M-3
Midterm Examination - 2024
Subject - Science
Set - 1

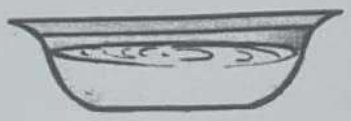
Time Duration: 3 hours M.M. 80

1. This question paper consists of 39 questions in 5 sections.
2. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
3. Section A consists of 20 objective type questions carrying 1 mark each.
4. Section B consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should be in the range of 30 to 50 words.
5. Section C consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should be in the range of 50 to 80 words.
6. Section D consists of 3 Long Answer type questions carrying 05 marks each. Answers to these questions should be in the range of 80 to 120 words.
7. Section E consists of 3 source-based/case-based units of assessment of 04 marks, each with sub-parts.

Section A (1 X 20 = 20)

1	A _____ process in which a substance reacts with _____ to give off heat is called combustion.	1
2	Magnesium is a non-combustible metal. State True or False.	1
3	Which one of the following has the highest calorific value, Cow dung cake or Biogas?	1
4	Name a chemical that can be spread near the fire to give off Carbon dioxide to extinguish the fire.	1
5	The table shows the ignition temperature of four substances. Which substance will catch fire easily when heated at 50°C?	1
6	Why goldsmiths blow the outermost zone of a candle flame to melt gold and silver?	1

Substance	Ignition temperature in degree celsius
A	180°C
B	25°C
C	119°C
D	38°C

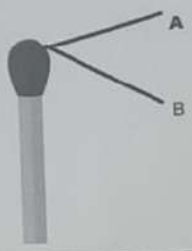
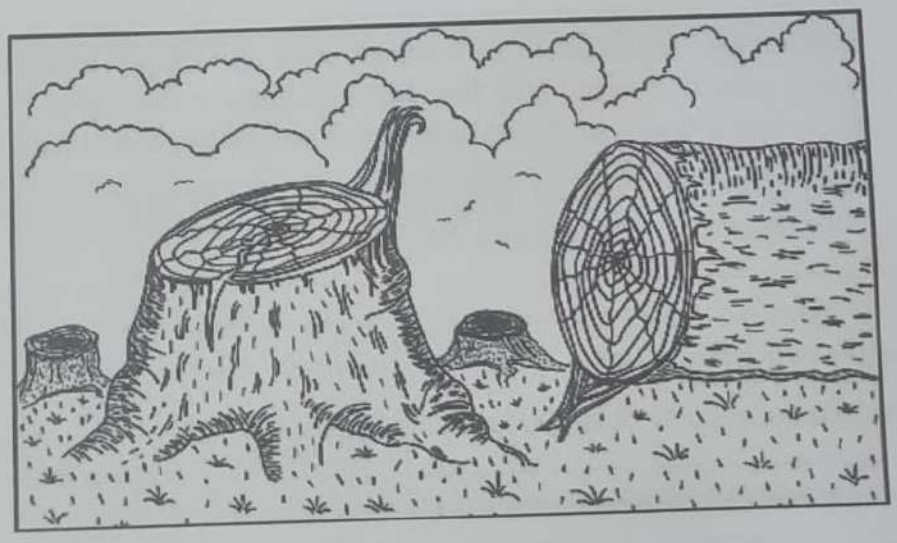
7	The type of combustion that has resulted in many disastrous fires in coal mines is _____ combustion.	1
8	X and Y are rich in plant nutrients. X Is a natural one whereas Y is manufactured in factories. Both X and Y are applied to the crop fields to increase soil fertility and crop yield. Identify X and Y.	1
9	_____ refers to the variety of organisms existing on the earth.	1
10	Take ½ kg flour (atta or maida), add some sugar and mix with warm water. Add a small amount of yeast powder and knead to make a soft dough. After two hours, it is observed that the dough rises.  *Maida with yeast powder*  *Raised maida* Name the process that causes this dough to rise.	1
11	Match the incorrectly matched agricultural practices with the implements used:	1

