

Section B: Botany

Attempt all questions.

Group 'A'

Write the correct answer in your answer book from the given alternatives. (5×1 = 5)

- The system of binomial nomenclature was discovered by.....
a. Carolus Linnaeus b. Rox Burgh c. Gaspard Bauhin d. Aristotle
- Amino acids are building blocks of
a. Fats b. Carbohydrates c. Proteins d. Oils
- Yeast is also known as.....
a. *Mucor* b. *Saccharomyces* c. *Ascomyces* d. *Penicillium*
- Which of the following plant has (9) +1 arrangement of stamens?.....
a. Wheat b. Sunflower c. Mustard d. Pea
- The chief source of nitrogen for plants in soil is
a. Nitrate b. Nitrite c. Free N₂ d. Ammonia

Group 'B'**Short questions (Any Four) (4× 4= 16)**

- Discuss the types of carbohydrates with their significance.
- Describe the system of binomial nomenclature? Discuss its merits.
- Differentiate between mitosis and meiosis cell division.
- Define ecosystem and mention the main components of an ecosystem.
- Describe the structure and function of chloroplast.

Group 'C'**Long questions**

- What do you mean by alternation of generation? Describe the life cycle of Fern with the help of well labeled diagrams. (1+ 7)

OR

Give the distinguishing characters of family **Cruciferae** with its floral formula and floral diagram. Mention botanical name of any two economically important plants of this family. (2+4+1+2)

- What are ecological pyramids? Discuss the types of pyramids in relation to grassland ecosystem. (2+6)

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Radiant Higher Secondary School

Annual Examination -2079

Subject: Biology (SET B), Grade: XI, Time: 3:00 hrs.

Section A ZoologyGroup A

Write the correct answer in your answer book from the given alternatives. (6×1 = 6)

- The branch biology of that deals with the study building blocks of life is called ...
a. Cytology b. Morphology c. Ecology d. Histology
- The earliest ancestor of human who was in direct line of human evolution was
a. *Ramapithecus* b. *Australopithecus*
c. *Homo habilis* d. *Peking man*
- The infective stage of Plasmodium is....
a. Trophozoite b. Sporozoite c. Schizont d. Merozoite
- The number of testis found in earthworm are ...
a. Two b. Four pairs c. Three pairs d. Two pairs
- The teeth of frogs are ...
a. Homodont b. Heterodont c. Diphydont d. Thecodont
- Which on the following is an endangered mammal found in Nepal
a. Wild boar b. bat c. Flying fox d. Red panda

Group B

Short questions (Any Four) (4× 4= 16)

- Describe the Miller –Urey experiment. 4
- Describe the process of gametogenesis in *Plasmodium*. 4
- Mention the effects of air pollution. 4
- Mention the copulation and cocoon formation in earthworm.4
- What is migration? Mention the types of migration in fishes.1+3

Group CLong questions

- Describe the structure of nervous system of earthworm. 8

OR

- Describe the male reproductive system of frog.
- What are vestigial organs? Describe the theory of evolution proposed by Lamarckism. 1+7

Radiant Higher Secondary School

Annual Examination -2079

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Section A ZoologyGroup A

Write the correct answer in your answer book from the given alternatives. (6×1 = 6)

- The branch of biology that deals with the study building blocks of life is called
a. Cytology b. Morphology c. Ecology d. Histology
- The First tool maker man was
a. *Ramapithecus* b. *Homo sapiens* c. *Homo Habilis* d. *Solo man*
- The infective stage of Plasmodium is.....
a. Trophozoite b. Sporozoite c. Schizont d. Merozoite
- The nephridia of earthworms are concerned in
a. Respiration b. Excretion
c. Digestion d. Excretion and water balance
- The teeth of frogs are ...
a. Homodont b. Heterodont c. Diphydont d. Thecodont
- Which on the following is an endangered mammal found in Nepal
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OR

- Describe the male reproductive system of frog.
- What are vestigial organs? Describe the theory of evolution proposed by Lamarckism. 1+7

Section B: Botany

Attempt all questions.

Group 'A'

Write the correct answer in your answer book from the given alternatives. (5×1 = 5)

- Father of cell is called.....
 - Robert Hook
 - Rox Burgh
 - Carolus Linnaeus
 - Aristotle
- Nitrogen bases of DNA molecule are.....
 - AUCG
 - ATCG
 - ACCG
 - AUUC
- The stage in which chromatids move towards the poles is known as.....
 - Prophase
 - Metaphase
 - Anaphase
 - Telophase
- The fruit of Fabaceae family is
 - Caryopsis
 - Capsule
 - Berry
 - Legume
- Which of the following cell organelles is called suicidal bag of cell?
 - Microtubles
 - Lysosome
 - Mitochondria
 - Ribosome

Group 'B'

Short questions (Any Four) (4× 4= 16)

- Describe the structure and function of mitochondria.
- Write the merits of five-kingdom system of classification.
- Write down briefly economic importance of lichens.
- Describe about the pyramid of number.
- Describe the mechanism of cellular totipotency in brief.

Group 'C'**Long questions**

- What do you mean by conjugation? Describe the life cycle of *Mucor* with the help of well labeled diagrams. (1+ 7)

OR

Give the distinguishing characters of family **Solanaceae** with its floral formula and floral diagram. Mention botanical name of any two economically important plants of this family. (2+4+1+2)

- Define ecosystem? Describe pond ecosystem with its components in detail. (1+7)

Radiant Higher Secondary School

Annual Examination -2079

Subject: Biology (SET C), Grade: XI, Time: 3:00 hrs.

Section A:Zoology**Group A**

Write the correct answer in your answer book from the given alternatives. (6×1 = 6)

- The branch of biology that deals with the study of early development of animals.....
 - Cytology
 - Embryology
 - Anatomy
 - Mycology
- The earliest ancestor of human who was in direct line of human evolution was
 - Ramapithecus*
 - Australopithecus*
 - Homo habilis*
 - Peking man*
- The Osmoregulatory organs of *Paramecium* are....
 - Food vacuole
 - Nucleus
 - contractile vacuole
 - Trichocy
- The teeth of frogs are ...
 - Homodont
 - Heterodont
 - Diphydont
 - Thecodont
- The anadromous migration is exhibit by ...
 - Salmon
 - Eel
 - Gobies
 - Thunnas
- Which on the following is an endangered mammal found in Nepal
 - Wild boar
 - bat
 - Flying fox
 - Red panda

Group B

Short questions (Any Four) (4× 4= 16)

- What is biogenesis? Give any two experiments to support the theory of biogenesis.
- Describe the process of gametogenesis in *Plasmodium*. 4
- Mention the effects of air pollution. 4
- Mention the copulation and cocoon formation in earthworm.4
- Mention the economic importance of earthworm. 4
- What is migration? Mention the types of migration in birds. 1+3 = 4

Group C**Long questions**

- Describe the structure of nervous system of earthworm. 8
- OR
- Describe the male reproductive system of frog. 8

14. Define organic evolution. Describe the theory of evolution proposed by Darwin. **1+7=8**

**Radiant Higher Secondary School
Annual Examination -2079**

Subject: Biology (SET C), Grade: XI, Time: 3:00 hrs.

