

NERC

Nigeria Electricity Regulatory Commission
APTITUDE TEST PAST QUESTIONS & ANSWERS



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Preparation Guide

This preparation guide helps you to prepare for NERC trainee programme aptitude tests. It helps you familiarize with the kind of questions you will face in the test.

Overview of the Assessment

NERC uses aptitude assessments as part of their multi-stage assessment procedures for the selection and development of staff. Research has shown that that they are good predictors of performance at work. The test is usually conducted by the in-house recruitment department or out-sourced to recruitment companies like solidhire or workforce group.

General format for the test:

The first stage of the test is conducted online, and covers areas like Math/problem solving, English/Verbal reasoning, General knowledge. (The timing is subject to change every year). This study pack helps you find out more about your strengths and areas you need to improve on.

The Assessments help NERC to:

- select candidates best suited to the demands of the job.
- Identify areas where individuals might benefit from further development
- obtain objective information about candidates' abilities

Instructions

On the following pages are some past questions that appeared in previous years. Completing these will help you understand the types of questions used and gain experience in taking the tests. The format has not changed so far, but there is no guarantee that the same will be repeated this year. It is important to practice how to solve these questions and do not attempt to memorize (cram) answers as your questions will change.

Have a pen and paper to hand to indicate your answers and make notes. You will NOT use a calculator. The actual test is strictly timed. Try to complete each set within time recommended in this study pack.

Checking your Answers

Check your answers against the correct answers after each test set. Look at any questions you got wrong and try to understand how to arrive at the correct answer. Keep in mind that in most aptitude tests, people typically do not complete all of the questions within the time limit. If you took much longer than 90 minutes to answer the questions, try to speed up your work rate. If you finished all of the questions within the time limit but made many mistakes, try focusing more on the accuracy of your responses.

Improving your Numerical Abilities:

Some tips for improving problem solving abilities are provided below:

- Complete daily calculations both with and without a calculator.
- Look for differences such as percentage changes in numerical trends.
- Check calculations done by others.
- Take on responsibilities which involve working with numbers.

Before the Test

- Practice every question that comes pack, READ THE STUDY NOTE at the end.
- Get a good night's sleep before the assessment.
- Make sure you are wearing any glasses, contact lenses or hearing aids you may require.
- If you have any special requirements, such as larger print versions of the test, specific lighting or seating needs, it is important that you make these known immediately to allow appropriate accommodations to be made.

During the Assessment

- Try to stay calm. Using the practice tips above should help you feel more at ease.
- Follow the instructions carefully, and ask questions if you are not sure of anything before the test starts.
- Read each question carefully.
- Work as fast as you can. Do not take too much time over any one question.
- If you find a question too difficult or are unsure of an answer indicate your best choice and move on quickly.
- After an assessment always seek feedback. It is much easier to improve your abilities if you know how well you have done.

Mathematics and Problem solving Guide

In the maths section you will be required to take problem solving questions.

You are advised to work quickly and as correctly as possible.

Each question should take about 1 minute to complete.

There will be 20 questions in this section (Based on past tests).

The number of questions don't matter as long as you have it in your mind to answer one question in one minute averagely.

So even if there are 20 questions in your actual exam, then you will most likely be required to complete the test in 20 minutes.

The problem solving questions are made of a mix of basic business mathematics

(Ratios, percentage increase/decrease, Numerical charts, sequence completion, discounts, Algebra, Basic Arithmetic and Basic quantitative reasoning).

Problem solving:

Test Guide

Problem solving questions are designed to test your basic mathematical skills and understanding of elementary mathematical concepts, as well as your ability to reason quantitatively, solve quantitative problems, and interpret data.

The mathematics knowledge required to answer the questions is no more advanced than what is generally taught in secondary school (or high school) mathematics classes. The test is simple, but time may not be enough.

In these questions, you are asked to solve each problem and select the best of the five answer choices given.

1. Begin by reading the question thoroughly to determine exactly what information is given and to make sure you understand what is being asked.
2. Scan the answer choices to understand your options. If the problem seems simple, take a few moments to see whether you can determine the answer. Then check your answer against the choices. If you don't see your answer among the choices, or if the problem is complicated, take a closer look at the answer choices and think again about what the problem is asking. See whether you can eliminate some of the answer choices and narrow down your options. If you are still unable to narrow the answer down to a single choice, reread the question.

3. Keep in mind that the answer will be based solely on the information provided in the question—don't allow your own experience and assumptions to interfere with your ability to find the correct answer to the question.

4. If you find yourself stuck on a question or unable to select the single correct answer, keep in mind that you have about one minute to answer each quantitative question. You may run out of time if you take too long to answer any one question, so you may simply need to pick the answer that seems to make the most sense. Although guessing is generally not the best way to achieve a high score, making an educated guess is a good strategy for answering questions you are unsure of. Even if your answer to a particular question is incorrect, your answers to other questions will allow the test to accurately gauge your ability level.

SECTION 1: MATHS**TIME:****20Mins****Instructions**

There are 20 questions in this section of your assessment, you are to provide the correct answers in 20 minutes. Your answer should be based on information provided only. Calculators are not allowed in this test. Click the start button to begin the test.

1. Directions (1-5): In the following number series one number is wrong. Find out the wrong number.

39, 42, 48, 59, 84, 132

A.132

B.42

C.48

D.59

E.84

2. 11, 18, 30, 40, 59, 86

A.30

B.11

C.18

D.59

E.86

3. 5, 30, 59, 119, 209, 335

A.59

B.335

C.5

D.119

E.30

4. 353, 385, 316, 441, 225, 568

A.568

B.353

C.385

D.225

E.316

5. 21, 29, 84, 756, 12096, 302400

A.12096

B.29

C.84

D.756

E.21

6 Each Student of a class collected some money for the trip. The total money collected by each student was equal to the cube of the total number of students.

If the total amount collected was ₦29,791. Find the total number of students.

A. 31

B. 30

C. 28

D. 37

E. 39

7. A dealer buys an article marked ₦50,000 at 25% and 10% successive discount. He spends ₦5,000 on its repair and sells it for ₦50,000. What is his loss or gain percentage?

- A. 33.63% loss
- B. 26.43% gain
- C. 1.25% gain
- D. 29.03%
- E. 27.13% loss

8. The average age of four boys, five years ago was 9. One of the boys is now 17. If the other boys' ages are one year apart from youngest to the oldest, The present age of the youngest is?

- A. 10 years
- B. 15 years
- C. 14 years
- D. 13 years
- E. 12 years

9. Bolanle wants to purchase a GSM handset. The shopkeepers told her to pay 30% tax if she asked for the actual sale price (without tax) of the mobile and paid to the shopkeeper ₦16,150. In doing so, she managed to avoid to pay the 30%tax. What is the amount of discount that she received on the selling price (inclusive of tax)?

- A. ₦ 5,495
- B. ₦ 5,850
- C. ₦ 5950
- D. ₦ 5685
- E. ₦ 5975

10. P, Q and R can do a piece of work in 18, 24 and 36 days on the second day and P on the third day, again R on the fourth day and so on. Then in how, many days will the work be completed?

A.25

B.24

C.22

D.20

E.26

Direction: Study the table carefully and answer the questions given below:

Details of employees deployed at different levels by EKZ Power Holding company in different departments.