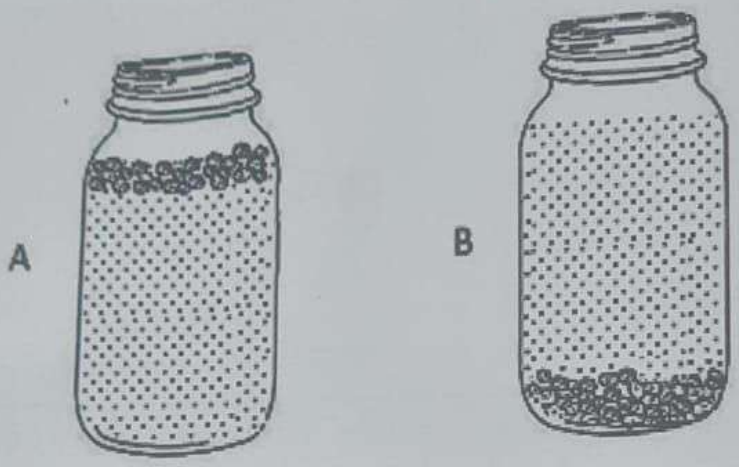
S.No.	Agricultural Practice	S.No.	Implement Used
1.	Sowing	a.	Seed drill
2.	Weeding	b.	Khurpi
3.	Threshing	c.	Sickle
4.	Harvesting	d.	Combine

12	Out of the few diseases which are listed in the box given below, identify the ones which are caused by viruses: 1. Cholera 2. Hepatitis A 3. Typhoid 4. Malaria 5. Polio 6. Tuberculosis	1
13	Atmospheric pressure is the _____ air in a column of unit area	1
14	Name a device used for measuring the force acting on an object.	1

15	Match The following: **COLUMN I** / **COLUMN II** A. Charcoal — i. Forms flame B. Camphor — ii. Does not form flame	1
16	Correct the statement. The force applied by the archer to stretch the bow is an example of gravitational force.	1
	The following questions from Question 17 to Question 20 consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below: **(a) Both A and R are true and R is the correct explanation of A** **(b) Both A and R are true and R is not the correct explanation of A** **(c) A is true but R is false** **(d) A is False but R is true** **(e) Both A and R are false**	
17	**Assertion:** The sun produces its own heat and light. **Reason:** In the sun, heat and light are produced by combustion.	1
18	**Assertion:** Sal, teak, mango, jamun are the flora of the Pachmarhi Biosphere Reserve. **Reason:** Biosphere reserves are the areas meant for conservation of biodiversity.	1
19	**Assertion:** Airplanes have a special shape that resembles birds. **Reason:** Scientists take inspiration from nature to design airplanes so as to reduce friction.	1
20	**Assertion:** Viruses reproduce only inside the host organism: bacterium, plant or animal cell. **Reason:** Diseases like Dysentery and Malaria are caused by viruses.	1

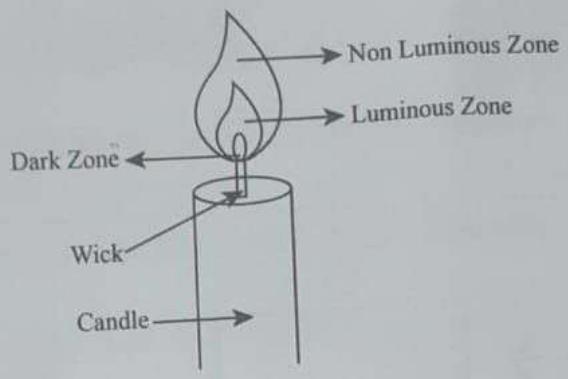
	Section B **2 X 6 = 12**	
21	(a) What is a fuel? (b) Give one example each for a solid, liquid and gaseous fuel.	2
22	Give reason for the following: a. Why do we not feel the enormous atmospheric pressure acting on our bodies? b. Why does a diver experience more pressure at greater depths in the ocean?	2
23	Give Reasons: (i) Some farmers grow leguminous crops like peas along-side rice crops. OR (ii) Soil gets affected by continuous plantation of crops.	2
24	A simple pendulum makes 5 oscillations in 10 seconds. What is the time period and frequency of its oscillation?	2
25	Explain why a car's tires have treads. How does the tread pattern affect friction, especially on wet roads? OR Explain why athletes wear special shoes with spikes while running on tracks or playing sports on grass fields.	2
26	Why should seeds be sown at appropriate depths and distances from each other?	2
	Section C **3 X 7 = 21**	
27	(a) List conditions under which combustion can take place. (b) Sunil was heating oil to fry potato chips. The pan with cooking oil all of a sudden caught fire. His house does not have a fire extinguishing cylinder. Under the given condition, what immediate action should Sunil take to douse off the fire. Explain his action with appropriate reasons.	3

