INTERNATIONAL NAUTICAL AND ENGINEERING COLLEGE

Diploma in Primary Teaching-LC- 0839
Education Psychology

December 2014

Index No...................
Answer all questions
Time 3 hrs

Total marks -100
Pass mark -50

Answers 05 questions: Part 01 is compulsory; Select other four questions from part B

Part 01

Select most appropriate answer

1. Psychology is the study of thought process and behavior of human and animals in their interaction with environment, whereas Educational Psychology can be defend as:
   (i)   Study of how children learn in an educational environment
   (ii)   Conduct experiments on how children learn
   (iii) Observation of how children learn
   (iv)   Teaching learning process

2. Classical conditioning learning theory is known as Stimuli and Response (S,R) Theory) this theory was initially developed by .
   (i)   E.L. Thondike   (ii) B.F. Skinner
   (iii) Ivan Pavlov v   (iv) J,B,Watson

3. Learning can be defined as:

   (i) Collecting new information   (ii) Doing new things
   (iii) Relatively permanent Behavioral change (iv) Stimuli and response

4. When a dog sees piece of meat salivation is:
   (i) Conditional stimuli   (ii) Conditional response
   (iii) Unconditional Response   (iv) Unconditional Stimuli

5. Behavioral learning theory "operant conditioning" developed by psychologist:

   (i) .J.B.Watson   (ii) B.F. Skinner
   (iii) Jean Piaget   (iv) Albert Bandura

6. According to Operant Conditioning learning theory.

    (i) Re-enforcement is given before the response
    (ii) Re-enforcement is given just after the behavior
    (iii)At the training stage
    (iv)Without re-enforcement nothing can be get done from, pigeons, rats, and cats.

7. People learn by observation and imitating the others behavior is known as Social learning, this theory was developed by

    (i) Jean Piaget   (ii) Albert Bandura

    (iii) B.F Skinner   (iv) Cofca

8. According to Jean Piaget learning is considered as change of Schemas, Process of changing schemas are as :

    (i) Assimilation, equilibrium, information and disequilibrium
    (ii) Equilibrium, disequilibrium, assimilation, and accommodation
    (iii)Assimilation, equilibrium, disequilibrium, accommodation
    (iv)IV.Accomodaion, disequilibrium, equilibrium and assimilation

9. Psychologist Abraham Maslow developed a Model for motivation and it is sequential, therefore it is called hierarchy of needs. According to Maslow's Hierarchy should be:

    (i) security needs, basic needs, affiliation needs, self-esteem needs and self-actualization needs
    (ii) self-esteem needs, basic needs, self-actualization needs, security needs and affiliation needs
    (iii) Self-actualization needs, self-esteem needs, affiliation needs, security needs, basic needs
    (iv)Basic needs, security needs, affiliation needs, self-esteem needs, self-actualization needs

10. Human memory consists of three stages therefore it is said multi storage model. In which memory can retain information up to one year or more with unlimited capacity.

    (i) Sensory memory   (ii) Short-term memory

    (iii) Long term memory   (iv) Sensory –short memory

Part II

Answer only four questions

1. (i)   What do you mean by learning?   (Marks 04)
    (ii) Briefly explain the behavioral learning (S.R.) Theory   (Marks 08)
    (iii) How do you apply behavioral learning theory in the classroom context (Marks 08)

2. (i)   What do you mean by social learning theory introduced by Albert Bandura   (Marks 10)
    (ii) How you use this learning theory in the school context explain with examples (Marks 10)

3. (i) Define what is memory   (Marks 02)

    (ii) Human Memory consists of three stages as sensory memory, short term memory and
          long term memory. Draw and explain the Atkinson model of human memory   (Marks 06)
    (iii) List out reasons for forgetting and explain briefly   (Marks 06)
    (iv) Explain memory development strategies and how do you use them in the classroom
                                                                                  (Marks 06)

4. Abraham Maslow developed motivational theory known as hierarchy of needs.
    (i)   What do you mean by motivation? Explain   (Marks 04)
    (ii) Draw and explain hierarchy of needs   (Marks 08)
    (iii) Explain how you use hierarchy of needs to motivate children in the school (Marks 08)

5. (i) What is meant by intelligence?, define   (Marks 04)
    (ii) Name the components of multiple intelligence and briefly explain   (Marks 08)
    (iii) How do you use multiple intelligence in the school context?   (Marks 08)

6. Write brief notes on four of the followings
    (i)   Fluid intelligence and crystal intelligence
    (ii)   Operant conditioning
    (iii) Trial and error method of learning
    (iv)   Concrete and abstract concepts
    (v)   Behavioral psychology and cognitive psychology   (Marks 20)

COLOMBO INTERNATIONAL NAUTICAL AND ENGINEERING COLLEGE

Diploma in Primary Teaching-LC- 0839
English Language and Communication

December 2014

Index No.......................

Answer all questions
Time 3 hrs

Total marks -100
Pass mark   -50

(1) Read the article given below and answer the questions that follow.

