of speed.
- (ii) It feeds the rotor with currents of varying frequency and thus, helps in achieving various ranges of speed.
- (iii) It helps in power factor correction by adjusting the active power output of the DFIG.
- (iv) It helps in power factor correction by adjusting the reactive power output of the DFIG.

Ans ☒ 1. (i) and (iv)
☒ 2. (i) and (iii)
☒ 3. (ii) and (iii)
☒ 4. (ii) and (iv)

Q.40 What is the purpose of laminating the core of a transformer?

Ans ☒ 1. To increase the eddy current loss
☒ 2. To make the core heavier
☒ 3. To minimise the eddy current loss
☒ 4. To induce eddy current loss

Q.41 The depletion layer capacitance is essentially the capacitance of a _____ p-n junction.

Ans ☒ 1. forward-bias
☒ 2. saturated
☒ 3. reverse-bias
☒ 4. cut-off

Q.42 In an AC circuit, the peak voltage is 388 V. Its effective voltage is:

Ans ☒ 1. 300 V
☒ 2. 275 V
☒ 3. 230 V
☒ 4. 200 V

Q.43 A repulsion start induction run single phase motor runs as an IM only when _____.

Ans ☒ 1. the commutator segments are short circuited
☒ 2. stator winding is reversed
☒ 3. brushes are shifted to neutral phase
☒ 4. short circuit is disconnected

Q.44 Which of the following lamps are used in searchlights?

Ans ☒ 1. Arc lamps
☒ 2. Neon lamps
☒ 3. Fluorescent lamps
☒ 4. Sodium vapour lamp

Q.45 What is the maximum electric field when $V_{bi}=3V$, $V_R=4V$, and the width of the semiconductor is 7 cm?

Ans ☒ 1. -200 V/m
☒ 2. -400 V/m
☒ 3. 300 V/m
☒ 4. 200 V/m

Q.46 A voltage source having some internal resistance delivers a 2A current when a 5Ω load is connected to it. When the load is 10Ω, then the current becomes 1.6A. Calculate the power transfer efficiency of the source for a 15Ω load.

- Ans
- ☐ 1. 90%
 - ☒ 2. 50%
 - ☐ 3. 10%
 - ☐ 4. 100%

Q.47 Which of the following motors is used for shears and presses?

- Ans
- ☒ 1. DC compound motor
 - ☐ 2. Stepper motor
 - ☐ 3. DC shunt motor
 - ☐ 4. DC series motor

Q.48 Which of the following is the outermost layer of an underground cable?

- Ans
- ☐ 1. Sheath
 - ☐ 2. Armour
 - ☐ 3. Insulation
 - ☒ 4. Serving

Q.49 An RLC series circuit has $R = 5\ \Omega$ and $L = 1\ \text{H}$. Which of the following values of capacitance will make this circuit critically damped?

- Ans
- ☐ 1. 0.08 F
 - ☐ 2. 0.20 F
 - ☐ 3. 0.30 F
 - ☒ 4. 0.16 F

Q.50 An electrodymanometer is widely used as a _____.

- Ans
- ☐ 1. low impedance circuit
 - ☒ 2. transfer instrument
 - ☐ 3. calibration instrument and transfer instrument
 - ☐ 4. calibration instrument

Q.51 The value of a series resistor is required to limit the current through an LED to 36mA with a forward voltage drop of 3V, when connected to a 12V supply.

- Ans
- ☐ 1. 250 m Ω
 - ☐ 2. 25 Ω
 - ☒ 3. 250 Ω
 - ☐ 4. 4000 Ω

Q.52 A 64kΩ resistor has a specified maximum power dissipation of 1000 watts. The maximum current that may be passed through the resistor is _____.

