Total Marks: 50   **Time: 1 Hour**

SECTION-A (Marks = 10)

Note.   **Attempt all questions from this section.**

Q.1   Encircle the correct option from the following:

i.   The most important organelle in bacterial cell other than DNA is;

    a. Mesosome   b Ribosome

    c. Lysosomes   d. Nucleosomes

ii.   Human lungs are spongy due to the presence of;

    a. Bronchi   b. Bronchiols

    c. Alveoli   d. Capoillaries

iii. Biologist use observation to develope a possible answers to a biological problems are_____.

    a. Observation   b. Hypothesis

    c. Experiment   d. Deduction

iv. Vestibule is present in the_____.

    a. Middle ear   b. Inner ear

    c. Outer ear   d. All of these

v.   In hypogeal germination elongates _____.

    a. Hypocotyle   b. Epicotyle

    c. Cotyledon   d. Both A & B

vi. From which bond of ATP molecule energy is taken?

    a. P-P bond   b. C-N bond

    c. C-H bond   d. C-O bond

vii. The respiratory centre is sensitive to the concentration of _____ in blood.

    a. CO_2 b. O_2

    c. N_2 d. All of these

viii. Which part of brain is responsible for thinking, intelligence and emotions?

    a. Cerebrum   b. Cerebellum

    c. Thalamus   d. Hypothelamus

ix. Plant use Nitrogen in the form of_____.

    a. Nitrites   b. Ammonia

    c. Nitrates   d. Nitrogen gas

x. the complete loss of function by one or more muscle group is called

    a. Epilepsy   b. Muscles damage

    c. Paralysis   d. Sciatica

Biology

Note: **Attempt any eight questions from this section. Each question carries 5 marks.**

Draw neat and labelled diagram where necessary

Q- 2   Describe the osmotic adjustment in xerophytes.

Q- 3   What is binomial nomenclature?

Q- 4   Describe the basic steps of genetic engineering.

Q- 5   Breifly describe the antagonistic function of muscle.

Q- 6   Define cell cycle and explain its phases.

Q- 7   Define circulatory system of human. Draw and label structure of human heart.

Q- 8   differentiate between the following.

   a. Endo-cytosis and Exo-cytosis.
   b. Simple tissue and compound tissue

Q- 9   How "PH" of a cell affects the activity of enzyme?

Q- 10   Differentiate between atherosclerosis and arteriosclerosis?

Q- 11   Describe the following terms:

   a. Nitrogen Fixation   b. Nitrification

PAPER CHEMISTRY FOR FIRST YEAR CLASS

Total Marks: 50   Time: 1 Hour

SECTION-A (Marks=10)

Note.   Attempt all questions from this section.

Q.1   Encircle the correct option from the following

   i.   Shielding effect in periods _____
        a. Increases   b. Decreases
        c. Remains constant   d. None of These

   ii. Highest ionization energy is of
        a. H   b. He
        c. Na   d. K

   iii. What is the mass of carbon present in 44g of CO_2
        a. 12g   b. 6g
        c. 24g   d. 44g

   iv. Nelson cell is used to prepare
        a. Na metal   b. NaOH
        c. $NaHCO_3$ d. NH_3

   v.   Reduction always takes place at_____
        a. Anode   b. Cathode
        c. Both A&B   d. None of these

   vi. Oxidation state of Mn in $KMnO_4$ is
        a. +1   b. +7
        c. -2   c. -6

   vii. Which one of the following is lewise Acid
        a. BF_3 b. NH_3
        c. H_2O d. HCl

   viii. Chemical formula of ammonium carbamate is
        a. $NH_2CO\ NH_2$ b. NH_2COONH_4
        c. NH_2COONH_2 d. NH_3COONH_3

   ix. Permanent hardness of water is due to
        a. Na_2SO_4 b. $CaSO_4$
        c. $Ca(HCO_3)_2$ d. $NaHCO_3$

   x.   Formic Acid contains functional group
        a. –OH   b. –CO–
        c. –COOH   d. –CHO

Chemistry

<u>SECTION-B (Marks=40)</u>

<u>Note</u>: **Attempt any eight questions from this section. Each question carries 5 marks.**

Q- 2   Briefly explain the mechanism of acid rain.