No, is the two-letter word, spoken calmly and quietly, that challenged our way of life more than some wars have. The word was spoken by a brave but gentle person who did not want attention.
In 1955, bus companies in any parts of the country allowed white riders to sit in front, but required blacks to sit in the back.

In Alabama, a 42-year-old black woman named Rosa Parks climbed aboard a city bus to go home from work. It was past 6 o'clock and she was tired.
A white man asked Mrs. Parks to stand at the rear of the bus. Her feet ached. So she simply said "No".
Her answer was reported to the driver. He called the police. But still Mrs. Parks wouldn't move. Rosa Parks was arrested at the next stop. She was sent to jail. Within two hours, 50 people appeared at the jail to sign a dollar 100 bond. And she could go home.

The next day blacks did not ride the buses. They continued not to ride the buses for 381 days-over year. By the time the bus company was losing money because it had so few riders.

Martin Luther King and other leaders, provided riders in private cars for the blacks who normally took the buses. They were arrested for operating "taxis" without licenses. All these activities ended and King was released from prison when the Supreme Court came up with its ruling. Treating people differently on buses was declared; against the law, Mr. Parks had won great victory, simply by saying "No".

1.   Names of two people are mentioned in the passage. What are they?
        ....

2.   What is the period mentioned in the article?
        ....
        Write in few sentences the incidents that took place on a particular day mentioned in the passage.

....
....
....

4. What happened when the blacks did not travel by bus for over a year?
....
....
....

5. How did they travel to work then?
....
....

6. What happened to the people who provided transport for the blacks?
....
....
....

7. When were they released finally?
....
....
....

8. What does 'Blacks' in the last paragraph refer to?
....
....
....

(15 marks)

(2) Underline the correct word from those given within brackets.

(A) *Bread Price Rises*

(As, Though, Because) still baking on old flour stocks, bakers yesterday increased the price of bread *(of, in, by)* Rs. 1.50 in Colombo and Rs. 2 in other areas *(while, as soon as, because)* the price of other products were also *(gone, going, go)* up. This came after the monopoly Prima Company increased the price of flour from Rs. 7 to Rs. 20 a kilo. Big time bakers told that there *(will be, is, would be)* no immediate hike *(because of because, owing to)* they still had old stock *(for, of with)* flour, but many of the small bakers were *(apparent, apparently)* not prepared to give even a few days grace to the consumer and the price of bread *(is raised, raised, was raised)* yesterday.

(B) *Independence Celebrations Nuwara Eliya.*

The theme of the 25ᵗʰ Independence celebration in Nuwara Eliya was '' Peace and *(prosperous, prosper, Prosperity)* for a *(good, better, best)* tomorrow among all communities in Sri Lanka." The National Flag was hoisted at all points including the plantation sector, with
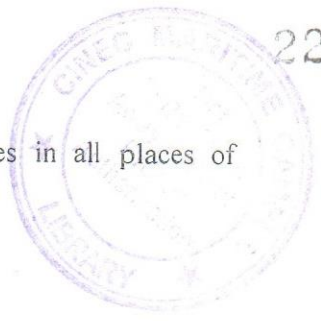
(tradition, traditional, traditionally) displays and religious ceremonies in all places of worship.

(C) National Drive to Conserve Medicinal Plants

The Minister of Environment and Natural Resources will seek the *(assist, assistance, assistant)* of priests, village community leaders and ayuruvedic physicians for a national drive aimed at *(conserve, conservation, conserving)* Sri Lanka's valuable and threatened medicinal plant species. The programme *(which, what, of which)* will commence in the Kegalle and Kurunegala districts is expected to ensure the *(survive, survival, surviving)* of about 200 medicinal plants now under threat *(due to, because, since)* overuse and illegal trading. The place of worship *(who, which, what)* have adequate space for *(set, setting, sets)* up plant nurseries and those *(which, who, whose)* have willingness to join this programmed will be selected under this initiative.

(20marks)

(3) Fill in the blanks with the correct form of the verb given below. You may use Active or Passive as may be suitable.

The police team ....(investigate) into the Rs. 17 million bank robbery at Anuradhapura has found that the bank officers .... (not/ take) action to repair the alarm bell connected to the safe for the past four years. Police have said that the alarm bell........................ (not / ring) on the day of the robbery and added if the bell had been in order it ....(activate) automatically when robbers .... (break open) the padlocks of the bank door.

The Assistant General Manager of the bank says that no security personnel .... (deploy) for the protection of any of the bank's branches in the areas as other security measures .... (take) for the protection of those banks. Security personnel are deployed only during daytime when banks. .... (be) open for the public. He further says that they. .... (not / deploy) any security personnel at present at this branch as they..................... (obtain) an insurance cover for the money in the safe.

(10 marks)

(4)Rewrite each sentence beginning as shown, so that the meaning stays the same.

- If you don't do it, you will be in danger.

  Unless you ....

- I didn't have an umbrella with me, so I got wet.

  I wouldn't..

- You dial this number to contact him.

  If you..

- They promised me a present.

  A present ....