- Ans
- ☒ 1. $\frac{1}{8}\ \text{A}$
 - ☐ 2. 64 A
 - ☐ 3. 8A
 - ☐ 4. 32A

Q.53 The most important consideration when making a detailed estimate is:

- Ans
- ☐ 1. Only quantity of the materials
 - ☒ 2. quantity, transportation and availability of materials
 - ☐ 3. Only transportation of materials
 - ☐ 4. Only availability of materials

Q.54 The ratio of the area under the load curve to the total area under the rectangle in which it is contained gives the value of _____.

- Ans
- ☐ 1. utilisation factor
 - ☐ 2. diversity factor
 - ☒ 3. load factor
 - ☐ 4. average demand

Q.55 A constant voltage source is applied between the two ends of a wire. If the length of the wire is doubled and the radius remains the same, then the rate of heat developed in the wire _____.

- Ans
- ☒ 1. will be halved
 - ☐ 2. will be zero
 - ☐ 3. will be 4 times
 - ☐ 4. will remain the same

Q.56 A non-inductive resistor of $50\ \Omega$ is connected in series with a coil of inductance $0.25\ \text{Henry}$ and of negligible resistance across a $250\ \text{V}$, $50\ \text{Hz}$ supply. The net impedance of the circuit is given by $93.07\ \Omega$. Find the value of reactive power.

- Ans
- ☒ 1. $567.59\ \text{VAR}$
 - ☐ 2. $1022.14\ \text{VAR}$
 - ☐ 3. $1091.25\ \text{VAR}$
 - ☐ 4. $727.5\ \text{VAR}$

Q.57 In electromagnetism, the pattern of the magnetic field in a solenoid is _____.

- Ans
- ☒ 1. of parallel straight lines
 - ☐ 2. of perpendicular lines
 - ☐ 3. circular
 - ☐ 4. of curved lines

Q.58 In a phasing out test, a voltmeter connected to the winding shows deflection when the supply is given; this indicates that this is _____.

- Ans
- ☐ 1. tertiary winding only
 - ☐ 2. both primary and secondary winding
 - ☒ 3. secondary winding only
 - ☐ 4. primary winding only

Q.59 The capacitance of a parallel plate capacitor having two plates of area $A = 200\ \text{cm}^2$ and separated by distance $d = 10\ \text{cm}$ is given by _____ if the permittivity of medium is $8.854 \times 10^{-12}\ \text{F/m}$

- Ans
- ☒ 1. $17.7 \times 10^{-7}\ \mu\text{F}$
 - ☐ 2. $17.7\ \text{F}$
 - ☐ 3. $17.7\ \text{PF}$
 - ☐ 4. $17.7\ \mu\text{F}$

Q.60 Power factor of an IM is low at _____.

- Ans
- ☐ 1. half load
 - ☐ 2. full load
 - ☐ 3. quarter load
 - ☒ 4. no load

Q.61 Which of the following information is NOT present on the nameplate of a transformer?

- Ans
- ☐ 1. Insulation class
 - ☐ 2. Rated frequency
 - ☒ 3. Frame size
 - ☐ 4. kVA or MVA rating

Q.62 In the application of electrical circuits, the nichrome that is used to make the heating element in an electric cooker has _____.

- Ans
- ☒ 1. 80% nickel and 20% chromium
 - ☐ 2. 40% nickel and 60% chromium
 - ☐ 3. 20% nickel and 80% chromium
 - ☐ 4. 50% nickel and 50% chromium

Q.63 The standard voltage between any two phases in three-phase four-wire secondary distribution system have _____.

- Ans
- ☐ 1. 11 kV
 - ☒ 2. 400 V
 - ☐ 3. 33 kV
 - ☐ 4. 230 V

Q.64 Three identical coils connected in delta to a 415 V, 3-phase supply take a total power of 50 kW and line currents of 70 A. Determine the total kVA taken by the coils.

- Ans
- ☐ 1. 9.68 kVA
 - ☐ 2. 23.24 kVA
 - ☐ 3. 16.77 kVA
 - ☒ 4. 50.32 kVA

Q.65 Which of the following lamps is used for the determination of polarity of DC mains?