Section A :Zoology

Group A

Write the correct answer in your answer book from the given alternatives. (6×1 = 6)

- The branch of biology that deals with the study of early development of animals.....
a. Cytology b. Embryology c. Anatomy d. Mycology
- The earliest ancestor of human who was in direct line of human evolution was
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a. Carolus Linnaeus b. Rox Burgh c. Gaspard Bauhin d. Aristotle.
- Nitrogen bases of DNA molecule are.....
a. AUCG b. ATCG c. ACCG d. AUUC
- Yeast is also known as.....
b. *Mucor* b. *Saccharomyces* c. *Ascomyces* d. *Penicillium*
- The fruit of Fabaceae family is
b. Caryopsis b. Capsule c. Berry d. Legume
- The chief source of nitrogen for plants in soil is
a. Nitrate b. Nitrite c. Free N₂ d. Ammonia

Group 'B'

Short questions (Any Four)

(4× 4= 16)

- Which on the following is an endangered mammal found in Nepal
a. Wild boar b. bat c. Flying fox d. Red panda

Group B

Short questions (Any Four) (4× 4= 16)

- What is biogenesis? Give any two experiments to support the theory of biogenesis.
- Describe the process of gametogenesis in *Plasmodium*. **4**
- Mention the effects of air pollution. **4**
- Mention the copulation and cocoon formation in earthworm. **4**
- Mention the economic importance of earthworm. **4**
- What is migration? Mention the types of migration in birds. **1+3 = 4**

Group C

Long questions

- Describe the structure of nervous system of earthworm. **8**
OR
Describe the male reproductive system of frog. **8**
- Define organic evolution. Describe the theory of evolution proposed by Darwin. **1+7=8**

- Discuss the types of carbohydrates with their significance.
- Write the merits of five-kingdom system of classification.
- Differentiate between mitosis and meiosis cell division.
- Describe about the pyramid of number.
- Describe the structure and function of chloroplast.

Group 'C'

Long questions

- What do you mean by alternation of generation? Describe the life cycle of Fern with the help of well labeled diagrams. **(1+ 7)**

OR

Give the distinguishing characters of family **Cruciferae** with its floral formula and floral diagram. Mention botanical name of any two economically important plants of this family. **(4+2+2)**

- Define ecosystem? Describe pond ecosystem with its components in detail. **(1+7)**

Section B: Botany

Attempt all questions.

Group 'A'

Write the correct answer in your answer book from the given alternatives. (5×1 = 5)

1. The system of binomial nomenclature was discovered by.....
a. Carolus Linnaeus b. Rox Burgh c. Gaspard Bauhin d. Aristotle.
2. Nitrogen bases of DNA molecule are.....
a. AUCC b. ATCG c. ACCG d. AUUC
3. Yeast is also known as.....
c. *Mucor* b. *Saccharomyces* c. *Ascomyces* d. *Penicillium*
4. The fruit of Fabaceae family is
c. Caryopsis b. Capsule c. Berry d. Legume
5. The chief source of nitrogen for plants in soil is
b. Nitrate b. Nitrite c. Free N₂ d. Ammonia

Group 'B'

Short questions (Any Four) (4× 4= 16)

6. Discuss the types of carbohydrates with their significance.
7. Write the merits of five-kingdom system of classification.
8. Differentiate between mitosis and meiosis cell division.
9. Describe about the pyramid of number.
10. Describe the structure and function of chloroplast.

Group 'C'

Long questions

11. What do you mean by alternation of generation? Describe the life cycle of Fern with the help of well labeled diagrams. (1+ 7)

OR

Give the distinguishing characters of family **Cruciferae** with its floral formula and floral diagram. Mention botanical name of any two economically important plants of this family. (4+2+2)

12. Define ecosystem? Describe pond ecosystem with its components in detail. (1+7)

Radiant Higher Secondary School**Annual Examination -2079****Subject: Comp. English (SET A)****Grade: XI****Time: 3:00 hrs.****Full marks: 75**

Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks.

Attempt all the questions.

1. Read the following text and complete the tasks that follow.

15

1. That large animals require luxuriant vegetation has been a general assumption which has passed from one work to another, but I do not hesitate to say that it is completely false and that it has vitiated the reasoning of geologists on some points of great interest in the ancient history of the world. The prejudice has probably been derived from India, and the Indian islands, where troops of elephants, noble forests, and impenetrable jungles are associated together in everyone's mind. If, however, we refer to any work of travels through the southern parts of Africa, we shall find allusions in almost every page either to the desert character of the country or to the numbers of large animals inhabiting it. The same thing is rendered evident by the many engravings which have been published in various parts of the interior.

2. Dr. Andrew Smith, who has lately succeeded in passing the Tropic of Capricorn, informs me that taking into consideration the whole of the southern part of Africa, there can be no doubt of its being a sterile country. On the southern coasts, there are some fine forests, but with these exceptions, the traveller may pass for days together through open plains, covered by poor and scanty vegetation. Now, if we look to the animals inhabiting these wide plains, we shall find their numbers extraordinarily great, and their bulk immense.

3. It may be supposed that although the species are numerous, the individuals of each kind are few. By the kindness of Dr. Smith, I am enabled to show that the case is very different. He informs me that in one day's march with the bullock-wagons, he saw, without wandering to any great distance on either side, between one-hundred and one-hundred and fifty rhinoceroses—the same day he saw several herds of giraffes, amounting together to nearly a hundred.

4. At the distance of a little more than one hour's march from their place of encampment on the previous night, his party actually killed eight hippopotamuses at one spot and saw many more. In this same river, there were likewise crocodiles. Of course, it was a case quite extraordinary to see so many great animals crowded together, but it evidently proves that they must exist in great numbers. Dr. Smith describes that the country passed through that day as 'being thinly covered with grass, and bushes about four feet high, and still more thinly with mimosa trees'.

5. Besides these large animals, anyone the least acquainted with the natural history of the Cape has read of the herds of antelopes, which can be compared only with the flocks of migratory birds. The numbers indeed of the lion, panther, and hyena, and the multitude of birds of prey, plainly speak of the abundance of the smaller quadrupeds. One evening, seven lions were counted at the same time prowling round Dr. Smith's encampment. As this, an able naturalist remarked to me, each day the carnage in Southern Africa must indeed be terrific! I confess that it is truly surprising how such a number of animals can find support in a country producing so little food.

6. The larger quadrupeds no doubt roam over wide tracts in search of it; and their food chiefly consists of underwood, which probably contains many nutrients in a small bulk. Dr. Smith also informs me that the vegetation has a rapid growth; no sooner is a part consumed, then its place is supplied by a fresh stock. There can be no doubt, however, that our ideas respecting the apparent amount of food necessary for the support of large quadrupeds are much exaggerated. The belief that where large quadrupeds exist, the vegetation must necessarily be luxuriant is more remarkable because the converse is far from true.