- We ought to start the work now.

  It's high time ....

- Don't shout all the time. It's so annoying.

  I wish ....

- I am very sorry. I couldn't attend your birthday party.

  I really wish. ....

- She was not there, that's why I couldn't speak to her.

  If she ....

- One of my friends always gives me calls for nothing.

  I ....

- It's better if you can leave now itself

  You'd ....

(10 marks)

(5) Join the following pairs of sentences with the words given.

- My friend Kamal has decided to buy a new car. His car was stolen last week (whose)

  ....

- A boy was sitting next to me in the exam hall. He told me the answers. (who)

  ....
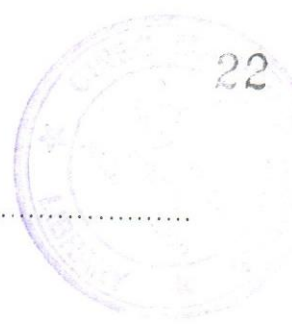
° My purse was stolen this morning. I contained only Rs. 10. (which)

....

° This is a wonderful present. I'm extremely grateful for it. (which)

....

° Mr. Anil is a parliamentarian. He lives next door. (who)

....

° There is a severe drought in the country at present. No power cuts are expected (although)

....

° My father did not join our trip. My mother did not join our trip. (neither ..... nor)

....

° Privatization takes place at the right time. It will attract foreign investors. (if)

....

° It rained very heavily. We could not enjoy our trip (so .... (that)

....

° They cleared the road. People can't enter that area. (unless)

....

(10 marks)

(6) Underline the most suitable word/ words to complete the sentence.

i.   I'm afraid I .... come to your party last night. I was busy.

   (a) can't   (b) couldn't   (c) mustn't   (d) shouldn't

ii.   A : I had a very boring evening at home yesterday.

   B: Why did you stay at home? you .... to the cinema.

   (a) could go (b) must go   (c) could have gone   (d) must have gone

iii.   Take an umbrella with you when you go out. It .... rain.

   (a) must   (b) should   (c) has to   (d) might

iv.   I'm sorry for being unable to meet you yesterday. I ....work till late.

(a) must   (b) had to   (c) might   (d) could.

v.   There is plenty of time for the train. You ………… be hurry.

     (a) may not   (b) mustn't   (c) needn't   (d) have to

Fill in the blanks with a suitable preposition.

- Kamal is leaving next week, and I am thinking ………… applying for this post.

- My friend has no money of his own. He is totally dependent ……………his parents.

- You look stupid with this hair cut. Everybody will laugh ……………you.

- The film was different …………… what I had expected.

- The people were afraid …………… the coming situation. So they moved out of the place.

(10 marks)

(7)Read the passage and answer the questions.

A car drew up outside the Swan Hotel and a young man got out pausing only for an instant to see that he had come to the right place. He went into the hotel and rang the bell on the counter of the bar.

Mrs. Crump, the landlady who was busy in the kitchen at the time, hurried out, wiping her hands. The young man raised his hat. "Excuse me," he said. "I'm looking for my uncle, Mr. White. I believe he is staying here".

"Oh dear," said the young man, looking disappointed. "I understood that he was going to stay here until the end of the month. At last, that is what his servant told me when I rang up his house." "Quite right," said Mrs. Crump "He intended to stay here the whole of July as he always does. But yesterday he got a telegram saying that one of his relatives was ill. So he caught the train back to London immediately"

"I wish he had let me know", the young man said. "I wrote him a letter saying that I was coming. I've had all this trouble for nothing. Well, since he isn't here, there is no point in waiting." He thanked Mrs. Crump and went out. Mrs. Crump went to the window and watched him drive off. When his car went out of sight, she called out.

"You can come out now, Mr. White. He's gone."

Mr. White came out of the kitchen, where he had been waiting. "Many thanks Mrs. Crump" he said laughing. 'You did that very well. These nephews of mine never give me any peace. That young

....

....

....

....

(15 marks)

(08) Write an essay on one of the following. *Use not less than 250 words.*

(1) English education in Sri Lanka

(2) Tourism industry

(3) Sri Lanka can be developed only through agriculture

Or

Develop the following into a story

It was a sunny day. I thought of experiencing something different and thrilling. So, I hired a sailing boat and started to sail in the sea….

(20 marks)
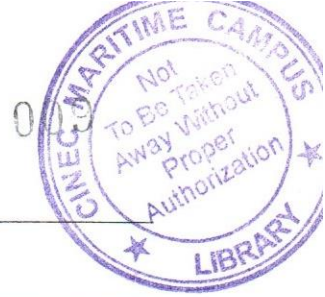
Diploma in Primary Teaching-LC- 0839

Primary Mathematics

December 2014

Index No................