- Ans
- ☐ 1. Mercury vapour lamp
 - ☐ 2. Carbon arc lamp
 - ☒ 3. Neon discharge lamp
 - ☐ 4. Sodium vapour lamp

Q.66 Which of the following is NOT a type of Field Effect Transistor?

- Ans
- ☐ 1. JFET
 - ☒ 2. Thyristor
 - ☐ 3. Enhancement MOSFET
 - ☐ 4. Depletion MOSFET

Q.67 What is the charging current per phase of a three-core underground cable connected to 22 kV, 50 Hz three phase supply? Given that the capacitance of each phase to neutral is 18 μ F. (Given the connection is star connected.)

- Ans
- ☒ 1. 71.82 A
 - ☐ 2. 82.13 A
 - ☐ 3. 84.45 A
 - ☐ 4. 50 A

Q.68 Which sort of contract requires contractors to provide individual price quotes for all work to be performed?

- Ans
- ☐ 1. Lump sum contract
 - ☐ 2. Percentage rate contract
 - ☐ 3. Schedule rate contract
 - ☒ 4. Item rate contract

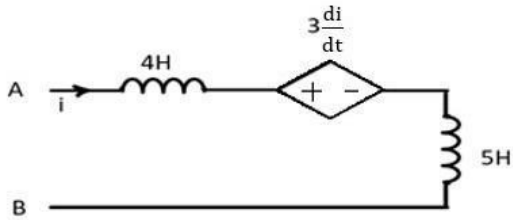
Q.69 In case of magnetic circuits, the product of the number of turns on a coil and the current flowing through the coil is called _____.

- Ans
- ☒ 1. MMF
 - ☐ 2. EMF
 - ☐ 3. absolute permeability
 - ☐ 4. relative permeability

Q.70 In a metal filament bulb, the filament used as a heating coil is tungsten due to its _____.

- Ans
- ☐ 1. high melting point and low resistivity
 - ☒ 2. high melting point and high resistivity
 - ☐ 3. low melting point and low resistivity
 - ☐ 4. low melting point and high resistivity

Q71 Find the value of the equivalent inductance as seen from the open terminal for the diagram shown below.



- Ans ☒ 1. 12H
☒ 2. 10H
☒ 3. 24H
☒ 4. 9H

Q72 If a current varies periodically from zero to maximum, back to zero and then repeats, the signal is a:

- Ans ☒ 1. direct signal
☒ 2. sinusoidal signal
☒ 3. constant signal
☒ 4. pulsating signal

Q73 The shaded-pole induction motors have _____ compared with other motor types and may not be suitable for applications with _____ or where precise speed control is necessary.

- Ans ☒ 1. high efficiency, light loads
☒ 2. high efficiency, heavy loads
☒ 3. lower efficiency, heavy loads
☒ 4. lower efficiency, light loads

Q74 How does the input impedance of a CRO affect its deflection sensitivity?

- Ans ☒ 1. It is directly proportional at low input impedance and inversely proportional at high input impedance
☒ 2. The input impedance does not affect deflection sensitivity
☒ 3. Higher input impedance leads to higher deflection sensitivity
☒ 4. Lower input impedance leads to higher deflection sensitivity

Q75 Which of the following expressions clearly indicates determination of the diversity factor in a power system?

- Ans ☒ 1. $\frac{\text{Maximum demand}}{\text{Sum of individual maximum demand}}$
☒ 2. $\frac{\text{Sum of Individual maximum demand}}{\text{Maximum demand of the whole system}}$
☒ 3. $\frac{\text{Average demand}}{\text{Maximum demand of the whole system}}$
☒ 4. $\frac{\text{Maximum demand of the whole system}}{\text{Sum of individual maximum demand}}$

Q76 In Bipolar Junction Transistor, for amplification purposes, emitter-base junction is ____ and collector-base junction is ____ biased.