	Manager		Officer	
Department	Number	M : F	Number	M : F
Operations	2200	7 : 4	2800	6 : 8
Public relation	1800	5 : 4	2500	9 : 11
Finance	2500	14 : 11	3200	17 : 15
Advertising	2900	12 : 17	1600	9 : 7
Sales	2400	9 : 7	2600	8 : 5
Procurement	2700	5 : 4	2200	9 : 13

11 The total number of female employees (Managers and Officers) in Procurement department is approximately by what per cent more than their male counterparts?

A.2%

B.6%

C.4%

D.8%

E.9%

12 The number of female managers in Finance department is what per cent of the total number of male managers in Sales department?

A.77%

B.82%

C.78%

D.84%

E.81%

13 What is the ratio of the total number of female managers in Operations and Finance departments to that of male officers in these two departments?

A.25:29

B.19:26

C.19:25

D.19:29

E.22:29

Direction: Study the table carefully and answer the questions given below:

Details of employees deployed at different levels by EKZ Power Holding company in different departments.

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Advertising	2900	12 : 17	1600	9 : 7
Sales	2400	9 : 7	2600	8 : 5
Procurement	2700	5 : 4	2200	9 : 13

14 The total number of male officers in Advertising and Sales departments is approximately what per cent the total number of officers in these two department?

- A.55.8%
- B.56%
- C.57.5%
- D.54%
- E.59.5%

15 What is the different between the total number of female officers in Advertising and Public Relations department and the total number of female managers in these two department?

- A.405
- B.415
- C.425
- D.435
- E.395

16 A number when divided by 169 leaves 78 as remainder. what would be the remainder when the same number is divided by 13 ?

- A.0
- B.1
- C.6
- D.9
- E.10

17. The Simple interest on a certain sum for 2 years at 10% per annum is N.90. The corresponding compound interest is??

- A.94.5
- B.92.6
- C.94.2
- D.94.1
- E.92.5

18. The cost of fencing a circular plot at the rate of N15 per m is N 6600. What will be the cost of flooring the plot at the rate of N.50 per sq. m?

- A. 6,70,000
- B. 5,50,000
- C. 7,70,000
- D. 6,50,000
- E. 5,60,000

19. The salaries of P,Q and R are in the ratio 5:3:2.If the increments of 20% ,10% and 20% are allowed in their salaries, then what will be the new ratio of their salaries ?

- A. 20: 11: 18
- B. 20: 11:15
- C. 20:11:12
- D. 20:11:10
- E. None of these

20. Following the pattern shown in the number sequence below, what is the missing number?

1 3 9 ? 81 243

A. 18

B. 27

C. 49

D. 21

E. 63

SECTION 2: VERBAL**TIME: 20Mins**

In this section you will be required to take Verbal reasoning questions. You are advised to work quickly and as correctly as possible. Each question should take about 1 minute to complete. There are 20 questions in this section to answer within 20 minutes.

Some proverbs/idioms are given below together with their meanings. Choose the correct meaning of the proverb/idiom.

1. To leave someone in the lurch is to _____?

- A. come to compromise with someone
- B. constant source of annoyance to someone
- C. put someone at ease
- D. desert someone in time of difficulty

2. To hit the nail right on the head is to _____?

- A. be exactly correct
- B. destroy one's reputation
- C. announce one's fixed views
- D. teach someone a lesson

3. A shot in the dark is to _____?

- A. The job of the injured person
- B. The job of the person dealing with the incident
- C. Details of First Aid given
- D. The name of the person dealing with the incident

4. To drive home a point is to _____?

- A. find one's roots
- B. return to place of rest
- C. be back to original position
- D. emphasize

Instruction (5-6)

In each question below, there is a sentence of which some parts have been jumbled up. Rearrange these parts which are labelled P, Q, R and S to produce the correct sentence.

Choose the proper sequence.

5. It was to be

P : before their school examination

Q : which was due to start

R : the last expedition

S : in a month's

The proper sequence should be _____?

A. SRQP

B. RQSP

C. RPQS

D. SPRQ

6. This time

P : exactly what he had been told

Q : the young man did?

R : beyond his dreams

S : and the plan succeeded

The proper sequence should be _____?

A. QPRS

B. QPSR

C. PQSR

D. QSRP

7. 80 is to octogenarian as 90 is to _____?

- A. nonagenarian
- B. novagenarian
- C. novascotian
- D. nanogenarian

8 Statements: Some papers are pens. All the pencils are pens.

Conclusions: Some pens are pencils.

Some pens are papers.

- A. Only (1) conclusion follows
- B. Only (2) conclusion follows
- C. Either (1) or (2) follows
- D. Both (1) and (2) follow

9. Egg, _____, pupa, butterfly.

- A. tadpole
- B. larva
- C. spawn
- D. cocoon

10. Which of the following word is the opposite of "Probity"?

- A. Turpitude
- B. Veracious
- C. Devotion
- D. Dignity

11. Which is the odd one out?

- A. Pool
- B. Lake
- C. Water

D. Pond

12. Which vowel comes midway between J and T?

A. A

B. E

C. I

D. O

13. Pedro goes either hunting or fishing every day. If it is snowing & windy then Pedro goes hunting. If it is sunny and not windy then Pedro goes fishing. Sometimes it can be snowing and sunny.

QUESTION: Which of the following statements must be true:

A. If it is not sunny and it is snowing then Pedro goes hunting.

B. If it is windy and Pedro does not go hunting then it is not snowing.

C. If it is windy and not sunny then Pedro goes hunting.

D. If it is windy and sunny then Pedro goes hunting.

14. Pear is to Apple as Potato is to _____ ?.

A. banana

B. radish

C. strawberry

D. peach

15. Which is the odd one out?

A. Carbon

B. Aluminium

C. Copper

D. Iron

instruction no-22)

This question presents a sentence, part of which or all of which is underlined. Beneath the sentence you will find five ways of rephrasing the underlined part. The first of these repeats the original; the other four are different. If you think the original is best, choose option A, else pick one of the others.

16. John and Tim went to the bank and he made a deposit.

- A. he
- B. they
- C. it
- D. their
- E. you

17. Although the average Girl Scout joins the organization at age 14, they have already been Brownies for several years.

- A. they have already been Brownies
- B. they were Brownies
- C. she has already been a Brownie
- D. she had already been a Brownie
- E. she was in the Brownies

18 In 1980, the Netherlands agreed to limit fishing in certain Atlantic Ocean beds, but in 1981, they terminated the agreement.

- A. they terminated the agreement.
- B. they decided to terminate the agreement.
- C. it terminated the agreement.
- D. it was terminated.
- E. it decided the agreement was terminated.