Time 03 hrs

Total marks -100
Pass mark   -50

PART – I

- **Select the most suitable answer and underline it**

1. The primitive man kept a record of his herd of cattle by using the concept:
   a) Counting
   b) One to one correspondence
   c) Ordering
   d) Relationship

2. When you change the arrangement of number of object the number will not change. This is an example of the concept of:
   a) Inclusion
   b) Invariance
   c) Order
   d) Relationship

3. A plain figure which has bilateral symmetry has two axes of symmetry and rotational symmetry of order two is
   a) A square
   b) A rectangle
   c) A parallelogram
   d) A trapezium

4. It is easy to understand that the numeral 3 is less than 5 and it is included in the set of 5. If we develop the concept
   a) Neighborhood
   b) Inclusion
   c) Invariance
   d) Relationship

5. The total number of subtraction facts between 'o' and '9' is:
   a) 45
   b) 54
   c) 81
   d) 100

6. To discover the result of addition or subtraction of two single digits the teaching/learning aids that can be used are:
   a) Number rods
   b) Avon number cards
   c) Addition subtraction slide rulers
   d) All of the above aids

7. In developing the mathematical concepts we use the experiences in the following order:
   a) Concrete, Visual, Abstract
   b) Visual, Concrete, Abstract
   c) Abstract, Visual, Concrete
   d) Concrete, Abstract, Visual

8. A teaching / learning aid used by primary pupils found that two is twice the length of one, three is thrice the length of one. The T/L aid is a set of:
   a) Counters
   b) Number Rods
   c) Avon number cards
   d) Flash cards with number

9. The objects that are used in concrete stage of experiences are:
   a) Solid objects
   b) The objects that can be manipulated
   c) Objects that are found in the environment
   d) Unmovable objects

10. The sequence of steps used to develop the concept of measurements are:
    a) Ordering, Transitivity, Comparing, Conservation
    b) Comparing, Ordering, Transitivity, Conservation
    c) Transitivity, Comparing, Ordering, Conservation
    d) Conservation, Comparing, Ordering, Transitivity

PART – II

1.0 Explain how you would use three levels of experiences used to subtract two single digits less than 9.
Draw charts to show how the relevant activities are performed
(Concrete, Visual and Abstract Experiences)

2.0 Abstract method of giving the two times table is assumed to be unsuccessful, how would you use the activities so that primary pupils can understand the two times table meaning fully?

3.0 Explain the meaning of the term 'division'
Describe the procedure used to introduce the division of numbers by two.

4.0 Explain how you would introduce the place value of numbers from 10 to 19
You may use drinking straws, Eakels or Avon number cards

5.0 For the addition of two like fractions we can use fractional cutouts/ or visuals and finally abstract methods.
Explain the sequence of steps that you would use to introduce the above addition.

6.0 You are expected to introduce the **Four Main Directions (N.S.E.W)** to the primary pupils.
Write the objectives of this lesson
How would you find out whether the objectives are achieved?

7.0 A pupil observed that the number of vehicles passed through a certain place on a road from 8.00 am to 10.00 am as follows:
Cars 12, Vans 08, Busses 06, Three wheelers 10, Motor bikes 14.
Draw a bar graph to represent this data
Prepare a set of six questions to interpret the graph.

LC 0840

COLOMBO INTERNATIONAL NAUTICAL AND ENGINEERING COLLEGE

SECONDARY MATHEMATICS – LC 0840

Paper - II

September 2015

Index No..........................

Time 03 hrs

Total marks -	100
Pass mark -	50

Answer all questions

1)
  i.   Prove that the sum of the angles of a triangle are equal to 180°.   [10 marks]
  ii. Prove that when the side of a triangle is produced the exterior angle so formed is equal to the sum of the interior opposite angles.   [10 marks]

2)   A line cuts three parallel lines at A, B and C Such that AB = BC. Another line cuts parallel lines at P, Q and R. Draw lines through P and Q Parallel to AC and use congruent triangles to prove that PQ = QR .   [20 marks]

3)
  i.   The diagonals of a rhombus are 12 cm and 9cm long. Calculate the length of the sides of the rhombus.   [10 marks]
  ii. ABCD is a parallelogram. Parallel lines BE and DF meet the diagonal AC at E and F respectively. Prove that: (a)   AE = FC (b) BEDF is a parallelogram.   [10 marks]

4)
  i.   Calculate the exterior angle of a regular polygon in which the interior angle is four times the exterior angle. Hence find the number of sides in the polygon.   [10 marks]
  ii. ABCD is a Quadrilateral in which < A = 86°, < C = 110°, < D = 40°. The angle ABC is bisected to cut the side AD at E. Find the < AEB.   [10 marks]

5)
  i.   Two circles of radii 16 cm and 9 cm touch each other externally. A common tangent to the two circles touches them at R and S. Calculate the length of RS.   [10 marks]
  ii. The three points X, Y and Z are marked on the circumference of a circle, so that YZ is a diameter. If YZ = 62 mm, XZ = 41 mm. Find XY.   [10 marks]

COLOMBO INTERNATIONAL NAUTICAL AND ENGINEERING COLLEGE

SECONDARY MATHEMATICS – LC 0840
Paper - I

September 2015

Index No.........................

Time 03 hrs

Total marks - 100
Pass mark - 50

1)

   i. State the Commutative Law for Addition and write two examples to show the law.