28	(a) Define Calorific Value. (b) In an experiment 5 kg of a fuel was completely burnt. The heat produced was measured to be 20,000 kJ. Calculate the calorific value of the fuel. OR (a) Why do we need to take special care in storing kerosene oil? (b) The image shown below is of a safety match stick. The head of the safety match is made up of two chemicals. Name them.  	3
29	A forest is defined as the area of land that is covered by trees. The Food and Agriculture Organisation of the United Nations defined forest as "Land spanning more than 0.5 hectares with trees higher than 5 metres and a canopy cover of more than 10 percent, or trees able to reach these thresholds in this situation". It does not include land that is predominantly under agricultural or urban use. Today, a major threat to survival of these organisms is deforestation.  Explain any three effects of deforestation.	3

30	a. X and Y are some common weeds growing in a crop field. After some time, it was observed that the growth of the main crop was affected. Why did this happen? b. A handful of seeds were added to jars A and B containing water. After a while, it was observed that the seeds in jar A were floating on the surface of water whereas the seeds in Jar B settled at the base of the jar.  A farmer took some seeds from jar A and added them to the soil. After some time he realised that he had made a mistake. What did he observe and why? c. Why are dried neem leaves used for storing food grains at home?	3
31	a. Consider two surfaces: one covered with sandpaper and the other with smooth plastic. Predict how the frictional force would differ between these two surfaces when an object is dragged across them and explain why. b. You might have noticed that when used for a long time, slippers with rubber soles become slippery. Explain the reason.	3
32	a. Two astronauts are floating close to each other in space. Can they talk to each other without using any special device? Give a reason. b. List two sources of noise pollution in your surroundings.	3
33	Friction is a necessary evil. Explain.	3

Section D
5 X 3 = 15

34 Observe the structure of the candle frame in the given diagram and answer the following questions. 5



(a) Which zone of the flame is least hot? Also give reason to your answer.

(b) What will you observe when a clean glass slide is introduced in the luminous zone of the flame?

(c) Distinguish between the luminous zone and non luminous zone of the candle flame.[2 points]

OR

(a) List any three characteristics of an ideal fuel

(b) It is dangerous to burn coal in a closed room. Give reasons

(c) What is acid rain?

35 A. I. What are preservatives? Explain how do the preservatives listed below prevent the spoilage of food: 5

a. Salt

b. Oil

c. Vinegar

II. What is food poisoning?

III. Draw a neat and well labelled diagram to show the Nitrogen Cycle in nature. (2 + 1 + 2)

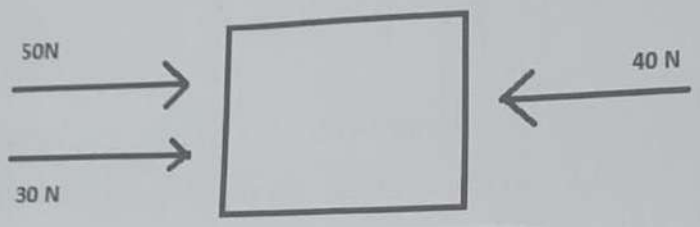
OR

B. I. Ritu was advised to stay away from her friend Annie since Annie was suffering from Chicken Pox. Why was Ritu told to stay away from Annie? Name the causative organism of chicken pox. How does this disease spread and mention any one way by which this disease can be prevented.