7. Mr. Burchell observed to me that when entering Brazil, nothing struck him more forcibly than the splendour of the South American vegetation contrasted with that of South Africa, together with the absence of all large quadrupeds. In his travels, he has suggested that the comparison of the respective weights (if there were sufficient data) of an equal number of the largest herbivorous quadrupeds of each country would be extremely curious. If we take on the one side, the elephants, hippopotamus, giraffe, boscaffer, elan, five species of rhinoceros; and on the American side, two tapirs, the guanaco, three deer, the vicuna, peccari, capybara (after which we must choose from the monkeys to complete the number), and then place these two groups alongside each other; it is not easy to conceive ranks more disproportionate in size.

8. After the above facts, we are compelled to conclude, against the anterior probability that among the Mammalia there exists no close relation between the bulk of the species, and the quantity of the vegetation in the countries which they inhabit.

A. Answer the following questions by choosing the most appropriate option.

(5 × 1 = 5)

- a. What is the primary concern of the author?
 - (i) Discussing the relationship between the size of mammals and the nature of vegetation in their habitats
 - (ii) Contrasting ecological conditions in India and Africa
 - (iii) Proving that large animals do not require much food
 - (iv) Describing the size of animals in various parts of the world
- b. According to the author, what has led to the 'prejudice'?
 - (i) Errors in the reasoning of biologists
 - (ii) False ideas about animals in Africa
 - (iii) Incorrect assumptions on the part of geologists
 - (iv) Doubt in the mind of the author
- c. Why are the flocks of migratory birds mentioned in the passage?
 - (i) To describe an aspect of the fauna of South Africa
 - (ii) To illustrate a possible source of food for large carnivores
 - (iii) To contrast with the habits of the antelope
 - (iv) To suggest the size of antelope herds
- d. Why does Darwin quote Burchell's observations?
 - (i) To counter a popular misconception
 - (ii) To describe a region of great splendour
 - (iii) To prove a hypothesis
 - (iv) To illustrate a well-known phenomenon
- e. What struck Mr. Burchell, when he entered Brazil?
 - (i) South African vegetation
 - (ii) Presence of all large quadrupeds
 - (iii) South American vegetation contrasted with that of South Africa
 - (iv) Equal number of the largest herbivorous quadrupeds

B. Answer the following questions briefly. (5 × 1 = 5)

- a. What prejudice has vitiated the reasoning of geologists?
- b. Why does Dr. Smith refer to Africa as a sterile country?
- c. What is the 'carnage' referred to by Dr. Smith?
- d. What does Darwin's remark, 'if there were sufficient data' indicate?
- e. To account for the 'surprising' number of animals in a 'country producing so little food', what partial explanation does Darwin suggest?

C. Answer the following questions briefly. (5 × 1 = 5)

- a. Find a word from the passage (para-5) which means 'the violent killing of large number of people'.
- b. Find a word from the passage (para-6) which means 'animals that have four legs'.
- c. The belief that huge animals require lush has been passed down from one work to the next.
- d. Dr. Smith's encampment was surrounded by at the same time one evening.
- e. A comparison of the corresponding weights of an equal number of each country's would be fascinating.

2. Write short answers to the following questions based on your textbook.

5x2=10

- a. What is the main theme of the story 'The Selfish Giant'?
- b. Why did Aksionov think of killing himself? (God Sees the Truth but Waits)
- c. What is the speaker's attitude towards war? (The Gift in Wartime)
- d. What is poverty according to the writer? (What is Poverty?)
- e. What does a scientist get instead of big money? (Scientific Research ... Humankind's Survival)

3. Write long answers to the following questions. 2x5=10

- a. The play is a satire on the present day education system. Do you think that our education system does not prepare students for life? Discuss. (Refund)
- b. Describe the conflict between the two friends. (Two Little Soldiers)
4. 'Should students get limited access to the Internet?' Write your views on the given topic in about 150 words.

5. Anxiety is something that never goes away for a student. After passing the class XII Board Exam, there is uncertainty about getting into a college and a course of one's choice. Every year, the percentage of students that are accepted into good institutions rises. There are few opportunities for average students. Write a letter to the editor of a

national newspaper outlining the difficulties listed above.

8

6. According to recent statistics, violent crime among young people under the age of 18 is on the rise. According to some psychologists, the primary reason for this is that today's children are not receiving the social and emotional learning they require from their parents and teachers. How much do you agree or disagree with this viewpoint? Include any relevant examples from your own knowledge or experience to support your response.

10

7. Do as indicated in the brackets and **rewrite the sentences.** 10x1=10

- I have never been to Japan. (Identify the word class of the underlined word)
- My uncle speaks (perfect/perfectly) Chinese. (Choose the correct word)
- Go the building and turn left. (into/up/off/out of – choose the correct preposition)
- Nita (invite) her to the party, but she didn't come. (Put the verb in the correct form in the blank)
- Sarita was (shocking/shocked) to hear about the earthquake. (choose the correct word)
- The man with all his children in the city. (live/lives – choose the correct verb)
- The car stoppedsuddenly. (Identify if the underlined verb is transitive, intransitive or linking verb)
- What would you suggest to your friend who is putting on weight.
- How would you persuade your sister who is not interested in doing school homework.
- Harry bought a watch. It was expensive. (Combine sentences using an appropriate connective)

8. Choose any copy the correct answer.

5x1=5

- Which of the letter has the silent sound in the word Wednesday.
- The initial sound in the word 'table' is transcribed as
 - /p/
 - /t/
 - /b/
 - /s/
- The word malpractice has the prefix
- The word infiltrate means:
 - establishment
 - to gain access to some place
 - life of roaming
 - to filter
- The 'ed' in the given verb visited has its pronunciation as: /t/, /d/ or /Id/

Radiant Higher Secondary School

Annual Examination -2079

Subject: Comp. English (SET B)

Grade: XI

Time: 3:00 hrs. Full marks: 75

Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks.

Attempt all the questions.

1. Read the following text and complete the tasks that follow. 15

All of Earth's oceans share one thing in common: plastic pollution. Discarded plastic bags, cups, and bottles make their way into the sea. Today, it seems that no part of the ocean is safe from plastic trash. In recent years, oceanographers have searched in vain for a pristine marine environment. They have found plastic everywhere they have looked. "It is a common global problem, we can't point to a single habitat or location with no plastic."

Plastic harms wildlife and introduces dangerous chemicals into marine ecosystems — communities of organisms interacting with their surroundings. Once plastic enters the environment, it lasts a long time. Scientists are working to prevent plastic pollution from entering the sea.

When people litter, or when trash is not properly disposed of, things like plastic bags, bottles, straws, foam beverage cups get carried to the sea by winds and waterways. About 80 percent of ocean plastic originates on land. The rest comes from marine industries, such as shipping and fishing.

In 2015, engineer Jenna Jamback at the University of Georgia and other researchers calculated that at least 8 million tons of plastic trash is swept into the ocean from coasts every year. That's the equivalent of a full garbage truck of plastic being dumped into the sea every minute. If current trends in plastic production and disposal continue, that figure will double by 2025. A report published by the World Economic Forum last year predicts that by 2050, ocean plastic will outweigh all the fish in the sea.