[2 marks]

   ii. What are Integers, and the Rational Numbers?

[2 marks]

   iii. Write the following numbers in the Table of Number periods (Zones)
- a) 2456798
- b) 500782903
- c) 1000567683

Write the above three numbers in words.

[6 marks]

2)

   i. Find the value of $(3.48)^2 + 2(3.48)(1.52) + (1.52)^2$

[2 marks]

   ii. Factorize completely $2x^3 - 9x^2 + 10x - 3$ given that $x - 3$ is one of the factors.

[2 marks]

   iii. Write down the expansion of $(x + y)^2$, given that $x^2 + y^2 = 37$ and $x + y = 7$ find the value of xy.

[3 marks]

   iv. Solve the simultaneous equations:
- a) $x - 2y = 1$
- b) $Xy - y = 8$

[3 marks]

3)

   i. An alloy containing $8 cm^3$ of copper and $7 cm^3$ of tin has a mass of 121 gm. A second alloy containing $9 cm^3$ of copper and $11 cm^3$ of tin has a mass of 158 gm. Find the densities of copper and tin in g/cm^3

[5 marks]

   ii. A motorist travels x km at 40 km/h and y km at 50 km/h. The total time taken is 2 ½ hours. If the time taken to travel 6x km at 30 km/h and 4y km at 50 km/h is 14 hours. Find x and y.

[5 marks]

LC 0840 - Final Exam

4)

    i.   Two numbers are in the ratio 5: 7
        When 15 is added to each the ratio changes to 5: 6
        Calculate the two numbers   [5 marks]

    ii.   A foreman and 7 men together earn Rs. 5200 Per week while two foremen and 17 men together earn Rs.12200 per week.
        Find the weekly wages of a foreman.   [5 marks]

5)

    i.   A man left 1/3 of his property to his eldest son, ¼ for his second son, and 1/5 to third, while legal and other expenses absorbed 2/15. Rest was left to a charity which obtained Rs. 12000/= what was the whole amount of the property?   [5 marks]

    ii.   How many trucks would be wanted to carry 175 tonnes of coal at the rate of 12 trucks for 100 tonnes.   [5 marks]

6)

    i.   Find the value of the number 0.2388^2 [3 marks]
    ii.   Find the square root of 0,001698   [3 marks]
    iii. Find the value of [1/0.7325 -1/ 0.9617]   [4 marks]

7)

    i.   The sum of the first ten terms of an arithmetic progression is 20 and the seventh term is 5 Calculate the first term, Common difference and the sum of the first thirteen terms of this progression.   [5 marks]

    ii.   The second term of a geometric progression is – 8 and the fifth term is 1. Find the common ratio and the first term of this progression.   [5 marks]

8)

    i.   A balanced diet should contain 12% calorie intake from proteins, 25% calorie intake from fats, and the rest from carbohydrates. If a certain person is prescribed 1300 calories per day, find his calorie intake from each of these per day.

                                        [5 marks]

    ii.   In a bank, I deposited a sum Rs7300, and took an interest of Rs 400, after a certain period. If the simple interest rate was 10% per annum, what was the time after I took the Interest?   [5 marks]

9)

    i.   Find the average mass of 22 boxes if 9 have a mass of 12 kg. 8 have a mass of 12 ½ kg, and 5 have a mass of 11 ¾ kg. [5 marks]

    ii. A line is to be divided into three parts in the ratios 2:3:11. If the line is 840 mm long, calculate the length of each part. [5 marks]

10)

    i.   Solve the following equations.

        a) $4x^2 - 3x - 2 = 0$ [3 marks]

        b) $5x^2 - 4x - 1 = 0$ [3 marks]

        c) $x(x + 4) + 2x(x + 3) = 5$ [4 marks]

COLOMBO INTERNATIONAL NAUTICAL AND ENGINEERING COLLEGE

Diploma in Teaching Mathematics – LC 0840

Mathematics Methodology

September 2015

Index No.....................

Time 03 hrs

Total marks - 100
Pass mark - 50

Answer all questions

1) Write a lesson plan for grade 08, 40 minutes lesson on the following competency.
   "The students will discover the conditions necessary for congruency of triangles"

   Your plan should include introduction, presentation, activities and evaluation.

2) There is a saying that, "Mathematics is the father of Science"

   I.   Give 03 reasons to prove that the above saying is correct.
   II. Write the steps of the scientific method.
   III. Give 03 instances where you can apply the scientific method for the teaching of mathematics.

3) [a] What are the co-curricular activities?
   [b] Mention 04 co-curricular activities you can use in teaching mathematics.
   [c] Describe in detail how you use them in your teaching process.

4) Activity based teaching is effective in any subject area.
   Suppose you have to teach about trigonometric ratios and their applications to grade 10.

   Write down the method you will use for the teaching of the above, with all the activities.

5) Many students consider mathematics as a difficult subject and many fail in mathematics at the G.C.E (O/L)
   I. Can you suggest at least 05 reasons for the above matter?
   II. What steps will you take or adopt to solve this problem.