Q- 3   How can Ozone depletion cause global warming? Explain

Q- 4   Explain why hard water is not suitable for use of our daily life activities.

Q- 5   Define mole and Avogadro's number. Calculate the no of molecules in 36g Ice cube?

Q- 6   Sketch the neat and labelled diagram of the Daniel cell.

Q-7   State Charles's law. Prove that $\frac{v_i}{T_2} = \frac{v_2}{T_2}$

Q- 8   What is hydrogen bond? Discuss hydrogen bonding in H_2O and HF.

Q- 9   Why H_2O acts as a bronted-lowery acid as well as a base. Justify your answer by giving suitable chemical reactions.

Q- 10   Draw and explain flow sheet diagram of Solvay's process.

Q- 11   Explain methods of removing permanent hardness of water.

CADET COLLEGE WANA

01 August 2021

PAPER COMPUTER SCIENCE FOR FIRST YEAR CLASS

Total Marks: 50

Time: 1 Hour

SECTION-A (Marks=10)

Note.   Attempt all questions from this section.

Q.1   Encircle the correct option from the following:

i.   Where is columbia supercomputer located?

   a. NASA Russia   b. NASA USA   c. NASA China   d. NASA Italy

ii.   Which of the following is the exclusive legal right that prohibits copying of intellectual property?

   a. Legal Right   b. Book Right   c. Copy Right   d. All Right

iii.   Which of the following is a sequence of instructions written in computer language to solve a problem?

   a. Program   b. Algorithm   c. Flowchart   d. Problem Analysis

iv.   Which program translates high level language into machine language?

   a. Loader   b. Linker   c. compiler   d. Debugger

v.   Which of the following is an arithmetic operator?

   a. &&   b. %   c. +=   d. < =

vi.   Which of the following gates are also known as inverter?

   a. OR Gate   b. NOT Gate   c. NOR Gate   d. NAND Gate

vii.   In which network topology all nodes are connected to a common communication medium or central cable?

   a. Bus   b. Ring   c. Star   d. Mesh

viii.   Which symbol is used for processing in flowchart?

   a. Rectangle   b. Parallelogram   c. Diamond   d. Oval

ix.   Which character terminates a C statement?

   a. Colon   b. Semi Colon   c. Perid   d. comma

x.   Which loop is used when it is required to execute the loop at least once?

   a. for loop   b. while loop   c. do-while loop   d. nested loop

Computer Science

SECTION-B (Marks=40)

Note: **Attempt any eight questions from this section. Each question carries 5 marks.**

Draw neat and labelled diagram where necessary

Q-2   What is the difference b/w software engineer and hardware engineer?

Q-3   Differentiate b/w guided and unguided media with its types.

Q-4   What are the advantages of using flowcharts?

Q-5   Write a C program that reads three numbers and prints their sum, product and average.

Q-6   Differentiate b/w "while loop" and "do while loop".

Q-7   What is batch processing operating system?

Q-8   Write note on client and server network.

Q-9   What is cybercrime?

Q-10   Differentiate between high level languages and low level languages.

Q-11   What is if-else statement? Draw and explain its structure.