- Ans ☒ 1. reverse; forward
☒ 2. forward; forward
☒ 3. forward; reverse
☒ 4. reverse; reverse

Q77 The total inductance of two coupled coils in the 'series aiding' and 'series opposing' connections are 4 H and 2 H, respectively. The value of mutual inductance will be _____.

- Ans ☒ 1. 0.5 H
☒ 2. 0.75 H
☒ 3. 0.2 H
☒ 4. 0.33 H

Q.78 A overhead transmission line is supported by supports at equal levels. If the length of the conductor span is increased by two times, the sag will _____. (Given, weight per unit length and tension in the conductor are constant.)

- Ans
- ☐ 1. decrease by two times
 - ☐ 2. decrease by four times
 - ☐ 3. increase by two times
 - ☒ 4. increase by four times

Q.79 To measure the frequency of a waveform, which of the following data is necessary from the CRO?

- Ans
- ☐ 1. Amplitude of the waveform
 - ☒ 2. Time period of the waveform
 - ☐ 3. Vertical scale setting
 - ☐ 4. Peak to peak value of the waveform

Q.80 A coil having a resistance of $8\ \Omega$ and an inductance of 0.01911 Henry is connected across a 230 V, 50 Hz AC supply. The reactive power is equal to _____.

- Ans
- ☒ 1. 3.174 KVAR
 - ☐ 2. 4.496 KVAR
 - ☐ 3. 3.703 KVAR
 - ☐ 4. 4.232 KVAR

Q.81 What is the apparent power of a 3-phase, star-connected system with a line voltage of 200 V and a line current of 20 A? The phase difference between the voltage and the current is 36.87° .

- Ans
- ☐ 1. 8.928 kVA
 - ☐ 2. 5.928 kVA
 - ☒ 3. 6.928 kVA
 - ☐ 4. 7.928 kVA

Q.82 An electric kettle consumes 10 kW of electric power when operated at 200 V. A fuse wire of what rating must be used for it?

- Ans
- ☐ 1. 30 A
 - ☐ 2. 40 A
 - ☐ 3. 10 A
 - ☒ 4. 50 A

Q.83 _____ is the money put down in addition to the tender.

- Ans
- ☐ 1. True money
 - ☒ 2. Earnest money
 - ☐ 3. Deposit money
 - ☐ 4. Exploit money

Q.84 In case of circuit laws, the currents flowing in various conductors in an electrical circuit are calculated by applying _____.

- Ans
- ☐ 1. the network reduction method
 - ☐ 2. Laplace's law
 - ☒ 3. Kirchhoff's law
 - ☐ 4. the direct method

Q.85 An AC circuit contains a resistance and inductance connected in series. The active power consumed by the circuit is equal to 4800 W and reactive power is 6400 VAR. Calculate the apparent power.

- Ans
- ☐ 1. 4233 VA
 - ☐ 2. 11200 VA
 - ☒ 3. 8000 VA
 - ☐ 4. 1058.3 VA

Q.86 Which of the following measurement instruments consumes the least amount of energy?

- Ans
- ☒ 1. PMMC type
 - ☐ 2. Induction type
 - ☐ 3. Dynamometer type
 - ☐ 4. Moving iron type

Q.87 A 3-phase star-connected alternator is rated at 1.3 MVA, 11 KV. The armature effective resistance and synchronous reactance are 1.3Ω and 20Ω , respectively. Calculate voltage drop due to synchronous reactance.

- Ans
- ☐ 1. 842.24 V
 - ☐ 2. 2363 V
 - ☒ 3. 1364.6 V
 - ☐ 4. 930.77 V

Q.88 Select the correct statement(s) with respect to the Francis turbine.

- A) It is used in medium heads and for moderate discharges.
- B) It is an axial-in radial-out type of turbine.
- C) It is an example of a mixed-flow turbine.