19. While brokers, as a rule, are not permitted to know executive access codes, in many instances they are widely known.

- A. they are widely known
- B. they are widely known to be
- C. they are widely known by many
- D. the codes are able to be widely known
- E. the codes are widely known

20. Despite seeming tame and intelligent, the state troopers had no choice but to shoot the loose Gorilla.

- A. Despite seeming tame and intelligent
- B. Despite a tame and intelligent appearance
- C. Although appearing to be tame and intelligent
- D. Although it seemed tame and intelligent
- E. However tame and intelligent in appearance

SECTION 3: TECHNICAL KNOWLEDGE**TIME: 20Mins**

In this section you will be required to answer 10 skill based questions. Each question should take about 1 minute to complete. There are 10 questions in this section to answer within 10 minutes

1. Which of the following statement is true both for a series and a parallel D.C. circuit?
 - (A) Elements have individual currents
 - (B) Currents are additive
 - (C) Voltages are additive
 - (D) Power are additive

2. Insulating materials have the function of
 - (A) Preventing a short circuit between conducting wires
 - (B) Preventing an open circuit between the voltage source and the load
 - (C) Conducting very large currents
 - (D) Storing very high currents

3. The hot resistance of the bulb's filament is higher than its cold resistance because the temperature coefficient of the filament is
 - (A) Zero
 - (B) Negative
 - (C) Positive
 - (D) About 2 ohms per degree

4. Resistance of a material always decreases if
 - (A) Temperature of material is decreased
 - (B) Temperature of material is increased

- (C) Number of free electrons available becomes more
- (D) None of the above is correct

5. In the case of direct current

- (A) Magnitude and direction of current remains constant
- (B) Magnitude and direction of current changes with time
- (C) Magnitude of current changes with time
- (D) Magnitude of current remains constant

6. Two copper conductors have equal length. The cross-sectional area of one conductor is four times that of the other. If the conductor having smaller cross-sectional area has a resistance of 40 ohms the resistance of other conductor will be

- (A) 160 ohms
- (B) 80 ohms
- (C) 20 ohms
- (D) 10 ohms

7. Which of the following statement is correct?

- (A) A semiconductor is a material whose conductivity is same as between that of a conductor and an insulator
- (B) A semiconductor is a material which has conductivity having average value of conductivity of metal and insulator
- (C) A semiconductor is one which conducts only half of the applied voltage
- (D) A semiconductor is a material made of alternate layers of conducting material and insulator

8. Which of the following can have negative temperature coefficient?

- (A) Compounds of silver
- (B) Liquid metals
- (C) Metallic alloys
- (D) Electrolytes

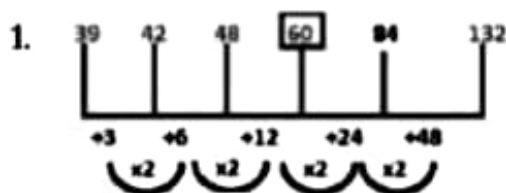
9. An instrument which detects electric current is known as

- (A) Voltmeter
- (B) Rheostat
- (C) Watt-meter
- (D) Galvanometer

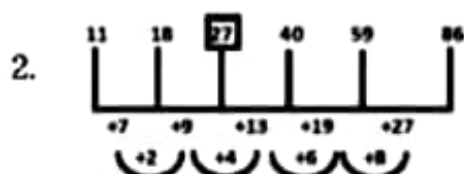
10. Four wires of same material, the same cross-sectional area and the same length when connected in parallel give a resistance of $0.25\ \Omega$. If the same four wires are connected in series the effective resistance will be

- (A) $1\ \Omega$
- (B) $2\ \Omega$
- (C) $3\ \Omega$
- (D) $4\ \Omega$

1 D	2 A	3 E	4 C	5 B	6 A	7 D	8 E	9 C	10 B
11 C	12 E	13 D	14 E	15 C	16 A	17 A	18 C	19 E	20 B

Explanations:

The correct sequence is given above. There should be 60 in place of 59. Answer=D



There should be 27 in place of 30. Answer=A

3. The series is

$$2^3 - 3 = 5, 3^3 - 4 = 23,$$

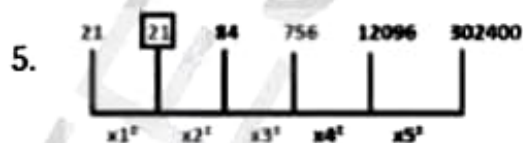
$$4^3 - 5 = 59, 5^3 - 6 = 119,$$

$$6^3 - 7 = 209, 7^3 - 8 = 335$$

Hence, there should be 23 in place of 30. Answer=E



Hence, there should be 380 in place of 385. Answer=C



Hence, there should be 21 in place of 29. Answer=B

6. Total number of students = $\sqrt{3 \times 29791} = 31$ Answer=A

7. Cost price of the article:

$$= 5000 \times \frac{75}{100} \times \frac{90}{100} + 5000 = \text{Rs. } 38750$$

Profit percent

$$= \frac{50,000 - 38750}{38750} \times 100$$

Answer= D

8. Five years ago, their average age was 9

Today, their average age is $9+5=14$

One of the boys is now 17

Let T = total ages of the four boys today. Today average = $14 = T/4$, $T = 56$

Total age of the remaining 3 boys = $T - 17 = 56 - 17 = 39$

If X is the age of the youngest,

Then $X + (X+1) + (X+2) = 39$.

$$3X + 3 = 39$$

$$X = 36/3 = 12$$

Answer = E

9. SP = 100, SP (with tax) = 130

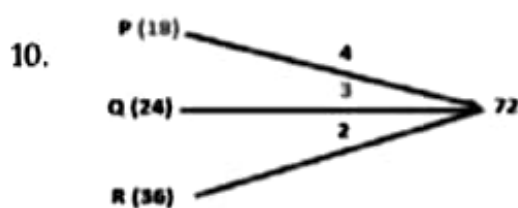
New SP = $100 - 5 = 95$

Effective discount = $130 - 95 = 35$

So, when SP of 95, discount = 35

And when SP of N.16,150, discount = $35/95 \times 16150 = \text{N.5,950}$.

Answer=C



Units of work done in 3 days = $(2 + 3 + 4) = 9$

\therefore 72 units of work will be done in

$= 3 \times 8 = 24$ days

Answer=B

11. Male manager = $\frac{5}{9} \times 2700 = 1500$

Female Manager = $\frac{4}{9} \times 2700 = 1200$

Male Officers = $\frac{9}{22} \times 2200 = 900$

Female Officers = $\frac{13}{22} \times 2200 = 1300$

Procurement Department.

Total female employees = $1200 + 1300$

$= 2500$ Total male employees

$= 1500 + 900 = 2400$

\therefore Required percentage more

$$= \frac{2500 - 2400}{2400} \times 100 = 4\%$$

12. Female managers in Finance department

$$= \frac{11}{25} \times 2500 = 1100$$

Male managers in Sales department

$$= \frac{9}{16} \times 2400 = 1350$$

Required percentage

$$= \frac{1100}{1350} \times 100 = 81\%$$

Answer = E

13. Female managers in Operation and Finance departments together

$$= \frac{4}{11} \times 2200 + \frac{11}{25} \times 2500$$

$$= 800 + 1100 = 1900$$

Male officers in Operation and Finance department together

$$= \frac{6}{14} \times 2800 + \frac{17}{32} \times 3200$$

$$= 1200 + 1700 = 2900 \therefore$$

Required ratio = 19: 29

Answer= D

14. Male officers in Advertising and Sales Departments

$$= \frac{9}{16} \times 1600 + \frac{8}{13} \times 2600$$

$$= 900 + 1600 = 2500 \therefore$$

Required percentage

$$= \frac{2500}{1600 + 2600} \times 100 = 59.5\%$$

Answer=E

15. Female officers in Advertising and Public relation

$$= \frac{7}{16} \times 1600 + \frac{11}{20} \times 2500$$

= 700 + 1375 = 2075 Female managers in Advertising and Public Relation

$$= \frac{17}{29} \times 2900 + \frac{4}{9} \times 1800$$

Required difference = 2500 - 2075 = 425

Answer=C

16. Given number = $169q + 78$

$$= 13 (13q + 6)$$

> The number is completely divisible by 13.