CADET COLLEGE WANA

01 August 2021

PAPER ENGLISH / URDU FOR FIRST YEAR CLASS

Total Marks: 50   **Time: 1 Hour**

SECTION ENGLISH (Marks=25)

Q.1   Write an essay on any one of the following.   10

    i.   Student's role in nation's building

    ii.   Causes and effects of pollution on environment

Q.2   Use the following pair of words in your own sentences?   10

    i. Loose, Lose   ii. Affect, Effect   iii. Pray, Prey

    iv. Diary, Dairy   v. Lesson, Lessen

Q.3   Translate into English   05

(1) میں صبح سے آپ کا انتظار کر رہا تھا۔

(2) جس کی لاٹھی اُس کی بھینس۔

(3) چلتی کا نام گاڑی ہے۔

(4) انہوں نے اپنا کام مکمل کیوں نہیں کیا ہے؟

(5) پولیس نے ہجوم کو منتشر کیا۔

SECTION URDU (Marks=25)

سوال نمبر 1۔ دیے گئے الفاظ و محاورات کو جملوں میں استعمال کریں۔   05

خاطر میں نہ لانا۔ دل آئینہ ہونا۔ عقل دنگ ہونا۔ تھرا اُٹھنا۔ مرجع

سوال نمبر 2۔   الف۔ مرکب ناقص اور مرکب نام کی وضاحت کریں نیز مرکب ناقص کی اقسام بیان کریں۔   05

ب۔ اسم جامد اور اسم مشتق کی تعریف کریں نیز مثالیں لکھیں۔   05

سوال نمبر 3۔ اپنے چھوٹے بھائی کو خط لکھیں جس میں اسے کورونا SOPs پر عمل کرنے کی ہدایت کریں۔   10

CADET COLLEGE WANA

01 August 2021

PAPER MATHS FOR FIRST YEAR CLASS

Total Marks: 50   **Time: 1 Hour**

SECTION-A (Marks=10)

Note.   Attempt all questions from this section.

Q.1   Encircle the correct option from the following

i.   L.C.M of $a^2 - a + 1$ and $a^3 + 1$ is_____.

   a. a + 1   b. $a^2 - a + 1$ c. $a^3 + 1$ d. $a^2 + a + 1$

ii.   The solution set of $\left|\frac{5x}{3}\right| = 5$ is _____.

   a. { ±3}   b. { 5,-5}   c. { 4,-4}   d. { -4}

iii. $\frac{1}{1+Sin\theta} + \frac{1}{1-Sin\theta} =$ _____.

   a. $2 Sec^2\theta$ b. $2 Cos^2\theta$ c. $Sec^2\theta$ d.$Cos\theta$

iv.   If $3i (2+5i) = x +6i$ then x=_____.

   a. 5   b. -15   c. $5i$ d. $15i$

v.   In a circle, two chords are equally distant from the centre of the circle the chords

   are_____.

   a. Congruent   b. None congruent   c. Parallel   d. Non parrallel

vi. $(4xy^4)^3 =$ _____.

   a. $64x^3y^8$ b. $64x^3y^6$ c . $64x^3y^{12}$ d. $64x^3y^7$

vii.   In a ratio x:y , y is called_____.

   a. Relation   b. Antecedent   c. Consequent   d. None of these

viii.   If $tan\theta = \sqrt{3}$, then θ is equal to _____.

   a. 90°   b. 45°   c. 60°   d. 30°

ix.   If $A \subseteq B$, then $A \cap B$ is equal to _____.

   a. A   b. B   c. Ø   d. None

x.   An equation of the type $3^x + 3^{2-x} + 6 = 0$
   a. Exponential Equation   b. Radical Equation

   c. Reciprocal Equation   d. None of these

SECTION-B (Marks=40)

Note: Attempt any eight questions from this section. Each question carries 5 marks.

Q-2 Solve the following system of linear equation using inversion method.

$x+2y = -13$, $3x+6y = 11$

Q-3 Verify the identity, $\frac{1+Cos\theta}{Sin\theta} + \frac{Sin\theta}{1+Cos\theta} = 2\,Cosec\theta$

Q-4 Find the value of

$\frac{S-3p}{S+3p} + \frac{S+3p}{S-3p}$, if $S=\frac{6\,pq}{p-q}$

Q-5 Factorize : $(x+1)(x+2)(x+3)(x+6) - 3x^2$

Q-6 The difference of a number and its reciprocal is $^{15}/_4$. Find the numbers.