In today's world, plastic is everywhere. It's found in shoes, clothing, household items electronics, and more. There are different types of plastics, but one thing they all have in common is that they are made of polymers – large molecules

made up of repeating units. Their chemical structure gives them a lot of advantages: they are cheap and easy to manufacture, lightweight, water-resistant, durable, and can be moulded into nearly any shape.

Unfortunately, some of the properties that make plastics great for consumer goods also make them a problem pollutant. Plastic's durability comes in part from the fact that unlike paper or wood, it doesn't biodegrade, or break down naturally. Instead it just fragments, or breaks into tiny pieces over time. These tiny pieces, known as microplastic, can potentially stick around for hundreds or perhaps even thousands of years.

Another problem with plastics is the other chemicals they contain, like dyes and flame retardants. When plastic isn't disposed of properly, these additives end up in the environment. Plastic also tends to absorb harmful chemicals from its surroundings. "It's like a sponge for persistent organic pollutants." These long lasting, toxic substances include pesticides and industrial chemicals. If plastic absorbs the chemicals, and marine organisms eat the plastic, they may be exposed to higher concentrations of these contaminants.

One of the biggest impacts of plastic pollution is its effect on sea life. Seals, sea turtles, and even whales can become entangled in plastic netting. They can starve to death if the plastic restricts their ability to move or eat. Or the plastic can cut into the animals' skin, causing wound that develop severe infections.

Sea turtles eat plastic bags and soda-can rings, which resemble jellyfish, their favourite food. Seabirds eat bottle caps or chunks of foam cups. Plastic pieces may make an animal feel full, so it does not eat enough real food to get the nutrients it needs. Plastic can also block an animal's digestive system making it unable to eat.

Plastic and its associated pollutants can even make it into our own food supply. Scientists recently examined fish and shell-fish bought at markets in California and Indonesia. They found plastic in the guts of more than a quarter of samples purchased at both locations. In organisms that people eat whole, such as sardines and oysters, that means we are eating plastic too. In larger fish, chemicals from plastic may seep into their muscles and other tissues that people consume.

One way to keep the ocean cleaner and healthier is through cleanup efforts. A lot of plastic waste caught in ocean currents eventually washes up on beaches. Removing it can prevent it from blowing out to sea again. Beach clean-up is ocean clean-up.

Cleanup efforts can't reach every corner of the ocean or track every bit of microplastic. That means it's critical to cut down on the amount of plastic that reaches the sea in the first place. Scientists are working toward new materials that are safer for the environment. For example, Jambeck and her colleagues are currently testing a new polymer that breaks down more easily in seawater.

"Individual actions make a big difference," says Jambeck. Disposing of plastic properly for recycling or trash collection is a key step. "And simple things like reusable water bottles, mugs, and bags really cut down on waste", she says. Skipping straws or using paper ones helps too. Ocean pollution can seem overwhelming, but it's something everyone can help address. This is a problem we can really do something about.

A. Answer the following questions by choosing the most appropriate option.

(5 × 1 = 5)

a. Percentage of ocean plastic that originates from land is:

1. 20% 2. 50% 3. 80% 4. 25%

b. In which year did Jenna Jambeck and other researchers calculate that at least 8 million tons of plastic trash is swept into ocean every year?

1. 2018 2. 2015 3. 2005 4. 2010

c. Plastic is not biodegradable because it is made up of:

1. low atomic particles 2. tiny particles
3. strong big particles 4. large molecule polymers

d. Sea turtles eat:

1. plastic bottles 2. plastic bags and soda-can rings
3. bottle caps 4. chunks of foam cups

e. Scientists bought fish and shell-fish for examination at markets in:

1. China and Russia 2. Pakistan and Afghanistan
3. California and Indonesia 4. Australia and Brazil

B. Answer the following questions briefly. (5 × 1 = 5)

a. Which articles made of plastic generally cause pollution in the sea?

b. How does plastic in oceans harm marine ecosystems?

- c. How is microplastic formed?
 d. Why is plastic compared to a sponge?
 e. What is the biggest impact of plastic pollution on sea life?

C. Pick out the words/phrases from the passage which are similar in meaning to the following:

(5 × 1 = 5)

1. unspoiled
2. long lasting
3. overpowering
4. report
5. people working together

2. Write short answers to the following questions based on your textbook.

5x2=10

- a. What is the central idea of the story 'The Oval Portrait'?
- b. What kind of effect did the carpet have on the child? (The Wish)
- c. What does the speaker promise to his beloved? (A Red, Red Rose)
- d. Is death really life's great invention? (How to live before you Die)
- e. Why does the writer want more freedom of speech than most people? (What I require from Life)

3. Write long answers to the following questions. 2x5=10

- a. How is the title 'A Sunny Morning' justifiable? Discuss
- b. Why do you think the thieves who come to rob Jonathan speak English with a heavier African accent than Jonathan does? (Civil Peace)
4. 'Smoking in public places should be banned'. Write your views on the given topic in about 150 words.

7

5. You are very disturbed by the discrimination against girls, especially among well-educated, rich families, even in urban areas. Discrimination is particularly visible in the areas of food and nutrition, health care, education, allowances, work-at-home opportunities, and freedom. Write a letter to the editor of a national newspaper expressing your strong opposition to such behaviors. **8**

6. Oil burning for transportation, particularly in private automobiles, is inefficient and environmentally irresponsible. To discourage the use of private cars, taxes on gasoline and diesel fuel should be raised to extremely high levels. To what extent do you agree with or disagree with this concept? **10**

7. Do as indicated in the brackets and rewrite the sentences. 10x1=10

- a. That's the house I was born. (Insert relative pronoun)
- b. Express your wish for the given situation: You are feeling sick.
- c. Janak (not/be) sick (Use correct tense)
- d. They be coming tomorrow. (may/must/can't)
- e. The man will buy a pen next day. (Find out the adverbial in the sentence)
- f. I/live in a flat when I was child. (Use **Used to**)
- g. It didn't stop (rain) all day yesterday. (Insert a gerund)
- h. What would you suggest to your friend who is ignoring his studies.
- i. He's enjoying his new job. (Pretend) (Paraphrase the sentence using the given verb).
- j. Can you the box in the back garden? (bury/berry)

8. Choose any copy the correct answer. 5x1=5

- a. Which of the letter has the silent sound in the word thumb.
- b. The initial sound in the word 'bottom' is transcribed as
 i. /p/ ii. /t/ iii. /b/ iv. /s/
- c. The word absorption has the suffix
- d. I didn't fix the problem. (Change into passive form)
- e. The 'ed' in the given verb shredded has its pronunciation as: /t/, /d/ or /Id/