Answer=A

$$17. P = 90 \times 100 / (2 \times 10) = 450$$

$$C.I = 450(1 + (10/100))^2 - 450$$

$$= 450 \times 121/100 - 450 = 94.5$$

Answer = A

$$18. \Rightarrow 2 \times \pi \times r = 6600/15 = 440m$$

$$\Rightarrow r = 70m$$

$$\text{Area} = \pi \times r^2 = 22/7 \times 70 \times 70 = 15,400$$

$$\text{Total cost} = 15,400 \times 50 = 7,70,000$$

Answer=C

19. P,Q and R salaries Ratio = 5:3:2

$$= 500:300:200$$

$$\text{If P Salary Increases } 20\% = 500 \times (20/100)$$

$$= 100 \Rightarrow 500 + 100 = 600$$

If Q Salary Increases 10%

$$= 300 \times (10/100) = 30 \Rightarrow 300 + 30$$

= 330 If R Salary Increases 20%

$$= 200 \times (20/100) = 40 \Rightarrow 200 + 40$$

= 240 New Ratios = 600:330:240

$$= 20:11:8$$

Answer=E

20. Following the pattern shown in the number sequence below, the missing number is 27.

1, 3, 9, __, 81, 243

= 30, 31, 32, 33, 34, 35

Answer=B

Answers to 2016/2017 Verbal Reasoning

1 D	2 A	3 D	4 D	5 C	6 B	7 A	8 D	9 B	10 A
11 C	12 D	13 A	14 B	15 A	16 B	17 C	18 C	19 E	20 D

Explanation: Verbal

16. (B). Who made a deposit? You can't tell. They is the only pronoun that creates a clear reference and agreement.

17. (C). Use the 2/3 split. The pronoun refers to the average Girl Scout, so it should be she. Eliminate (A) and (B). One difference among the others is has vs. had. vs. was. The verb tense needs to be consistent with joins, so use has and choose (C).

18. (C). They Netherlands is an it (as is the United States) not a they. Eliminate (A) and (B). (D) terminates the Netherlands, always a bad idea. (E) is passive, so choose the active (C).

19. (E). Step 1: The 2/3 split shown in italics (which doesn't happen on the real test) is they vs. the codes. You want the codes because they is ambiguous; it could refer to brokers or codes. Step 2: Eliminate (A), (B), and (C). Step 3: The difference between (D) and (E) is able to be. Codes aren't able (only people are), so choose (E).

20. (D). (A) has a misplaced modifier because it suggests that the troopers were tame and intelligent. (B), (C), and (E) change the words around a little, but they still repeat this error. (D) fixes the misplaced modifier by turning the phrase into a clause. The pronoun it is okay because the only noun it could match is the loose gorilla.

Answers to 2016/2017 Technical paper

1 D	2 B	3 C	4 C	5 A	6 D	7 A	8 D	9 D	10 D
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SECTION 1: MATHS

TIME: 20Mins

Instructions

There are 20 questions in this section of your assessment, you are to provide the correct answers in 20 minutes. Your answer should be based on information provided only. Calculators are not allowed in this test. Click the start button to begin the test.

1 In the image shows correctly worked addition sum, A, B, C and D represent different digits, and all the digits in the sum are different. What is the sum of A, B, C and D?

$$\begin{array}{r} 5A \\ + BC \\ \hline D43 \end{array}$$

- A. 23
- B. 22
- C. 18
- D. 16
- E. 14

2. 12 litres of water are poured into an aquarium of dimensions 50cm length, 30cm breadth, and 40cm height. How high (in cm) will the water rise? (1 litre = 1000cm³)

- A. 6
- B. 8
- C. 10
- D. 20
- E. 40

3. For how many integer values of n will the value of the expression $4n + 7$ be an integer greater than 1 and less than 200?

- A. 48
- B. 49
- C. 50
- D. 51
- E. 52

4. If $pqr = 1$, $rst = 0$, and $spr = 0$, which of the following must be zero?

- A. P
- B. Q
- C. R
- D. S
- E. T

5. $\clubsuit n$ denotes the number obtained when n is rounded to the nearest tenth.

For example $\clubsuit 4.31 = 4.3$, $\clubsuit 0.089 = 0$, $\clubsuit 1.135 = 1.1$

- A. 1.05
- B. 1.04
- C. -1.05
- D. -1.0
- E. -0.1

6 Which of the following is the same as $25/1000$?

- A. 0.25
- B. 0.025
- C. 0.0025
- D. 40
- E. 25000

7. If you count from 1 to 100, how many 6s will you pass on the way?

- A. 10
- B. 19
- C. 20
- D. 11
- E. 21

8. $(34 + 13) - 4 = ? + 3$

- A. 7
- B. 47
- c. 51
- D.40
- E. 37

9. A square has a perimeter of 36cm. Its area is 81 cm². What is the length of one side?

- A. 9cm
- B. 18cm
- C. 9 metres
- D. 18 metres
- E. 16cm

10. A number when divided by 169 leaves 78 as remainder. what would be the remainder when the same number is divided by 13 ?

- A.0
- B.1
- C.6
- D.9
- E.10

11 In a college the ratio of the number of boys to girls is 8:5. If there are 160 girls, what is the total number of students in the college?

- A.100
- B.250
- C.260
- D.416
- E.420

12. What percent of 50 is 2?

- A.2%
- B.2.5%
- C.4%
- D.5%
- E.1%

13. What is $(5 \text{ of } 13) - (4 + 19) \text{ of } 2$?

- A. 17
- B. 18
- C. 19
- D. 20
- E. 24

14. When rope is selling at \$.10 a foot, how many feet can you buy for sixty cents?

- A. 6 feet
- B. 18 feet
- C. 30 feet
- D. 45 feet
- E. 60 feet

15. In printing an article of 48,000 words, a printer decides to use two sizes of type. Using the larger type, a printed page contains 1,800 words. Using smaller type, a page contains 2,400 words. The article is allotted 21 full pages in a magazine. How many pages must be in smaller type?

- A.10
- B.15
- C.17
- D.19
- E.23

16. A gallon of gas costs \$2.50. How many gallons of gas can be purchased with \$5?

- A. 2
- B. 3
- C. 4
- D. 40
- E. 5

17. Last year, 12 out of 600 employees at a service organization were rewarded for their excellence in customer service, which was _____% of the employees.