LC 0841

COLOMBO INTERNATIONAL NAUTICAL AND ENGINEERING COLLEGE

Diploma in Teaching Science – LC 0841

Science Methodology

September 2015

Index No.....................

Total marks -   100
Pass mark   -   50

Time 03 hrs

Part – I

Underline the most correct answer.

1) Teaching is a,
    i. Job
    ii. Profession
    iii. Career
    iv. Service

2) Today, the teaching should be,
    i. Teacher centered
    ii. Student centered
    iii. Society centered
    iv. Science centered

3) Which of the following methods should be stored under paraffin oil?
    i. Fe
    ii. Cu
    iii. Al
    iv. Na

4) Group activities will develop,
    i. Cooperativeness
    ii. Leadership qualities
    iii. Patience
    iv. All the above

5) Sometimes explosions can occur when preparing,
    i. Oxygen gas in the lab
    ii. Hydrogen gas in the lab
    iii. Carbon Dioxide gas in the lab
    iv. Ammonia gas in the lab

6) Which of the following solution should be stored in amber coloured bottles?
   i.   Sulfuric acid
   ii.   Sodium hydroxide solution
   iii.   Silver nitrate solution
   iv.   Copper sulfate solution

7) What is the type of fire extinguisher that should be used for fires caused due to petrol?
   i.   Carbon dioxide extinguisher
   ii.   Water extinguisher
   iii.   Sand extinguisher
   iv.   Foam extinguisher

8) Which <u>one</u> of the teaching method you consider most suitable?
   i.   Lecture
   ii.   Discussion
   iii.   Self-learning situations
   iv.   Giving notes

9) <u>Statement A</u>
   You hear the thunder after seeing the lightning.

   <u>Statement B</u>
   Light travels faster

   i.   Statement A and B both correct.
   ii.   Statement A and B both incorrect
   iii.   Statement A correct B incorrect
   iv.   Statement A incorrect B correct

10) Sound travels in,
   i.   Straight lines
   ii.   Waves
   iii.   Compressions and rarefactions
   iv.   Vacuum

11) A rainbow is formed due to,
   i.   Dispersion of light
   ii.   Refraction of light
   iii.   Converging of light
   iv.   Diverging of light

12) In an electrical circuit the ammeter, voltmeter and switch should be connected respectively in,
    i.   Series, parallel, series
    ii.   Parallel, series, series
   iii. Series, series, parallel
    iv. Parallel, parallel, series

13) Which of the following person 1st carried out experiments regarding heredity,
    i.   De vos
    ii.   Lamark
    iii. Gregor mendel
    iv. Charles Darwin

14) If you want to show a typical plant cell, under the microscope, which plant's part will you use?
    i.   Hibiscus leaf
    ii.   Underground part of onion
    iii. Potato tuber
    iv. Shoe flower

15) Two students constructed 02 circuits to find out whether an electric current will pass through a salt solution

Carbon rods

A   B
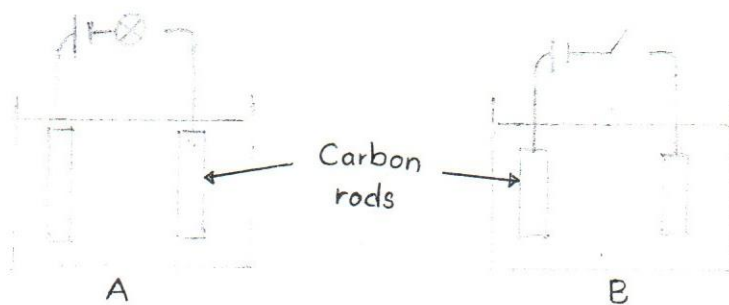
    i.   A is correct. B incorrect
    ii.   A is incorrect. B correct
    iii. A and B both correct
    iv. A and B both incorrect

16) Few pieces of iron powder were put into a $CuSO_4$ $_{(aq)}$. Which of the following is <u>not</u> an observation in the above activity?

 i. Blue colour of $CuSO_4$ $_{(aq)}$ fade

 ii. Iron powder dissolves

 iii. A brownish residue formed

 iv. Copper deposits

17) When chemical fertilizers are added to some balsam plants on a hot day, the balsam plants wilted.

 The reason is,

 i. No water for the cells

 ii. Water came out of the cells (exosmosis)

 iii. Excess transpiration

 iv. Chemical fertilizer was harmful

18) Students note books showed be corrected,

 i. Hourly

 ii. Daily

 iii. Weekly

 iv. Monthly

19) Teachers should write lesson plans,

 i. For the term

 ii. Monthly

 iii. Weekly

 iv. daily

20) Any lesson needs a good and an interesting introduction because,

 i. It should attract the attention of students.

 ii. IT makes students to think

 iii. It will develop creativeness

 iv. It helps for all the above I, II and III.

Part - II

Question one is compulsory. Answer all questions.

1) Write a detail lesson plan for grade 08, 40 minutes lesson on the competency.