**Radiant Secondary School
 Annual Examination (2079)**

SET-A

**Grade: XI
 Time: 3 Hours**

Subject: Physics

Subject Code: 1011

Full Marks: 75

Group: A**Multiple Choice Questions (11x1 =11)**

Write the correct answer

- Correct statement is.....
 - work and torque has different unit
 - dimensionless quantity has no unit
 - joule per coulomb is unit of electric potential
 - stress and strain are unitless
- To describe vertical circle of radius r , minimum velocity of body at the top of vertical circle is.....
 - \sqrt{rg}
 - $\sqrt{2rg}$
 - $\sqrt{3rg}$
 - $\sqrt{5rg}$
- Projectile attains zero range when fired at an angle of with the horizontal.
 - 30°
 - 45°
 - 60°
 - 90°
- Orbital velocity of satellite.....
 - depends on its mass.
 - depends on its density.
 - both a and b.
 - none of these.
- Cow is more stable than man because
 - base area of cow is more than that of man
 - height of cow is less than that of man
 - cow is four footed animal
 - both a and c
- Concavo convex lens has.....
 - both convex surfaces
 - both concave surfaces
 - one concave and another convex surface
 - one convex and another plane surface.
- During dispersion of light, order of colours in the spectrum from top to bottom is.....
 - VIBGYOR
 - VIBYGOR
 - RYOGIBV
 - ROYGBIV
- Critical angle and refractive index are....
 - independent of one another
 - directly proportional to each other
 - inversely proportional to each other
 - none of these
- Concave mirror form magnified inverted image when object lies.....
 - at centre of curvature
 - between principal focus and centre of curvature
 - at principal focus
 - inside principal focus
- Correct statement is.....
 - electric potential and electric field at same point may be zero
 - electric potential and electric field at same point can't be zero
 - force acting between charges is independent of nature of medium
 - electron and proton have same mass.
- According Hubble, velocity of galaxy is directly proportional to theof galaxy.
 - mass
 - density
 - distance
 - energy

Group: B**Short Answer Questions**

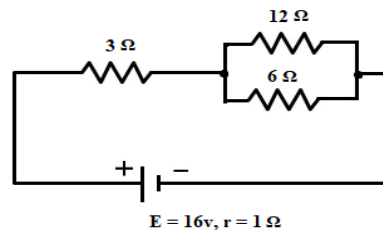
Attempt all the questions (8 x 5 = 40)

- Define scalar and vector giving examples. (1)
 - A force of 2 N acting on the body at an angle of 30° east of north and at the same time another force of 3 N acts on the same body at an angle of 30° north of east. Find angle made by the resultant force with 2N force. (2)
 - Find magnitude of cross product of vectors $(2\hat{i} + \hat{j} - 3\hat{k})$ and $(\hat{i} - \hat{j} + 3\hat{k})$. (2)
- OR**
- What are the conditions for body to be projectile? (2)
 - Show that the range of projectile remains same when it fired at an angle θ or $(90^\circ - \theta)$ with the horizontal with same initial velocity. (3)
 - Define thermal expansion and mention its types. (2)
 - Obtain formula for the variation of density with temperature. (3)
- Define heat equation and state principle of calorimetry. (2)

- ii. Find final temperature of mixture when 20g water at 80°C is mixed with 10g ice at -5°C .
(Specific heat capacity of ice $0.5 \text{ calg}^{-1}\text{C}^{-1}$, specific heat capacity of water $1 \text{ calg}^{-1}\text{C}^{-1}$ and latent heat of fusion of ice 80 calg^{-1}) (3)
4. i. Define thermal conductivity and derive its dimensional formula. (2)
ii. Find rate of energy radiated by the sphere of radius 100 cm at 127°C assuming it 90% black body.
(Stefan's constant $5.67 \times 10^{-8} \text{ Wm}^{-2}\text{k}^{-4}$) (3)
5. i. What will be the focal length of glass lens when it is placed inside water? (1)
ii. Define power of lens. (1)
iii. An object is placed at a distance of 30cm from plano convex lens made of glass of refractive index 1.5 whose curved surface has radius 20cm. Find position and nature of image formed by the lens. (3)

OR

- i. What is the difference between shadow and image? (2)
ii. Define spherical mirror? What do you mean by reflection of light? (3)
- 6.i. State Joule's law of heating. (2)
ii. Find power consumed by 12Ω resistor in the given circuit. (3)



7. i. Define current and current density with units. (2)
ii. Find possible combinations of 2Ω , 3Ω and 4Ω resistors. (3)
8. i. Define one farad. (1)
ii. What are the factors on which capacitance of parallel plate capacitor depends? (2)
iii. Find maximum and minimum capacitance that can be obtained from combination of two $2\mu\text{F}$ capacitors. (2)

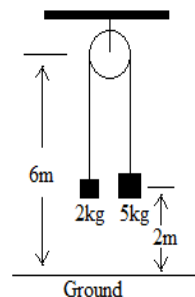
Group: C

Long Answer Questions (3x8 =24)

9. i. State Newton's laws of motion. (2)
ii. What is the cause of friction? (3)
iii. A rubber ball of mass 100g is dropped on the ground from a height of 20m and it rebound within 0.1 s with velocity which is one third of velocity with which it hits ground. Find force on the ball due to impact. ($g=10\text{ms}^{-2}$) (3)

OR

- i. Draw free body diagram for given figure. (2)
ii. Find tension in the string and acceleration of system. (3)
iii. Find net potential energy loss by the system. (3)



10. i. What do you mean by stress and strain? (2)
ii. Define Young's modulus, Bulk modulus and Modulus of rigidity (3)
iii. A uniform wire having mass 20g and density 8000km^{-3} is lengthen by 1mm when a mass of 5kg suspended at its free end. Find Young's modulus of wire. (3)
11. i. How element is represented symbolically in nuclear physics? (1)
ii. Define mass defect, binding energy and packing fraction. (2)
iii. Define black hole and gravitational wave. (2)
iv. Prove that nuclear density is independent of mass number? (3)

Radiant Secondary School
Annual Examination (2079)
Subject Code: 1011

SET-B

Grade: XI
Time: 3 Hours

Subject: Physics

Full Marks: 75

Group: A**Multiple Choice Questions (11x1 =11)**

Write the correct answer

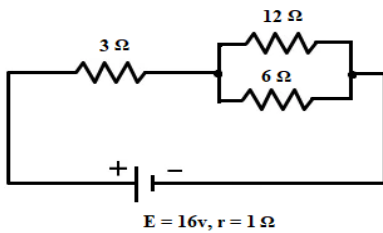
1. Correct statement is.....
 - a. momentum and impulse has different unit
 - b. dimensionless quantity has no unit
 - c. volt per meter is unit of electric field intensity
 - d. direction of deforming and restoring force is same
2. To describe vertical circle of radius r , minimum velocity of body at the bottom of vertical circle is.....
 - a. \sqrt{rg}
 - b. $\sqrt{2rg}$
 - c. $\sqrt{3rg}$
 - d. $\sqrt{5rg}$
3. Projectile attains maximum height when fired at an angle of with the horizontal.
 - a. 30°
 - b. 45°
 - c. 60°
 - d. 90°
4. Stationary satellite has time period.....
 - a. 12 hrs
 - b. 24hrs
 - c. 36hrs
 - d. 48hrs
5. For rotational equilibrium,
 - a. net amount of force is zero
 - b. net amount of torque is zero
 - c. angular acceleration is not zero
 - d. linear acceleration is zero
6. Convexo concave lens has.....
 - a. both convex surfaces
 - b. both concave surfaces
 - c. one concave and another convex surface
 - d. one convex and another plane surface.
7. During dispersion of light, order of colours in the spectrum from bottom to top is as.....
 - a. VIBGYOR
 - b. VIBYGOR
 - c. VBIGYOR
 - d. ROYGBIV
8. Lateral shift depends on.....of medium.
 - a. mass
 - b. thickness
 - c. volume
 - d. none of these
9. Concave mirror form magnified erect image when object lies.....
 - a. at centre of curvature
 - b. between principal focus and centre of curvature
 - c. at principal focus
 - d. inside principal focus
10. Correct statement is.....
 - a. electric potential and electric field are scalar
 - b. electric potential and electric field are vector
 - c. electron and proton have same mass.
 - d. electron and proton have different mass.
11. Gravitational wave
 - a. is transverse in nature
 - b. is longitudinal in nature
 - c. is visible
 - d. has infinite velocity