- A. 1
- B. 2
- C. 3
- D. 4
- E. 6

18. Divide 30 by half. Add 10. Multiply by 3. Add 6. What is does this equal?

- A. 37
- B. 47
- c. 51
- D. 81
- E. 216

19. A circle has a perimeter of 44cm. Its area is 154 cm^2 . What is the radius of the circle?

- A. 5.0 cm
- B. 18cm
- C. 9 metres
- D. 7.0 cm
- E. 2.9cm

20. Which number should come next in this series?

25, 24, 22, 19, 15, _____

A.4

B.5

C.10

D.14

E.6

1 B	2 B	3 C	4 D	5 D	6 B	7 C	8 D	9 A	10 A
11 D	12 C	13 C	14 A	15 C	16 A	17 B	18 E	19 D	20 C

1. First you must realize that the sum of two

2-digit numbers cannot be more than

198 ($99 + 99$). Therefore in the given problem

D must be 1.

Now use trial and error to satisfy the sum

$$5A + BC = 143$$

A + C must give 3 in the units place, but neither can be 1 since all the digits have to be different.

$$\text{Therefore } A + C = 13.$$

With one to carry over into the tens column,

$$1 + 5 + B = 14, \text{ and } B = 8.$$

$$A + C + B + D = 13 + 8 + 1 = 22$$

Answer= B

2. Total volume of water = 12 liters = 12 x

1000 cm³

The base of the aquarium is 50 x 30 =

1500cm³

Base of tank x height of water = volume of water

1500 x height = 12000; height = 12000 /

1500 = 8

Answer=B

3. $1 < 4n + 7 < 200$

n can be 0, or -1

n cannot be -2 or any other negative integer or the expression $4n + 7$ will be less than 1.

The largest value for n will be an integer

$< (200 - 7) / 4$ $193/4 = 48.25$, hence 48

The number of integers between -1 and 48 inclusive is 50

Answer=C

4. If $pqr = 1$, none of these variable can be zero. Since $spr = 0$, and since p and r are not zero, s must be zero. (Note that although $rst = 0$, and so either s or t must be zero, this is not sufficient to state which must be zero)

Answer=D

25. 0.089 to the nearest tenth = 0.1

1.135 to the nearest tenth = 1.1

$0.1 - 1.1 = -1$

Answer = D

6. Answer = B

7. 6,16,26,36,46,56,60,61,62,63,64,65,66,67,68,

69,76,86,96 (66 is a double 6)

Answer=C

8. Answer = D

9. Area of square = L^2

$$81 = L^2$$

$$L = 9\text{cm}$$

Answer=A

10. The given number is of the form

$$169x + 78 = 13(13x) + 13 \times 6$$

$$\text{Factor out } 13; = 13(13x + 6) + 0$$

The remainder when the given number is divided by 13 is 0.

Answer=A

11. There are several ways to solve this, but in this case, bolt-tie multiplication method is faster.

We say if 5 = 160, then 8 = ?

$$\text{Boys} = (8 \times 160) / 5 = 256$$

$$\text{Total} = 256 + 160 = 416$$

Answer = D

$$12. 2 = X/100 \text{ of } 50 = 4\%$$

Answer=C

$$13. (5 \text{ of } 13) - (4 + 19) \text{ of } 2 ?$$

Follow BODMAS,

$$65 - 46 = 19$$

Answer=C

$$14. \text{Note that } 6\text{cent} = \$0.6$$

Answer=A

15. Representation:

Let L = number of pages printed Larger type

S = number of pages printed smaller type

Translate given sentences to mathematical sentences. the article is allotted 21 full pages in a magazine. $\rightarrow L + S = 21$

$$1,800L + 2,400S = 48,000, \text{ divide } 100$$

$$18L + 24S = 480$$

Solve:

$$L + S = 21$$

$$18L + 24S = 480$$

$$-18(L + S = 21)$$

$$18L + 24S = 480$$

$$-18L - 18S = 378$$

$$18L + 24S = 480$$

$$6S = 102$$

$S = 17 \rightarrow$ pages printed in smaller type

Answer = C

$$16. 1G=2.5 ?G=5 =2$$

Answer = A

17. Reframe: what percent of 600 is 12

Answer=B

18. Note that the first statement says "Half"

$$\{[30/(0.5)]+10\} \times 3 + 6 = 216$$

Answer = E

$$19. \text{Perimeter or Circumference} = 2\text{-Pie-R}$$

$$2 \times 22 / 7 \times R = 44$$

$$R = 7$$

Answer=D

20. 25,24,22,19,15,___

$$25 - 1 = 24,$$

$$24 - 2 = 22$$

$$22 - 3 = 19$$

$$15 - 5 = 10$$

Answer=C

SECTION 2: VERBAL**TIME: 20Mins**

In this section you will be required to take Verbal reasoning questions. You are advised to work quickly and as correctly as possible. Each question should take about 1 minute to complete. There are 20 questions in this section to answer within 20 minutes.

Instruction (1-2)

This question presents a sentence, part of which or all of which is underlined. Beneath the sentence you will find five ways of rephrasing the underlined part. The first of these repeats the original; the other four are different. If you think the original is best, choose option A, else pick one of the others.

1. The number of workers have increased steadily each year.

- A. have increased steadily
- B. steadily have increased
- C. have been increasing steadily
- D. has increased steadily
- E. has steadily been going through an increase

2. The commercial airliner flew too close to the military base, an act that the army saw as a violation of its air space.

- A. as
- B. as if it was
- C. to be
- D. that it was
- E. for

Instruction (23-29)

The questions in this group are based on the content of a passage. After reading the passage, **choose the best answer to each question.** Answer all questions following the passage on the basis of what is stated or implied in the passage.

3. For the past five years, US consumption of eggs has decreased. The National Egg Council plans to reverse this trend by launching an advertising campaign extolling the healthful benefits of eggs.

Which one of the following, if true, will provide the strongest support for the National Egg Council's plan?

- A. Eggs are a good source of protein.
- B. Many former egg eaters now make omelets using egg substitutes.
- C. Most people stopped eating eggs because they thought eggs were unhealthy.
- D. Eggs contain unhealthy levels of cholesterol.
- E. Eggs substitute makers launched an extensive marketing campaign six years ago.

4. In an effort to reduce the amount of fat and the number of calories that they consume, many citizens of the United States are making significant changes in their diets. For them staying in shape and looking fit now take precedence over eating foods that are filling and that taste good. It is likely that if they maintain these new priorities with consistent regard for other health issues, the length and quality of their lives will increase significantly.

Which one of the following is an assumption upon which the argument is based?

- A. Eating foods that are filling and tastes good is inconsistent with staying in shape and looking fit.
- B. Controlling the quality of one's life requires more than mere dietary adjustments.
- C. A combination of diet and exercise is necessary if one wishes to stay in shape and look fit.
- D. Many citizens of the United States have only recently discovered the importance of diet to living a longer, healthier life.
- E. Staying in shape and looking good are current goals for most citizens of the United States.

5 Singing in the Rain Umbrella Corp. plans to institute a marketing campaign in which it sells umbrellas at the exits of subway stations during rainy weather. The umbrellas will be sold at a price that is slightly higher than normal.

The company thinks the sales of these higher – priced umbrellas will be greater than normal sales of umbrellas, because the purchasers of these umbrellas will be forced to buy them if they do not want to get wet.

The author assumes which of the following about the purchasers of the umbrellas in predicting the sales of the umbrellas?