Q-7 Using theorem of componendo - dividendo

Solve $\frac{(x-2)^2-(x-4)^2}{(x-2)^2+(x-4)^2} = \frac{12}{13}$

Q-8 Solve: $x^{2/3} + 54 = 15x^{1/3}$

Q-9 Calculate the length of a chord which stands at a distance 5cm from the center of a circle whose radius is 9 cm.

Q-10 Prove the trigonometric identily

$(Cos\theta-Sin\theta)^2 = 1-2\,Cos\theta.Sin\theta$

Q-11 Evaluate; $(1+3w-w^2)(1+w-2w^2)$

Total Marks: 50   Time: 1 Hour

SECTION-A (Marks=10)

Note.   **Attempt all questions from this section.**

Q.1   Encircle the correct option from the following:

   i.   How does sound travel from its source to your ear.

   a. By changing air pressure   b. By vibration in wire or strings
   c. By electromagnetic wave   d. By infrared wave

   ii.   An electric current in conductor is due to the flow of

   a. +ve ions   b. –ve ions

   c. Free electron   d. +ve charge

   iii. Pressure at depth in fluid_____.

   a. Increases   b. Deereases

   c. Stays the same   d. None

   iv. The value of "g" at equator is_____.

   a. Same as at poles   b. Larger than at poles
   c. Smaller than at poles   d. None

   v.   Capacitance is defined as_____.

   a. VC   b. Q/V

   c. QV   d. V/Q

   vi. The distance cover by a car in time "t" starting from rest.

   a. vt   b. Zero

   c. $\frac{1}{2}gt^2$ d. 2 as

   vii. When horse pulls a cart, the action is on the _____.

   a. Cart   b. Earth

   c. Horse   d. Earth & Cart

   viii. If the length of a simple pendulum is halve, then its time period will become .

   a. $T/2$ b. $T/\sqrt{2}$

   c. $\sqrt{2T}$ d. 2T

   ix. Slope of work time graph is equal to

   a. Displacement   b. Acceleration

   c. Power   d. Energy

   x. An electric charge at rest produces

   a. Only magnetic field   b. Only an electric field

   c. Neither electric nor magnetic field   d. Both electric and magnetic field

Physics

Note: **Attempt any eight questions from this section. Each question carries 5 marks.**

Q.2 Explain why?

a. Land breeze blows from land towards sea.

b. Deserts soon get hot during the day and soon get cool after sunset.

Q- 3 Explain how the value of 'g' varies with altitude.

Q- 4 What is barometer? Why water is not suitable to use in barometer?

Q- 5 Define the following.

a. Physics   b. momentum   c. Torque   d. Work   e. Power

Q- 6 Discuss the main features of parallel combination of resistors.

Q- 7 State and explain ohm's law. What are its limitations?

Q- 8 Define moment of a force. Give its mathematical description and elaborate the factors on which its depends.

Q- 9 Explain coulomb's law of electrostatics and write its mathematical form.

Q- 10 If the length of a simple pendulum is doubled, what will be the change in its time period?

Q- 11 What is hook's law? What is meant by elastic limit?

CADET COLLEGE WANA

PAPER BIOLOGY FOR CLASS 11ᵗʰ 24 June 2023

Total Marks: 50   **Time: 1 Hour**

SECTION-A (Marks = 10)

Note.   Attempt all questions from this section. Write the correct answers on the answer sheet provided.