Group-B**Short Answer Questions**

Attempt all the questions (8 x 5 = 40)

1. i. State principle of conservation of linear momentum. (1)
 - ii. What are the advantages and disadvantages of friction? (2)
 - iii. Body having mass 2 kg moving with 10ms^{-1} collides with stationary body placed over horizontal surface. After collision they move together. Find loss in kinetic energy of 2kg body. (2)
- OR**
- i. Define angle of friction and angle of repose. (2)
 - ii. Prove that downward acceleration of body sliding down along inclined rough surface is independent of its mass. (3)
 2. i. Define thermal capacity and specific heat capacity. (2)
 - ii. Find final temperature of mixture when 2g steam at 100°C is mixed with 10g ice at 0°C .
 (Latent heat of steam 540 calg^{-1} , specific heat capacity of water $1\text{ calg}^{-1}\text{C}^{-1}$ and latent heat of fusion of ice 80 calg^{-1}) (3)
 3. i. Define conduction, convection and radiation with examples. (2)

- ii. Find power of the sphere at 27°C whose surface area is $4\pi m^2$ and emissivity of sphere 0.95.
(Stefan's constant $5.67 \times 10^{-8} \text{ w m}^{-2}\text{k}^{-4}$) (3)
4. i. Write down the postulates of kinetic theory of gases. (2)
ii. At 27°C , r.m.s. speed of gas molecule is 240ms^{-1} . Find r.m.s. speed of gas molecule at 127°C . (3)
5. i. Define refractive index of medium. (1)
ii. Why clear pool of water always appears shallower than its real depth? (2)
iii. Find critical angle of medium having refractive index 1.5 when it is placed inside liquid having refractive index 1.33. (2)
- OR**
- i. Define prism and write down an expression for deviation produced by small angle prism. (2)
ii. An equilateral glass prism of refractive index 1.5 produces minimum deviation of 36° in air. Find its refracting angle. (3)
6. i. Draw circuit diagram for the experimental verification of Ohm's law. (2)
ii. Find heat produced in 6Ω resistor in the given circuit if current flows for 4s. (3)



7. i. Define equipotential surface and write down its properties. (2)
 ii. Three positive charges each of $2\mu\text{C}$ are located at corners of an equilateral triangle having perimeter 3m . Find net potential at mid-point of any one side. ($\epsilon_0 = 5.85 \times 10^{-12} \text{C}^2\text{m}^{-2}\text{N}^{-1}$) (3)
8. i. Derive an expression for energy stored in a capacitor. (2)
 ii. Eight water drops of equal radii carrying same amount of charges combine to form bigger drop. Compare capacitance of bigger drop with smaller drop. (3)

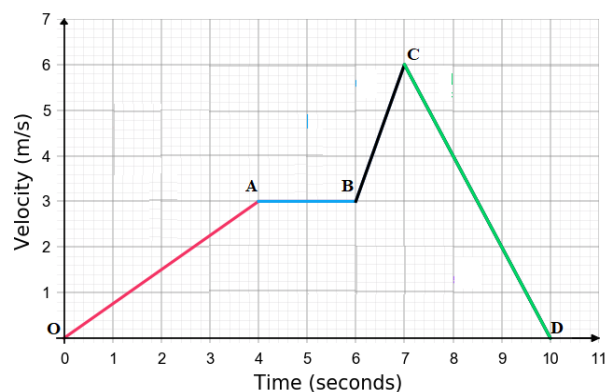
Group-C

Long Answer Questions (3x8 =24)

9. i. What is the source of centripetal force for satellite? (2)
 ii. Prove that the velocity of satellite is independent of its mass. (3)
 iii. Find height of parking orbit. ($g = 10 \text{ms}^{-2}$ & radius of earth 6400km) (3)
10. i. Define elastic, plastic and rigid body. (2)
 ii. State Hooke's law. How Hooke's law is verified from graph? (2)
 iii. Why bridges are declared unsafe after long use? (2)
 iv. A uniform wire having length 2m lengthens by one tenth of one percent of initial length due to 80N force. Find Young's modulus of the material of wire. (radius of wire 1mm) (2)

OR

- i. What is the difference between distance and displacement? (2)
 ii. Motion of body is represented by velocity time graph as



- a. How body is moving along OA, AB, BC and CD? (3)
 b. What is the total distance moved by body? (3)
11. i. State Hubble's law and give significance of Hubble constant. (2)
 ii. Define fission and fusion reaction with examples. (3)
 iii. Find mass defect for ${}^4_2\text{He}$ nucleus. (3)
 ($m_p = 1.007825 \text{a. m. u.}$, $m_n = 1.008665 \text{a. m. u.}$)
 (actual mass of nucleus 4.00263a. m. u.)

Radiant Secondary School
Annual Examination 2079

Computer Science **SET A**
Grade: XI (Science/Management)

FM 50
Time 2 hrs

Group A

Tick the best alternative

[9x1=9]

1. Who is the father of Computers?
 - a) James Gosling
 - b) Charles Babbage
 - c) Dennis Ritchie
 - d) Bjarne Stroustrup
2. Which of the following language does the computer understand?
 - a) Computer understands only C Language
 - b) Computer understands only Assembly Language
 - c) Computer understands only Binary Language
 - d) Computer understands only BASIC
3. Which of the following is the smallest unit of data in a computer?
 - a) Bit
 - b) KB
 - c) Nibble
 - d) Byte
4. What is an operating system?
 - a) interface between the hardware and application programs
 - b) collection of programs that manages hardware resources
 - c) system service provider to the application programs
 - d) all of the mentioned
5. A program which translates a high-level language program into a machine language program is called?
 - a) Compiler
 - b) Interpreters
 - c) Both (A) and (B)
 - d) None of the above
6. The correct sequence of HTML tags for starting a webpage is -
 - a) Head, Title, HTML, body
 - b) HTML, Body, Title, Head
 - c) HTML, Head, Title, Body
 - d) HTML, Head, Title, Body
7. Which of the following tag is used to insert a line-break in HTML?
 - a) `
`
 - b) `<a>`
 - c) `<pre>`
 - d) ``
8. The combination of text, graphics art, sound, animation and video delivered by computer or other electronic devices is called:
 - a) Multimedia
 - b) Hyper media
 - c) Visual media
 - d) None
9. Which of the following is not a positional number system?
 - a) Roman Number System
 - b) Octal Number System
 - c) Binary Number System
 - d) Hexadecimal Number System

Group B (Short Answer Question)

Attempt all questions

[5×5=25]

1. Differentiate between primary memory and secondary memory.
2. Define 9's complement method. Subtract $(25)_{10}$ from $(100)_{10}$ using 10's complement method.