- A. Customers who do not feel immediate pressure to purchase will not do so.
- B. Normally priced umbrellas are not profitable for singing in the Rain Umbrellas Corp.
- C. Very few people buy Singing in the Rain's normally priced umbrellas.
- D. Singing in the Rain Umbrellas Corp. will have to stop selling normally priced umbrellas when it starts selling higher priced umbrellas.
- E. Most potential customers of Singing in the Rain's higher priced umbrellas will not have acquired an umbrella previously.

6 A leading cement manufacture has been having problems processing manufacturing and delivery records since it expanded its operations. To solve this problem it plans to install a new platform on its central computing system which will run its tracking program five times faster than the current system does.

Which one of the following casts the most serious doubt on the manufacture's plan?

- A. Not all computer platforms can make the company's tracking programs run more quickly
- B. The cost of the new computer platform will require the cement manufacture to raise prices for its products.
- C. The cement company's computer system does not have the capability to run the new platform and cannot be updated.
- D. The company has been increasing the sales of cement by 1.5 percent a month for the past 18 months.
- E. A completely new computer system could make the program run 6 times faster than it does currently.

7. Critics insist that government regulation of business has made it more difficult for American businesses to operate profitably and has destroyed their ability to compete with foreign producers of consumer goods. This argument is not compelling.

Government regulation of business was never as active in this nation as it was between the years 1975 and 1985, and in those years the average net worth of American family increased more than it had in any previous decade.

The author's argument would be most seriously weakened if it were true that

- A. 80 percent of all businesses started during the decade 1975-1985 lost money in their first year.
- B. More businesses declared bankruptcy during the period 1975-1985 than in any previous decade.
- C. During the decade 1975-1985, America imported more consumer goods than it exported.
- D. The increase in net worth of average American families during the years 1975-1985 was largely due to an increase in the value of residential homes.
- E. The average interest rate charged on business and home mortgage loans was higher during the decade 1975-1985 than it had been in any previous decade.

8 A recession is not caused by any economic force other than nation wide loss of confidence. If the economy is perceived as being unstable, banks are conservative in lending money, investors take fewer risks and hence economic growth is slowed.

Which of the following, if true, would most strengthen the argument above.

- A. A recession is getting effected by the response of the Federal Reserve's setting of interest rates.
- B. A recession can be brought on by the failure of a major bank that had been loaning money.
- C. Slowed economic growth is not the only result of a recession.
- D. When investors begin taking greater risks it is enough to stimulate economic growth.
- E. It is a fallacy to assume that economic growth is necessary for economic stability.

9. In an effort to increase revenues, Arik Air recently partnered with several airlines to create a joint frequent-flier program. In the new program, miles earned on all partner airlines can be combined for reward tickets valid on any airline in the partnership. Arik Air's CEO cites a recent increase in the number of passengers on all the partner airlines as evidence that the new frequent-flier program is having the desired effect. Industry analysts doubt the CEO's claim.

Which of the following, if true, best supports the analysts' positions?

- A. Air travel tends to be seasonal, with more passengers traveling during warmer months and holiday periods.
- B. The recent increase in passenger rates for all the partner airlines was predicted by the lowest rates of air travel in the last decade.
- C. Many travelers achieved reward tickets more quickly under the new frequent-flier program and redeemed them recently for free travel.
- D. Travelers redeemed frequent-flier rewards on Arik Air's partners more frequently than on Arik Air.
- E. A study of frequent-flier programs showed that they generally result in increased long-term airline revenues.

Instruction (30-35)

This question presents a sentence, part of which or all of which is underlined. Beneath the sentence you will find five ways of rephrasing the underlined part. The first of these repeats the original; the other four are different. If you think the original is best, choose option A, else pick one of the others

10 Neither my mother nor my father, both of whom are English professors, agree with my contention that James Joyce's novel Ulysses is overrated.

- A. Both of whom are English professors, agree with my contention that James Joyce's novel Ulysses is overrated.
- B. Both of whom are English professors, agrees with my contention that James Joyce's novel Ulysses is overrated.
- C. Both of whom are English professors, agree with my contention that Ulysses, a novel by James Joyce is overrated.
- D. Each of whom is an English professor, agree with my contention that James Joyce's novel Ulysses is overrated.
- E. English professors the both of them agrees with my contention that James Joyce's novel Ulysses is overrated.

11. A number of military personnel who served in Operation Desert Storm has encountered a series of unexplainable symptoms that were attributed to Gulf War syndrome.

- A. has encountered a series of unexplainable symptoms that were attributed to
- B. has unexplainably encountered a series of symptoms that have been attributed as
- C. have encountered a series of unexplained symptoms that have been attributed as
- D. have encountered a series of unexplainable symptoms that have been attributed to
- E. have encountered unexplainably a series of symptoms that were attributed as

12. Although Smith once championed the charity, he changed his mind after journalist linked its origin to a corrupt individual.

- A. once championed the charity
- B. had once championed the charity
- C. has once championed the charity
- D. was a champion of the charity
- E. championed the charity at one time

13. A swarm of desert honeybees, a phenomenon seen by few of the select scientists and entomologists, occur when a portion of the colony leave the current nest to find a new home.

- A. few of the select scientists and entomologists, occur when a portion of the colony leave
- B. a select few scientists and entomologists, only occurs when portions of the colony leaves
- C. very few selected scientists and entomologists, occur when portions of the colony leave
- D. only very few selected scientists and entomologists, occurs when a portion of the colony leaves
- E. only a select few scientists and entomologists, occurs when a portion of the colony leaves

14. Of the numerous decisions facing the Supreme Court this term, the question of an individual's right to die is for certain the more perplexing.

- A. the question of an individual's right to die is for certain the more perplexing
- B. it seems certain that the more perplexing is the question of an individual's right to die
- C. the question of an individual's right to die is certainly the most perplexing
- D. it seems certain the question of an individual's right to die is the most perplexing
- E. the question of an individual's right to die is certainly the more perplexing

15. The Supreme Court can effectively rule on a case in two ways, either by deciding to hear the case and handing down its judgment, or rather to simplify refuse to hear the case at all.

- A. either by deciding to hear the case and handing down its judgment, or rather to simplify refuse
- B. either by deciding to hear the case and handing down its judgment, or by simplify refusing
- C. by either deciding to hear the case and hand down its judgment or to simplify refuse
- D. to hear a case and to hand down its judgment, or to refuse simply
- E. either by deciding to hear the case and hand down its judgment, or the simple refuse

16. FICTITIOUS is to PSEUDONYM as BACKWARD is to.

- A. ANTONYM
- B. PALINDROME
- C. NAMESAKE
- D. EPONYM
- E. ANANYM

17 Select the pair which has the same relationship.

PAIN : SEDATIVE

- A. comfort : stimulant
- B. grief : consolation
- C. trance : narcotic

D. ache : extraction

18. AFTER : BEFORE

A. first : second

B. present : past

C. successor : predecessor

D. contemporary : historic

19. Which is the odd one out?

A. Paper

B. Tree

C. Man

D. Insect

E. Reptile

20. Bicycle is to Car as Man is to _____?

A. Ostrich

B. Centipede

C. Elf

D. Dog

E. Woman

1 D	2 A	3 C	4 A	5 A	6 C	7 D	8 D	9 D	10 B
11 D	12 E	13 C	14 C	15 B	16 E	17 B	18 C	19 A	20 D

1. (D). Subject is The number, which is singular (a number is plural). Eliminate (A), (B), and (C). (D) is shorter and simpler than (E).