- Ans
- ☐ 1. B and C
 - ☐ 2. A and B
 - ☒ 3. A and C
 - ☐ 4. Only A

Q.89 As the leading power factor of the load of an alternator decreases, the magnitude of generated voltage required to give rated terminal voltage _____.

- Ans
- ☐ 1. decreases
 - ☐ 2. first increases and then decreases
 - ☐ 3. remains unchanged
 - ☒ 4. increases

Q.90 A 230 V, 3-phase voltage is applied to a balance delta connected 3-phase load of phase impedance $(15 + j 20) \Omega$. What is the power consumed per phase?

- Ans
- ☐ 1. 1161.6 W
 - ☐ 2. 2198.3 W
 - ☐ 3. 3807.6 W
 - ☒ 4. 1269.6 W

Q.91 Which of the following types of cooling is more economical for very large transformers of rating 100 MVA?

- Ans
- ☐ 1. Oil natural air natural
 - ☐ 2. Oil natural air forced
 - ☐ 3. Oil forced air forced
 - ☒ 4. Oil forced water forced

Q.92 The main reason to amplify the input signals by using vertical amplifier is:

- Ans
- ☐ 1. the input impedance is low
 - ☐ 2. they provide attenuation
 - ☐ 3. they provide low stability
 - ☒ 4. they are not strong to provide deflection that can be measured

Q.93 The type of armature winding used in large high-voltage alternators is:

- Ans
- ☐ 1. two layer winding
 - ☒ 2. concentric winding
 - ☐ 3. lap winding
 - ☐ 4. wave winding

Q.94 Which of the following is NOT a desirable criteria for an underground cable?

- Ans
- ☐ 1. Proper insulation thickness should be taken care of in order to provide greater degree of safety
 - ☐ 2. Conductors should be used such that heating loss is minimum
 - ☒ 3. Mechanical protection is not required in any underground cable
 - ☐ 4. Conductors used in the cable should be stranded

Q.95 In the split-phase induction motor, maximum torque is about _____ the full load torque at about 75% of the synchronous speed.

- Ans
- ☒ 1. 2.5 times
 - ☐ 2. 250 times
 - ☐ 3. 25 times
 - ☐ 4. 0.25 times

Q.96 What kind of error does it constitute if only one of the parties to a contract misunderstands its terms or scope?

- Ans
- ☐ 1. Mutual mistake
 - ☐ 2. Multilateral mistake
 - ☒ 3. Unilateral mistake
 - ☐ 4. Bilateral mistake

Q.97 Which option among the following is correctly associated with the 'Auxiliary motor starting'?

- Ans
- ☐ 1. A damper winding is used for the starting purpose of the starting of the synchronous motor.
 - ☐ 2. ADC supply and DC compound motor is used for the starting purpose of the starting of the synchronous motor.
 - ☐ 3. Asquirrel cage winding is used for the starting purpose of the starting of the synchronous motor.
 - ☒ 4. A small direct-coupled induction motor, called pony motor, is used for the starting purpose of the synchronous motor.

Q.98 If 15A current is flowing through a solenoid of inductance 4H, find the magnetic energy stored in the solenoid.

- Ans
- ☐ 1. 540 J
 - ☒ 2. 450 J
 - ☐ 3. 1000 J
 - ☐ 4. 100 J

Q.99 In case of electromagnetic induction, two coils are arranged in such a way that a change in one coil causes an EMF to be induced in the other coil. This is called _____.

- Ans
- ☐ 1. self-inductance
 - ☐ 2. series inductance
 - ☐ 3. parallel inductance
 - ☒ 4. mutual inductance

Q.100 What is the purpose of interleaving the windings in a transformer?

- Ans
- ☐ 1. To reduce the efficiency of the transformer
 - ☐ 2. To increase the leakage flux
 - ☐ 3. To increase the inductance of the transformer
 - ☒ 4. To reduce the leakage flux