   "The students will identify the parts of a flower"

   Your lesson plan should include introduction, presentation, activities and evaluation.

   (40 marks)

2) [I]   State 04 aims of teaching Science.

   [II]   Mention 04 co-curricular activities suitable for Science students.

   [III]   Describe in detail, how you make use of 03 of the above in secondary science teaching.   (30 marks)

3) [I]   Why are we using classifications in science teaching.

   [II]   How will you introduce simple dichotomous classification to grade 06 students.

   [III]   Classify the following animals using <u>only</u> their <u>external</u> features.

   (Frog, garden lizard, ant, earthworm, snail, snake, fish, parrot)

   (30 marks)

4) There is a belief that, "Chemical fertilizer increase the yield of paddy plants"
   How will you test the validity of the above belief using the scientific method?

   (30 marks)

5) Audio-visual teaching aids will help to get the attention of students and also they will increase the memory.

   [I]   State 04 audio-visual aids that you can use in your science lessons.

   [II]   Describe how you will make use of them in your teaching, with examples.

   (30 marks)

COLOMBO INTERNATIONAL NAUTICAL AND ENGINEERING COLLEGE

DIPLOMA IN SECONDARY SCIENCE – LC 0841
Paper II - Biology

September 2015

Index No.....................

Total marks -   **100**

Time 03 hrs

Pass mark -   **50**

Part - I

Underline the most correct answer.

1) A spider has,
   - i.   4 legs
   - ii.   6 legs
   - iii. 8 legs
   - iv. 10 legs

2) Which of the following foods contain much vitamin A?
   - i.   Oranges
   - ii.   Carrots
   - iii. Meat
   - iv. Milk

3) Which of the following foods is harmful to persons suffering from kidney diseases?
   - i.   Sugar
   - ii.   Meat
   - iii. Fruits
   - iv. Vegetables

4) The mineral needed for the formation of hemoglobin is?
   - i.   Calcium
   - ii.   Iron
   - iii. Iodine
   - iv. Phosphorous

5) Digestion begins in the mouth. Which of the following statement is INCORRECT?
   i. The tongue aids in the digestion of the food
   ii. The saliva changes some of the starches in the food to sugar
   iii. The tongue keeps the food in place in the mouth while the food is being chewed
   iv. The digestive juices can react more easily with the food when chewed

6) Excess glucose in the human body is stored in the liver as?
   i. Glycerol
   ii. Glycerine
   iii. Glycogen
   iv. Glucose

7) Which type of blood vessels carries blood away from the heart?
   i. Veins
   ii. Arteries
   iii. Capillaries
   iv. Arteries, veins and capillaries

8) What is the organ that pumps blood all throughout the human body?
   i. The lungs
   ii. The heart
   iii. The kidneys
   iv. The blood vessels and capillaries

9) Which one of the following is **not** an excretory product?
   i. Urine
   ii. Sweat
   iii. Carbon dioxide
   iv. Faces

10) Which of the following is not an endocrine gland?
   i. Thyroid gland
   ii. Hypothalamus
   iii. Salivary gland
   iv. Pituitary gland

11) The part of the cell in which the reaction that supply energy for vital activities take place is the?
   i. Chloroplast
   ii. Ribosome
   iii. Golgi body
   iv. Mitochondrion

12) Why is oxygen important to blood and to the cells?
- i.   Oxygen helps the blood to clot
- ii.   Oxygen brings food to the cells
- iii.   Oxygen is necessary for cell growth and energy
- iv.   Oxygen is not important – Carbon dioxide is the most important substance to the body

13) The circulatory system is composed of,
- i.   The heart, blood and blood vessels
- ii.   The heart, the brain and the lungs
- iii.   The lungs, the blood and the blood vessels
- iv.   The brain, the heart and the blood vessels

14) Where are red blood cells made?
- i.   Heart
- ii.   Lungs
- iii.   Bone marrow
- iv.   Kidneys

15) The name of the part between the mouth and the stomach is?
- i.   The oesophagus
- ii.   The rectum
- iii.   The small intestine
- iv.   The large intestine

16) Which of the following does NOT manufacture digestive juices?
- i.   Liver
- ii.   Kidneys
- iii.   Stomach
- iv.   Pancreas

17) The main functions of the digestive system are?
- i.   Ingestion and digestion
- ii.   Propulsion and secretion
- iii.   Absorption and elimination
- iv.   All of the above

18) The movements that propel the food particles through the digestive tract are called?
- i.   Peristalsis
- ii.   Rhythm
- iii.   Mastication
- iv.   Osmosis

19) Which of the following is NOT secreting enzymes?
- i.   Liver
- ii.   Gallbladder
- iii.   Pancreas
- iv.   Spleen

20) Salivary amylase secreted into the oral cavity starts the digestion of,
- i.   Proteins
- ii.   Starch
- iii.   Lipids
- iv.   Amino acids

(Marks – 1x20 = 20)

PART - II

Answer all questions. (Each question 30 marks)

01.   Human blood circulatory system is an important system in regulating most of the functions.

- I.   Name 04 functions of blood circulatory system.
- II.   Indicate the path of blood which absorbs nutrients from small intestine travel to lungs.
- III.   Name two valves present in heart. Indicate their functions.
- IV.   Name two diseases related to blood and give causes for each of them.
- V.   What do you understand by the double circulation in mammals?