Q.1   Encircle the correct option from the following

i.   Respiration at cellular level is also known as:

a. Breathing   b Ventilation

c. Oxidation   d. All of these

ii.   The largest part of the brain is:

a. cerebrum   b. cerebellum

c. Thalamus   d. Medulla oblangta

iii.   Which of the following is not part of the axial skeleton?
a. sternum   b. pectoral girdle

c. Skull   d. vertebrae

iv.   In parthenogenesis a new animal develops from?

a. Fertilized egg   b. unfertilized egg

c. sperm   d. Budding

v.   Which of these can be used as a vector for inserting a gene into bacteria?

a. plasmid   b. Algae

c. yeast   d. E.Coli

vi.   Interferons are chemicals which are used to:-

a. kill virus   b. improve immunity

c. work as vaccine   d. All of the above

vii.   The central dogma is best represented by :-

a. DNA+RNA = Protein   b.DNA→ RNA +Protein

c. DNA→ RNA→Protein   d. Protein→ RNA →DNA

viii.   Which connective tissue attaches two bones at a Joint?

a. ligament   b. Tendon

c. cartilage   d. Marrow

ix.   The digestive Enzyme pepsin secreted by gastric glands begins the digestion of:-

a. Carbohydrates   b. Protein
c. Fats   d. Vitamins

x. Trypsin , an enzyme ,works at:-

a. Alkaline   b. Acidic PH
c. neutral PH   d.PH does not affect its activity

CADET COLLEGE WANA

PAPER BIOLOGY FOR CLASS 11th 24 June 2023

SECTION-B (Marks=40)

Note: Attempt any eight questions from this section. Each question carries 5 marks.

Q-2   Explain the role of bioelements in living organism.

Q-3   How human activities affect the biodiversity of an area?

Q-4   Briefly discuss the significance of Mitosis.

Q-5   Describe alternation of generation in flowering plants.

Q-6   Differentiate between food chain and food web with example.

Q-7   List down the endangered species of Pakistan and what are the reasons behind their population decrease?

Q-8   How do kidneys control the composition of blood?

Q-9   Describe the function of three major types of Joints and give an example of each.

Q-10   How is artificial selection used for the improvement of crops?

Q-11   Briefly describe the causes, symptoms and treatment of Asthma.

CADET COLLEGE WANA

PAPER CHEMISTRY FOR CLASS 11th 24 June 2023

Total Marks: 50   **Time: 1 Hour**

SECTION - A (Marks = 10)

Note.   Attempt all questions from this section. Write the correct answers on the answer sheet provided.

Q.1   Encircle the correct option from the following

i.   Aqueous saturated solution of sodium chloride is called

    a. Brine   b. Ammonical Brine   c. Caustic Soda   d. None of these

ii.   Which of the following has lowest ionization energy?

    a. K   b. Na   c. He   d. H

iii.   When sodium react with chlorine it produces NaCl.In this reaction chlorine is .

    a. Oxidized   b. Reduced   c. Remains unchanged   d. All of them

iv.   In which of the following does sulphur have an oxidation number of +7?

    a. HSO_4^- b. SO_3 c. H_2SO_4 d. $H_2S_2O_8$

v.   Which of the following decolourises Br_2 water ?

    a. Ethane   b. Ethene

    c. Propane   d. Methane

vi.   Ethylene react with dilute solution of $KMnO_4$ to produce ethylene glycol. The reaction is called.

    a. tollen's test   b. Baeyer's test

    c. Silver mirror test   c. both a & b

vii.   Deficiency of vitamin A causes

    a. Scurvy   b. Rickets

    c. Night blindness   d. Aging

viii.   Chemical formula of urea is

    a. NH_3CONH_3 b. NH_2COONH_4

    c. NH_2COONH_2 d. $NH_2CO\ NH_2$

ix.   Temporary hardness of water is due to

    a. Na_2SO_4 b. $CaSO_4$

    c. $Ca(HCO_3)_2$ d. $NaHCO_3$

x.   Acetic Acid contains functional group

    a. –OH   b. –CO–

    c. –COOH   d. –CHO

PAPER CHEMISTRY FOR CLASS 11th 24 June 2023

SECTION-B (Marks = 40)

Note: Attempt any eight questions from this section. Each question carries 5 marks.

Q- 2 Explain briefly why ionization potential decreases down the group while increases from left to right along periods in periodic table.