OR

Differentiate between XOR and XNOR with truth table, venn diagram and symbol.

3. Define operating system. Differentiate between GUI and CUI with example.
4. Define translator. Differentiate between compiler and interpreter.

OR

Define loop. Write a program to display sum of first 10 natural numbers.

5. What is multimedia? Explain the components of multimedia.

Group C (Long Answer Questions)

Attempt all questions [2×8=16]

6. Define programming language. Explain different types of programming language with its merits and demerits.

7. Define CSS. Explain external and inline CSS with suitable example.

OR

Write a program to input any 10 number and display numbers in ascending order.

**Radiant Secondary School
Annual Examination 2079**

**Computer Science SET B
Grade: XI (Science/Management)**

**FM 50
Time 2 hrs**

Group A

Tick the best alternative [9×1=9]

1. Which of the following is the brain of the computer?

- a) Central Processing Unit b) Memory
c) Arithmetic and Logic unit d) Control unit

2. Which of the following are physical devices of a computer?

- a) Hardware b) Software
c) System Software d) Package

3. Operating system is a collection of

- a) Software routines b) Input-output devices
c) Hardware components d) All of these

4. HTML stands for -

- a) High Text Machine Language
b) Hyper Text and links Markup Language
c) Hyper Text Markup Language d) None of these

5. How to create an unordered list (a list with the list items in bullets) in HTML?

- a) b) c) d) <i>

6. All keywords in C are in _____

- a) Lower Case letters b) Upper Case letters
c) Camel Case letters d) None of the mentioned

7. Who is the father of C language?

- a) Steve Jobs b) James Gosling
c) Dennis Ritchie d) Rasmus Lerdorf

8. Which type of errors are flagged by Compilers?

- a) Logical errors b) Syntax errors
c) Both (A) and (B) d) None of these

9. The binary equivalent of the decimal number 10 is _____

- a) 0010 b) 10 c) 1010 d) 010

Group B (Short Answer Question)

Attempt all questions [5×5=25]

1. Explain the types of computer on the basis of brand.

2. Define 1's complement method. Subtract $(1011)_2$ from $(101)_2$ using 1's complement method.

OR

Differentiate between NAND and NOR gate with table venn diagram and symbol.

3. Explain for loop with suitable example.

OR

Write a program to input any number and check whether number is positive or negative or equal.

4. Define single user and multiuser operating system.

5. Define list. Explain ordered list with example.

Group C (Long Answer Questions)

Attempt all questions

[2×8=16]

6. Explain the component of computer with logical block diagram.

7. Define string. Explain any three string function with example.

OR

Define an array. Write a program to input any matrix of odder 2x3 and display its transpose.

Radiant Secondary School

SET-A

Annual Exam (2079)

Grade: XI

Subject: Chemistry

Subject Code: 3011

Time: 3 Hours

Full Marks: 75

Candidates are required to give their answer in their own words as far as practicable. The figures in the margin indicate full marks.

Attempt all questions.

Group: A

(11 × 1 = 11).

Rewrite the correct option of each question in your answer sheet.

1. Percentage of sulphur in $\text{Na}_2\text{S}_4\text{O}_6$ is

(a) 37.40

(b) 47.40

(c) 57.40

(d) 51.50

2. How many atoms are present in 28 g of nitrogen?

(a) 1.2046×10^{23}

(b) 3.0115×10^{23}

(c) 6.023×10^{23}

(d) 12.046×10^{23}

3. The high boiling point of water is due to

(a) hydrogen bonding between molecules

(b) its high specific heat

(c) weak dissociation of water molecules

(d) its high dielectric constant

4. What happens when hydrogen sulphide gas is passed into acidified $\text{K}_2\text{Cr}_2\text{O}_7$ solution?

(a) H_2S is reduced to S

(b) H_2S is reduced to H_2SO_4

(c) H_2S is oxidised to S

(d) H_2S is oxidised to H_2SO_4

5. Efflorescent is the phenomenon which involves

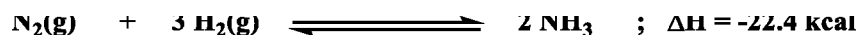
(a) loss of water

(b) gain of water

(c) decomposition

(d) none

6. In Haber's process ammonia is manufactured by the direct combination nitrogen gas and hydrogen gas. The reaction is reversible.



Which conditions of pressure and temperature favour the forward reaction?

- (a) High pressure and high temperature (b) High pressure and low temperature
 (c) Low pressure and high temperature (d) Low pressure and low temperature

7. The impurities associated with the ore after mining are collectively called

- (a) flux (b) slag (c) minerals (d) gangue

8. Raw materials for the production of urea are

- (a) NH_3 and CO (b) NH_3 and CO_2 (c) N_2 and CO (d) N_2 and CO_2

9. Which of the following is useful for contraction of muscles?

- (a) Fe^{2+} (b) Zn^{2+} (c) Ca^{2+} (d) Cu^{2+}

10. Which of the following nutrients is responsible for rapid growth of plants?

- (a) Nitrogen (b) Phosphorus (c) Potassium (d) Calcium

11. The functional group of esters is

- (a) COOH (b) -CHO (c) COR (d) -COOR

Group: B

(8 × 5 = 40)

12. An element X has 2 electrons in K shell, 8 electrons in L shell and 7 electrons in M shell.

- (a) Identify the element X and write the number of protons and electrons in it.
 (b) Write the electronic configuration of the element X.
 (c) Size of X^- ion is greater than that of X atom though both contain the same number protons. Give reason.

(2+1+2=5)

Or

What is ionization energy? Describe the factors that affect the ionization energy. Why is ionization energy of nitrogen greater than that of oxygen?

(1+3+1=5)

13. Write the postulates of Bohr's atomic model. How did it overcome the limitations of Rutherford's atomic model? (4+1)

(4+1=5)

14. 90 g of pure CaCO_3 is reacted with 73 g of pure HCl to produce CaCl_2 , H_2O and CO_2 .

- (a) Which one is the limiting reagent?
 (b) Calculate mass of CaCl_2 produced.
 (c) How many molecules of water are produced?
 (d) What volume of CO_2 is produced if the reaction is carried out at 27°C and 760 mm Hg pressure. (1+1+1+2=5)

15. Give electronic interpretation of oxidation and reduction with suitable examples. Balance the following reaction by ion-electron or oxidation number method.