2. (A). The idiom is see/saw...as and only (A) gets it right.

3. (C). Support for the argument are the identifying words. C: Increase egg consumption with health ads. P: None worth mentioning. A: Health is an issue for potential egg-eaters. (A) and (B) aren't bad, but they require you to infer a connection between eggs, health, and consumers' concerns rather than stating it outright. (C) clearly shows consumers are concerned with eggs' health effects. (D) weakens the argument. (E) is out of scope.

4. (A) ID the question: Assumption is an obvious key word. Work the argument: C: If people maintain the new priorities (changes in diet), the length and quality of their lives will increase. P: People are making changes to their diets (a subsidiary conclusion) because they'd rather be fit than eat foods that are filling and taste good. Gap: better diet—longer life and changes to diet—filling, good tasting foods. POE: (B) is irrelevant. If anything, this weakens by suggesting that changes in diet aren't enough. (C) is irrelevant. This goes along with the general idea, but it's not strictly necessary. In (D), the time of discovery is irrelevant. In (E), the goals of most citizens are irrelevant. You're only interested in the people who are acting on their goals. (A) fills in the assumption needed to make the subsidiary conclusion true. If eating filling, good tasting foods is inconsistent with staying in shape and looking fit, people who want to stay in shape and be fit are willing to give them up. They will maintain good habits and live longer, better lives.

5. (A) ID the question: Assume is an obvious key word. Work the argument: C: Sales of umbrellas at subway exits while it's raining will be greater than normal sales. P: People will be forced to buy umbrellas if they don't want to get wet. A: They don't have umbrellas with them. They are unwilling to get wet. POE: In (B), profitability of normally priced umbrellas is irrelevant. In (C), sales of normally priced umbrellas are irrelevant. (D) doesn't deal with the issue. (E) looks good, but it's not right. Potential customers might have umbrellas, but the issue is whether they have an umbrella with them. (A) makes the link. If it's raining and you don't have an umbrella, you feel the pressure to make a purchase. On some assumption questions, you may have a lot of difficulty spotting the necessary assumption due to the way the answers are worded. This is particularly true with answer choices containing

negative words such as not and never. One way to check whether an answer choice is a necessary assumption is to negate, or reverse, that answer. If the negation would weaken the argument, that answer is a necessary assumption.

6. (C) ID the question: The key words are casts the most doubt. Work the argument: C: The company will install the faster platform on its computer system. P: The company can't process its records fast enough anymore. Gap: New platform—fixing current problems. A: (1) Speed won't compromise accuracy; (2) the computer can run the program. (C) attacks assumption #2. (B) strengthens the argument; (A) is irrelevant (what if the platform the company has in mind can do the job?). (D) only addresses the company's expansion, and (E) is irrelevant.

7. (D) ID the question: The key words are most seriously weakened. Work the argument: C: The idea that government regulation hinders profits is invalid. P: From 1975–1985, when government regulation was very active, the average net worth of American families rose. Gap: Business profits—families' net worth. A: The profitability of businesses caused the average net worth of American families to rise. (D) provides an alternate reason why families were richer.

(A) Is 80% better or worse than normal? Irrelevant. (B) Isn't strong enough because it doesn't list bankruptcies as percentage of the whole. (C) Is out of the scope. If (E) were true, how would average net worth of families rise?

8. (D) Identify the question: The key word is strengthen. Work the argument: C: A recession is caused only by a national loss of confidence. P: If people think the economy is sluggish, they won't invest. (D) strengthens the link between investor confidence and economic growth by stating that greater investment strengthens the economy. (A) and (B) weaken the conclusion by offering other causes for a recession. (C) is backward; we don't care what recessions cause; we care what causes a recession. In (E), economic stability is never mentioned. Explanation :

9. (D) Read the question carefully. It asks you to support the analyst's position, not the CEO's. The analysts argue that the CEO is wrong to say that increase in passengers on partner airlines is evidence that the program is working to increase revenues. P: The joint frequent flier program allows miles earned on partner airlines to be combined for reward tickets on any airline. There's been an increase in the number of passengers on the partner airlines. You need to show that the frequent flier plan is NOT increasing revenues for Arik Air. POE: (A) is irrelevant. (B) is irrelevant. (C) goes along the CEO's position, not that of the analysts. (E) supports the

CEO's position. Only (D) supports the analysts' position.

10. (B) Another common subject-verb agreement issue arises when a sentence has a compound subject. The split is agree/agrees. With neither...nor, the verb agrees with the subject closest to it, so father is the subject. Eliminate choices with plural verbs. (A), (C), and (D) are out. Choice (E) contains awkward, unidiomatic wording (English professors the both of them). (B) is the answer.

11. (D) The number/a number is an ETS favorite. A number is plural; eliminate (A) and (B). The next split is attribute...as/attribute...to. The idiom is attribute to, so (C) and (E) are out. (D) is the answer.

12. (B) The tense shifts in the answer choices. Two events happened in the past, and one happened earlier than the other did (Smith championed the charity, and then he changed his mind). The past perfect tense is best to convey this meaning. (A), (C), (D), and (E) don't use the correct tense. Choose

(B).

13. (E) This example has modifier problems because only moves around in the answer choices and because of the select/selected split. Only should emphasize a select few scientists. However, it's probably easier to work the subject-verb error first. Start with the leave/leaves or occur/occurs split. The subject, swarm, is singular. Eliminate (A) and (C) because occurs is plural. Eliminate (B) because portions does not agree with leaves. The choice between (D) and (E) comes down to meaning. Selected means a group chosen by someone, while select means a special group. (E) is better at conveying the meaning of a small group of scientists who have been lucky enough to witness the swarm.

SECTION 3: GENERAL KNOWLEDGE**TIME: 20Mins**

In this section you will be required to answer 10 skill based questions. Each question should take about 1 minute to complete. There are 10 questions in this section to answer within 10 minutes

1. Sparking occurs when a load is switched off because the circuit has high

- (A) Resistance
- (B) Inductance
- (C) Capacitance
- (D) Impedance

2. International ohm is defined in terms of the resistance of

- (A) A column of mercury
- (B) A cube of carbon
- (C) A cube of copper
- (D) The unit length of wire

3. An open resistor, when checked with an ohmmeter reads

- (A) Zero
- (B) Infinite
- (C) High but within tolerance
- (D) Low but not zero

4. The number of electrons in the outer most orbit of carbon atom is

- (A) 3
- (B) 4
- (C) 6

(D) 7

5. A field of force can exist only between

(A) Two molecules

(B) Two ions

(C) Two atoms

(D) Two metal particles

Answers:

1. B 2. A 3. B 4.B 5.B

1. In Nigeria the standard voltage and the frequency is ____ respectively
- A. 230 V / 50 Hz
 - B. 302 V / 75
 - C. 420 V / 70
 - D. 530 V / 50

Answer: 230 V / 50 Hz

2. One of this is not a source of electricity.

- A. Sun
- B. Wind
- C. Water
- D. Hydrogen

answer: Hydrogen

3. ____ is the rate of doing work?
- A. Power
 - B. Energy
 - C. Strength
 - D. Fitness

Answer: Energy

4. PPM means?
- A. Prepaid meter
 - B. Permanent meter
 - C. Power meter
 - D. Prefer meter

Answer: Prepaid meter

5. Acronym NERC means ?
- A. Nigerian Electricity Regulatory Commission
 - B. National Electricity Regulatory Commission
 - C. Nigerian Electric Regulatory Commission
 - D. All of the above

Answer: Nigerian Electricity Regulatory Commission

6. Which one of the following is the practical unit of power?

- a) Watt (W)
- b) Kilowatt hour (kWh)
- c) Horse power (hp)
- d) Kilojoule (kJ)

Answer: c

Clarification: The practical unit of power is horse power (hp). Kilo watt is also another practical unit of power. 1 kilowatt = 1000 watt; 1 hp = 746 watt. It is usually used in reference to the output of engines or motors.