Q- 3 Complete and balance the following chemical equations:-

a. $NH_3 + O_2 \longrightarrow$?
b. $HCl + KOH \longrightarrow$?
c. $CH_2 = CH_2 + HCl \longrightarrow$?
d. $C + H_2O \longrightarrow$?
e. $Cl_2 + H_2O \longrightarrow$?

Q- 4 Define solubility? Discuss briefly the effect of various factors affecting solubility.

Q- 5 What is acid rain? Explain briefly the adverse effects of acid rain.

Q- 6 Write down the electronic configuration of the following elements:-

N-7 , Na-11 , Si-14 , S-16 , Ar-18

Q-7 Draw the flow sheet diagram of Solvay's process.

Q- 8 Define PH ? Prove that PH + POH = 14.

Q- 9 Why H_2O acts as a bronted-lowery acid as well as a base. Justify your answer by giving suitable chemical reactions.

Q- 10 Draw the structural formula of the following compounds:-

2-Butene, 2,3,4-Trimethyl-3-hexene , Acetylene , Ethylene , 1,2-ethanediol

Q- 11 Define water pollution? Discuss briefly waterborn diseases.

CADET COLLEGE WANA

PAPER COMPUTER FOR CLASS 11th 24 June 2023

Total Marks: 50   **Time: 1 Hour**

<u>Note.</u>   Attempt all questions from this section. Write the correct answers on the answer sheet provided.

Q No. 1   Encircle the correct option from the following.

i.   Which computer is a combination of digital and analog technologies?

   a. Hybrid   b. Super   c. Mini   d. Mainframe

ii.   Which of the following operating system allows a user to run multiple programs at any given time?

   a. Single user   b. Multi user   c. Multitasking   d. Real time

iii.   The basic unit for entering data in Excel is:

   a. Row   b. Column   c. Cell   d. Formula

iv.   The row in Excel are denoted by:

   a. Letters   b. Numbers   c. Words   d. Sign

v.   Internet is the example of which type of network?

   a. LAN   b. WAN   c. MAN   d. Both b and c

vi.   In C language every statement is terminated by:

   a. Full stop   b. Double quotes   c. Comma   d. Semicolon

vii.   A types of operator that works with single operator:

   a. Unary operator   b. Binary operator   c. Ternary operator   d. None of these

viii.   Which of the following is postfix increment operator?

   a. c++   b. ++c   c. --c   d. c--

ix.   Which statement is used to move the control to the start of loop body?

   a. continue   b. break   c. exit   d. none of these

x.   The gate whose output is ' 0 ' when all the inputs are same is called?

   a. AND gate   b. NOR gate   c. XOR gate   d. XNOR gate

CADET COLLEGE WANA

PAPER COMPUTER FOR CLASS 11th 24 June 2023

Section B (40 Marks)

Note: Attempt any eight questions from this section. Each question carries 5 marks.

Q No. 2 Differentiate between shareware and freeware.

Q No. 3 What is the use of hyperlink in a word document?

Q No. 4 Differentiate between Ring topology and Mesh topology.

Q No. 5 Differentiate between Analog signal and Digital signal.

Q No. 6 What is computer security?

Q No. 7 Draw a flowchart to print even numbers from 50 to 100.

Q No. 8 Write down rules for writing variable names.

Q No. 9 Write a program to find the smallest number of three numbers using if-else statement?

Q No. 10 What is for loop? Write and explain its general syntax?

Q No. 11 What is NAND gate? Write down its truth table also draw its block diagram.

Q No 12 Describe the following HTML tags.

    i. Paragraph   ii. Heading   iii. Center

Total Marks: 50   **Time: 1 Hour**

SECTION ENGLISH (Marks = 25)

Q.1 Write an essay on any one of the following.   10

    a.   Self - Discipline and its importance

    b.   Importance of National Integration

Q.2 Use the following pair of words in your own sentences?   10

    a   Urbane, Urban b. Stationary, Stationery c. Canvas, Canvass

    d.   Bear, Bare e. illegible, eligible

Q.3 Change the voice of the following sentences.   05

    a.   The guard will have locked the gates by 2 P.M.

    b.   Why did you not tell me this?

    c.   Drink juice.

    d.   I shall draw a labeled diagram.

    e.   We shall do home work in time.