(2.5+2.5=5)

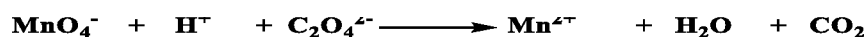
16. Derive relationship between K_p and K_c . Give one example of chemical reaction where K_p is equal to K_c . (4+1)

17. Give reactions for the preparation of HCl, HBr and HI in laboratory. What happens when HCl reacts with (a)

AgNO_3 solution

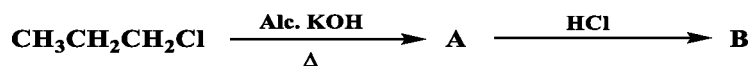
(b) NaOH solution

(3+1+1=5)



Or

Describe with self-explanatory sketch of Down's process for the manufacture of sodium. Write the action of sodium with

(a) H₂O(b) CO₂

(3+1+1=5)

18. (a) What kind of hybridization results into tetrahedral geometry? Give any one character of this type of hybridization.

(b) Predict the geometry of BF₃ and NH₃ molecules on the basis of VSEPR theory.

(2+3)

19. (a) Identify A and B, and give their IUPAC name in the following reaction sequence.

(b) State and explain Huckel's rule of aromaticity with suitable examples.

(3+2)

Group: C

(3 × 8 = 24)

20. (a) H₂S gas is used as an analytical reagent in laboratory for analysis of basic radicals. For this purpose it is prepared using Kipp's apparatus. Describe the working principle of Kipp's apparatus.

(b) Give reaction to show that SO₂ can acts as:

(i) an acid

(ii) an oxidising agent

(iii) a reducing agent

(iv) a bleaching agent

(4+4=8)

Or

- (a) Describe working principle with flow sheet diagram for the manufacture of nitric acid by Ostwald's process. (3+2=5)
 (b) What happens when?
 (i) cold and very dilute HNO_3 reacts with Mg.
 (ii) hot and conc. HNO_3 reacts with Zn.
 (iii) hot and conc. HNO_3 reacts with C. (1+1+1=3)
21. (a) Derive ideal gas equation $PV = nRT$. Under what conditions real gases behaves as ideal gas? (3+1=4)
 (b) When CH_4 and SO_2 are simultaneously introduced into opposite ends of 100 cm long tube and allowed to diffuse. At what distance the molecules of these two gases will meet from the SO_2 end? (4)
22. Write short notes on:
 (i) Homologous series and its characteristics. (ii) Detection of nitrogen in organic compounds. (4+4=8)

Radiant Secondary School

SET-B

Annual Exam (2079)

Grade: XI

Subject: Chemistry

Subject Code: 3011

Time: 3 Hours

Full Marks: 75

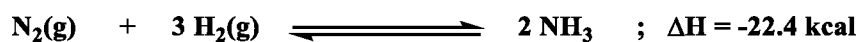
Candidates are required to give their answer in their own words as far as practicable. The figures in the margin indicate full marks.
 Attempt all questions.

Group: A

(11 × 1 = 11).

Rewrite the correct option of each questions in your answer sheet.

- A compound with empirical formula $\text{C}_2\text{H}_5\text{O}$ has vapour density 45. The molecular formula of compound will be
 (a) $\text{C}_2\text{H}_5\text{O}$ (b) $\text{C}_4\text{H}_{10}\text{O}_2$ (c) $\text{C}_2\text{H}_2\text{O}_4$ (d) $\text{C}_2\text{H}_5\text{O}_4$
- How many atoms are present in 32 g of oxygen?
 (a) 1.2046×10^{23} (b) 3.0115×10^{23} (c) 6.023×10^{23} (d) 12.046×10^{23}
- Which of the following is not electron deficient molecule?
 (a) NH_3 (b) AlCl_3 (c) BF_3 (d) BCl_3
- One of the striking features of transition elements is
 (a) show fixed oxidation states (b) all are non-metals
 (c) form coloured compounds (d) form colourless compounds
- Deliquescent is the phenomenon which involves
 (a) loss of water (b) gain of water (c) decomposition (d) none
- In Haber's process ammonia is manufactured by the direct combination nitrogen gas and hydrogen gas. The reaction is reversible.



Which conditions of pressure and temperature favour the backward reaction?

- (a) High pressure and high temperature (b) High pressure and low temperature
 (c) Low pressure and high temperature (d) Low pressure and low temperature
7. Which of the following processes is used for the concentration of sulphide ores?

- (a) Gravity separation (b) Leaching (c) Froth floatation (d) Electromagnetic separation

8. In chlorophyll..... metal ion is present.

- (a) Fe^{2+} (b) Mg^{2+} (c) Ca^{2+} (d) Cu^{2+}

9. Raw materials for the production of urea are

- (a) NH_3 and CO (b) NH_3 and CO_2 (c) N_2 and CO (d) N_2 and CO_2

10. Which of the following nutrients is responsible for resistance of plants towards diseases?

- (a) Potassium (b) Phosphorus (c) Nitrogen (d) Calcium

11. The functional group of ethers is

- (a) COOH (b) $-\text{CHO}$ (c) $\text{O}-$ (d) $-\text{COOR}$

Group: B

(8 × 5 = 40)

12. An element X has 2 electrons in K shell, 8 electrons in L shell and 6 electrons in M shell.

- (a) Identify the element X and write the number of protons and electrons in it.
 (b) Write the electronic configuration of the element X.
 (c) Size of X^{2-} ion is greater than that of X atom though both contain the same number protons. Give reason.
 (2+1+2=5)

Or

What is electronegativity? Describe the factors that affect electronegativity. How does electronegativity varies within a period and group?
 (1+3+1=5)

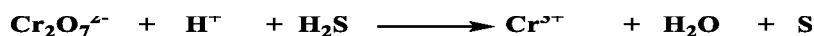
13. Write the postulates of Rutherford's atomic model. What are its limitations?
 (4+1=5)

14. 20 g of 40% pure CaCO_3 if reacted with 5 g of pure HCl to produce CaCl_2 , H_2O and CO_2 .

- (a) Which one is the limiting reagent and why?
 (b) Calculate mass of CaCl_2 produced.
 (c) How many number of water molecules are produced?
 (d) What volume of CO_2 is produced if the reaction is carried out at 27°C and 0.5 atm. pressure. (1+1+1+2=5)
 15. Give electronic interpretation of oxidation and reduction with suitable examples. Balance the following reaction by ion-electron or oxidation number method.
 (2.5+2.5=5)

16. State the law of mass action. Define equilibrium constant. Give important characteristics of equilibrium constant.
 (1+1+3=5)

17. Give reactions for the preparation of Cl_2 , Br_2 and I_2 in laboratory. What happens when Cl_2 reacts with (a) hot and concentrated NaOH solution (b) cold and dilute NaOH solution
 (3+1+1=5)



Or

Explain the following terms: (a) roasting (b) calcination (c) flux (d) slag (e) amalgam (3+1+1=5)

18. (a) What kind of hybridization results into triangular planar geometry? Give any one character of this type of hybridization. (b) Predict the geometry of CH₄ and H₂O molecules on the basis of VSEPR theory. (2+3)
19. (a) Identify A and B, and give their IUPAC name in the following reaction sequence.