02.
- I.   Draw a labeled diagram of a human digestive system.
- II.   Explain the process relevant to digestive system.
- III.   Name two diseases relevant to digestive system.
- IV.   [a]   What is the main function of the small intestine?
         [b]   What are the adaptations it has to carry out this function?
- V.   What are the secretions of pancreas?
- VI.   Describe the functions of those secretions, separately.

03. Plants are very useful to us.
    I. Draw and label the parts of a dicot plant.
    II. State 03 ways that a monocot plant differ from dicot plant.
    III. Draw and label the parts of any named flower.
    IV. Name the processes that need for the formation of seeds in a flower.

04. I Draw and label the parts of a root hair cell.
    II Explain how water enters a root hair cell.
    III How will you demonstrate osmosis by a simple experiment?
    IV [a] Name the factors that cause the rise of sap in plants.
    [b] Give an activity to demonstrate one of the above factors.
    [c] Name 02 precautions you have to take in the experiment you mentioned.

05. Genetics is an important topic useful for biologists as well as agriculturalists.
    I. Describe the activities done by 'Gregor Mendel', the father of Genetics.
    II. Explain the results of Mendel's 1st law indicating the phenotypes and genotypes.
    III. State 02 advantages of studying Genetics.

06. I Draw and label the parts of plant cell.
    II Mention 03 ways how an animal cell differs from a plant cell.
    III Classify the following animals using a dichotomous key, using only their external characteristics:
    Parrot, Earthworm, Snail, Frog, Garden lizard, Mosquito, Cockroach.

(Marks – 30x6 = 180)

Colombo International Nautical and Engineering College

Winner -World Class - Global Performance Excellence Award 2012- Education Organization
Winner -International Asia Pacific Quality Award – 2010 - Best in Class- Education Organization
Winner - Sri Lanka National Quality Award 1999 – 2004 – 2009 – 2014
Approved for Quality Management System

REPEAT EXAMINATION QUESTION PAPER
DEPARTMENTAL DOCUMENTED INFORMATION REFERENCE –QP

EDUCATION & TRAINING COURSE: DIPLOMA IN TEACHING MATHEMATICS AND SCIENCE
COURSE CODE: LC – 0844
SUBJECT: SECONDARY MATHEMATICS

Faculty	Department / Section/Division
Management, Humanities and Social Sciences	Education and Languages

INSTRUCTIONS TO CANDIDATES	Date: 2019.08.03
Answer only FIVE Questions.	Duration of the examination = 02 hours
Total Marks = 100	Candidates could be disqualified if you violate examination rules.
	Candidates are not allowed to communicate with and disturb fellow candidates during the examination.

* **Answer only FIVE Questions.**

Question 01

a) Factorize: $x^2 + 12x + 35$

b) Find the values of *x and y* which satisfies the following equations:
$x + y = 5, x^2 = 1$

c) Find the roots of the given the quadratic equation:
$2x^2 - 9x - 5 = 0$

(20 marks)

Question 02

Find the dimensions of the rectangle that has a length 3 meters more that its width and a perimeter equal in value to its area?

(20 marks)

Question 03

a) An urn contains 5 red marbles and 3 black marbles. Two marbles are drawn *with replacement* from the urn. What is the probability that both of the marbles are black?

b) If $p(A \cap B) = \frac{3}{4}$, $p(A \cup B) = \frac{4}{5}$ and $p(B) = \frac{1}{6}$ find
$p(B')$, $p(A)$ and $p(A \cap B')$

(20 marks)

Question 04

a) What is the gradient of the curve y = 2x³ at the point (3,54)?

b) If $f(x) = \frac{1}{4}x^4 - \frac{7}{3}x^3 + 7x^2 - 8x + 15$ find $f'(x)$

(20 marks)

Question 05

Given the following equation

$$9x^2 + y^2 = 36$$

i. Find the x and y intercepts of the graph of the equation.
ii. Find the coordinates of the foci.
iii. Find the length of the major and minor axes.
iv. Sketch the graph of the equation.

(20 marks)

Question 06

If $A = \begin{pmatrix} 1 & 3 & -2 \\ 2 & 3 & 0 \\ 0 & 1 & -1 \end{pmatrix}$

i. Find *adj* A
ii. Verify A *adj* A = |A| I
iii. Find A⁻¹

(20 marks)

Question 07

Nimal is studying the daily mean wind speed for Camborne using the large data set from 1987.

The data for one month are summarized in the following Table.

Winspeed n/a	6	7	8	9	11	13	14	15	16
Frequency	1	3	2	3	2	2	3	1	2

(a) Calculate the mean for these data.
(b) Calculate the standard deviation for these data and state the units.

········. *END OF THE QUESTION PAPER* ··········