SECTION URDU (Marks = 25)

سوال نمبر 1ـ دیے گئے الفاظ و محاورات کو جملوں میں استعمال کریں۔   05

رخنہ ڈالنا ، نمک چھڑکنا ، اپنا الو سیدھا کرنا، شیر و شکر ہونا، الٹے پاؤں پھرنا

سوال نمبر 2ـ الف۔ جملہ انشائیہ اور جملہ خبریہ کی تعریف کریں اور نیز مثالیں دے کر فرق واضح کریں۔   05

ب۔ قصیدہ اور مثنوی کی تعریف کریں اور مثالیں پیش کریں۔   05

سوال نمبر 3ـ اپنے بھائی کو خط لکھیں جس میں اُسے ماحولیاتی آلودگی کے نقصانات سے بچنے کی تدبیر سے آگاہ کریں۔   10

CADET COLLEGE WANA

PAPER MATHS FOR CLASS 11th 24 June 2023

Total Marks: 50   **Time: 1 Hour**

SECTION-A (Marks=10)

Note. Attempt all questions from this section. Write the correct answers on the answer sheet provided.

Q.1 Encircle the correct option from the following

i. A value of 'x' from which p(x)=0, is called _____ of the p(x).

   a. root   b. solution   c. zero   d. All of these

ii. A _____ is a quadrilateral in which all sides are congruent.

   a. square   b. rectangle   c. Parallelogram   d. Rhombus

iii. In a circle, two chords are equally distant from the centre of the circle, the chords are:-

   a. Congruent   b. not congruent   c. Parallel   d. not parallel

iv. The measure of the external angle of a regular hexagon is :-

   a. $\frac{\pi}{3}$ b. $\frac{\pi}{4}$ c. $\frac{\pi}{6}$ d. $\frac{\pi}{2}$

v. If A= { a,b}, B= {1,2}, then the number of all possible subset of A x B is:-

   a. 8   b. 4   c. 12   d. 16

vi A chord is 5 cm from the center of circle of radius 13 cm. the length of chord is___:-

   a. 6cm   b. 12cm   c. 24cm   d. 30cm

vii. The nth root of product of 'n' number of values is called_____.

   a. Arithmetic mean   b. Geometric mean

   c. Hormonic mean   d. None of these

viii. If α and β are the roots of $4x^2-3x+7=0$, then the value of $\frac{1}{\alpha}+\frac{1}{\beta}$ = _____.

   a. $\frac{-3}{4}$ b. $\frac{3}{7}$ c. $\frac{-3}{7}$ d. $\frac{4}{7}$

ix. $Log_9 \frac{1}{81}$ = ?

   a. -1   b. -2   c. 2   d. does not exist

x. The point having its co-ordinates (0,0) is called:-

   a. Abscissa   b. ordinate   c. origin   d. critical point

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PAPER MATHS FOR CLASS 11th 24 June 2023

Total Marks: 50   **Time: 1 Hour**

SECTION-B (Marks=40)

Note: Attempt any eight questions from this section. Each question carries 5 marks.

Q-2 Solve the simultaneous equation by using graphical method, $3x+5y = 2$, $3x + 5y = 8$

Q-3 If α and β are the roots of $2x^2+3x +1=0$, then find the values of $\frac{\alpha^2}{\beta}+\frac{\beta^2}{\alpha}$

Q-4 Prove that $(\sec x - \tan x)^2 = \frac{1-\sin x}{1+\sin x}$

Q-5 The area of a rectangle is 252 square meters . the length of its side is 9 meters longer than its width. Find its sides.

Q-6 Inscribe a regular hexagon in a circle of radius 4cm.