II. Food that is not stored properly can cause food borne illness. Justify the statement.

III. Draw a neat and well labelled diagram to show the Nitrogen Cycle in nature.

36 a. Calculate the net force and its direction in the following case. 5



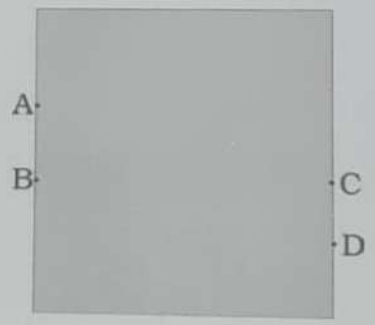
b. During dry weather, while combing hair, sometimes we experience hair flying apart. Identify and define the force responsible for it.

c. Differentiate between contact and non-contact force with the help of examples.

OR

a. A force of 100 N exerts pressure of 5 N/cm^2. What is the area on which the force acts in SI units?

b. A water tank has four taps fixed at points A, B, C, D as shown in Fig. State the points from where the water will flow out at the same pressure. Justify your answer.



c. Name a device used to measure atmospheric pressure.

Section E (4 X 3 = 12)

37	Read the passage and answer the questions that follow: Combustion of most fuels releases carbon dioxide in the environment. Carbon fuels like wood, coal, petroleum release unburnt carbon particles. For centuries, wood was used as domestic and industrial fuel. But now it has been replaced by coal and other fuels like LPG. In many rural parts of our country, people still use wood as a fuel because of its easy availability and low cost. Burning of coal and diesel releases sulphur dioxide gas. It is an extremely suffocating and corrosive gas. Moreover, petrol engines give off gaseous oxides of nitrogen. (i) LPG is a better domestic fuel than wood. Justify the statement with two valid reasons. (ii) Why is the use of diesel and petrol as fuels in automobiles being replaced by CNG? (iii) Incomplete combustion of coal gives_____gas. OR (iii) Increased concentration of carbon dioxide in the air is believed to cause_____.	4
38	Read the passage and answer the questions that follow: Antibiotics are medications that fight bacterial infections. They don't work against viral infections like cold or flu. Bacteria are microscopic germs that live inside your body, on your skin and all around you. Most types of bacteria won't hurt you. Some types (like some in your gut or on your skin) help keep you healthy. But certain bacteria can make you sick, with the effects ranging from a mild infection to a severe one that lands you in the hospital. That's why antibiotics are so important. They can help you feel better and are often lifesaving. But when it comes to antibiotics, it's possible to have too much of a good thing. Using antibiotics when they're not needed — like for viral infections or mild bacterial infections that would go away on their own — can lead to unnecessary side effects and contribute to the global problem of antibiotic resistance. a. In 1929, a scientist was working on a culture of disease causing bacteria. Suddenly he found the spores of a little green mould in one of his culture plates. He observed that the presence of mould prevented the growth of bacteria. In fact, it also killed many of these bacteria. From this mould an antibiotic was developed. Name this antibiotic and the scientist who discovered it.	4

	b. Why are antibiotics not effective against colds and flu? c. What is the difference between the mechanism of action of an antibiotic and a vaccine? d. Microorganisms could be friends or foes. Justify the statement OR d. We can control the spread of malaria and dengue. Justify the statement.	
39	Read the passage and answer the questions that follow: Sound plays an important role in our lives. It helps us to communicate with one another. We hear a variety of sounds in our surroundings. Many of you might have seen the manjira (cymbals), the ghatam, and the noot (mudpots) and the kartal. These instruments are commonly used in many parts of our country. These musical instruments are simply beaten or struck. a. Name the vibrating part producing sound in veena and flute. b. What are two important properties of any sound? c. State two differences between noise and music. OR c. State the frequency range for audible and inaudible sound.	4