7. The power consumed by a 300 V bulb, having a resistance of 100 ohms, is 3 Watts.

- a) True
- b) False

Answer: b

Clarification: Electric power can also be calculated or represented in other ways, such as: Power = voltage \times current; Power = $\text{current}^2 \times \text{resistance}$; Power = $\frac{\text{voltage}^2}{\text{resistance}}$. In this case, we can use the equation - Power = $\frac{\text{voltage}^2}{\text{resistance}}$. Voltage = 300 V; Resistance = 100 ohms

$$\text{Power} = \frac{(300 \times 300)}{100}$$

$$= 900 \text{ Watts}$$

Therefore, the power consumed by a 300 V bulb, having a resistance of 100 ohms, is 900 Watts.

8. One watt is equal to _____

- a) one kilowatt per second
- b) one kilo joule per second
- c) one joule per second
- d) one joule per minute

Answer: c

Clarification: Watt is the SI unit of power. Power = $\frac{\text{work done}}{\text{time}}$. The SI unit of work done is the same as energy, that is, joule and that of time is seconds. Therefore, one watt is equal to one joule per second.

9. An engine uses 30 A of current. The resistance offered is 15 ohms. Calculate the power consumed by the engine in horse power.

- a) 18 hp
- b) 19 hp
- c) 17 hp
- d) 13500 hp

Answer: a

Clarification: Current used = 30 A; Resistance = 15 ohms

The required equation is: Power = current² × resistance

$$= 30 \times 30 \times 15$$

$$= 13,500 \text{ Watts}$$

We know that, 1 Watt = 746 horse power (hp). So, 13,500 Watts = 18.096 hp, which can approximately be equal to 18 hp.

Therefore, the engine consumes 18 hp power.

c) Electric power = electric work done × time taken
Physics Multiple Choice Questions on "Current Electricity – Electrical Energy & Power".

11. The SI unit of electrical energy is _____

- a) kilojoule (KJ)
- b) joules (J)
- c) watt (W)
- d) kilowatt (KW)

Answer: b

Clarification: Electric energy is defined as the total electric work done or energy supplied by the source of emf in maintaining the current in an electric circuit for a given time. The SI unit of electrical energy is joule (J). The commercial unit of electric energy is kilowatt-hour (kWh).

12. 1 kWh = _____

- a) $3.6 \times 10^6 \text{ J}$
- b) $3.6 \times 10^5 \text{ J}$
- c) $0.36 \times 10^6 \text{ J}$
- d) $0.36 \times 10^5 \text{ J}$

Answer: a

Clarification: The commercial unit of electric energy is kilowatt-hour (kWh).

1 kWh = 1000 Wh = $3.6 \times 10^6 \text{ J}$ = one unit of electricity consumed. The electric energy used in factories, industries and houses are measured in kWh.

13. Calculate the number of units of electricity used if a bulb of 100 W is kept on for 5 hours.

- a) 1 unit
- b) 0.1 unit
- c) 5 unit
- d) 0.5 unit

Answer: d

Clarification: The number of units of electricity consumed is

$$n = \frac{\text{total , wattage , times , time , in , hour}}{1000}$$

Total wattage = 100 W Time in hour = 5 hours

$$\text{Therefore, } n = \frac{100 \times 5}{1000}$$

$$= 0.5 \text{ units}$$

So, the number of units of electricity consumed is 0.5 units.

14. Electric energy is dependent on time.

- a) True
- b) False

Answer: a

Clarification: Yes, electric energy is dependent on time.

Electric energy = electric power × time = $P \times t$. Electric energy is basically the energy derived from electric charge. It can be calculated by multiplying the electric power of the body with the time taken for the power emission.

15. Kabir bought 5 new light bulbs of 50 W each in addition to the 7 bulbs he already had in his house which were also 50 W each. Calculate his electricity bill, if he keeps the new bulbs on for 5 hours and the older bulbs on only for 3 hours, and the cost of one unit of electricity is Rs. 60.

- a) Rs.136
- b) Rs.137
- c) Rs.138
- d) Rs.139

Answer: c

Clarification: New bulbs = 5; Old bulbs = 7; Total wattage of new bulbs = 5×50 ;

Total wattage of old bulbs = 7×50 ; Time the new bulbs are kept on = 5 hours;

Time the old bulbs are kept on = 3 hours

$$\text{The number of units of electricity consumed by new bulbs (n1)} = \frac{\text{total , wattage , times , time , in , hours}}{1000}$$

$$= \frac{50 \times 5 \times 5}{1000} = 1.25$$

The number of units of electricity consumed by old bulbs (n_2) = $\frac{50 \text{ times } 7 \text{ times } 3}{1000} = 1.05$ Total bill of electricity = number of units of electricity consumed \times amount for one unit of electricity

$$= (n_1 + n_2) \times 60$$

$$= (1.25 + 1.05) \times 60$$

$$= 138$$

Therefore, his electricity bill will be Rs. 138.

16. Identify the correct formula of electric power.

a) Electric power = $\frac{\text{time , taken}}{\text{electric , work , done}}$

b) Electric power = $\frac{\text{electric , work , done}}{\text{time , taken}}$

17. The resistance of a conductor varies inversely as

(a) length

(b) area of cross-section

(c) temperature

(d) resistivity

Answer: b

18. With rise in temperature the resistance of pure metals

(a) increases

(b) decreases

(c) first increases and then decreases

(d) remains constant

Answer: a

19. With rise in temperature the resistance of semi-conductors

(a) decreases

(b) increases

(c) first increases and then decreases

(d) remains constant

Answer: a

20 . The resistance of a copper wire 200 m long is 21 Ω . If its thickness (diameter) is 0.44 mm, its specific resistance is around

(a) $1.2 \times 10^{-8} \Omega\text{-m}$

(b) $1.4 \times 10^{-8} \Omega\text{-m}$

(c) $1.6 \times 10^{-8} \Omega\text{-m}$

(d) $1.8 \times 10^{-8} \Omega\text{-m}$

Answer: c

21. The property of a conductor due to which it passes current is called

(a) resistance

(b) reluctance

- (c) conductance
- (d) inductance

Answer: c

22. Conductance is reciprocal of

- (a) resistance
- (b) inductance
- (c) reluctance
- (d) capacitance

Answer: a