Q-7 Solve $8(x^2 + \frac{1}{x^2}) - 42(x - \frac{1}{x})+29=0$

Q-8 If x={1,2,3,4} and y= {5,6,7,8} then write.

     i.   a function from x to y.

     ii.   a 1-1 function from x to y.

     iii.   Bijective function from y to x.

Q-9 Using Apollonius theorem find the length of the medians of a triangle having sides 10cm , 12 cm and 16 cm respectively.

Q-10 For what value of 'K' the expression $4x^4+32x^2+96+\frac{128}{x^2} + \frac{K}{x^4}$ will become a perfect square.

Q-11 The measure of the three angles of a triangle are in the ratio 2:3:4. Find the measure of the largest angle?

Total Marks: 50

Time: 1 Hour

SECTION-A (Marks=10)

Note. Attempt all questions from this section. Write the correct answers on the answer sheet provided.

Q.1 Encircle the correct option from the following:

i. Floppy disc is made of flexible plastic, which is coated with _____ compounds.

a. Diamagnetic   b. paramagnetic   c. Ferromagnetic   d. None

ii. The electric devices in the artificial satellite are controlled from earth station with the help of _____.

a. current   b. electrical power

c. computer   d. electromagnetic waves

iii. Gastroscope is an instrument to view the _____.

a. heart   b. lungs   c. stomach   d. liver

iv. A light year is distance traveled by light in one year, it travels about 9.460×10^{15} m. How many significant figures are in this number_____?

a. 15   b. 3   c. 4   d. 18

v. The relative velocity of geostationary satellite with respect to earth is.

a. 7.9 kms^{-1} b. 11.2 kms^{-1} c. 9.8 ms^{-1} d. 0 kms^{-1}

vi. _____ is used for curing cancerous tumors and cells.

a. Sulphur-32   b. Cobalt-60   c. Uranium-238   d. Polonium-121

vii. The device which converts mechanical energy into electrical energy is_____.

a. motor   b. generator   c. battery   d. thermocouple

viii. If the length of a simple pendulum is halved, its time period will become:-

a. $\frac{T}{2}$ b. $\frac{T}{\sqrt{2}}$ c. $\sqrt{2T}$ d. 2T

ix. A car is going backwards at 5 ms^{-1}. After 10 s of uniform acceleration the car is going forward at 10 ms^{-1}. The acceleration is _____.

a. 0.5 ms^{-2} b. 0.75 ms^{-2} c. 1.5 ms^{-2} d. 5 ms^{-2}

x. For making cooking utensils, which of the following pairs of properties are most suited.

a. high specific heat and high conductivity

b. low specific heat and low conductivity

c. high specific heat and low conductivity

d. low specific heat and high conductivity

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PAPER PHYSICS FOR CLASS 11th 24 June 2023

SECTION-B (Marks=40)

Note: Attempt any eight questions from this section. Each question carries 5 marks.

Q.2 Differentiate between renewable and non renewable energy source with two examples each?

Q- 3 Write note on; (i) Banking of roads. (ii) skidding of vehicles.

Q- 4 A ball is dropped from a certain height on to the floor and keeps bouncing is the motion of ball simple harmonic ? Explain.

Q- 5 A capacitor holds 0.06C of charge when fully charged by a 6 volt battery. Calculate capacitance of capacitor?

Q- 6 Define the following terms.

i. Momentum   ii. Power   iii. Killo-watt-hour

iv. Frequency   v. Amplitude

Q- 7 What is meant by resolution of force? Find the two rectangular components of a force of 100N which is acting at an angle of 60^0 with x-axis.

Q- 8 Two capacitors of capacitance 2PF amd 3PF , are connected in parallel to 9 volt battery , calculate the equivalent capacitance and the charge on each capacitor?

Q- 9 Define sound. What is the speed of the sound in air at -20 C^0 ?

Q- 10 Define equilibrium. What is the difference between translational and rotational equilibrium?

Q- 11 What is transformer? Explain the working of a transformer in connection with mutual Induction.