CCE RR

ಸಂಕೇತ ಸಂಖ್ಯೆ : **83-E**

Code No. : 83-E

ವಿಷಯ : ವಿಜ್ಞಾನ

Subject : SCIENCE

(ಭೌತಶಾಸ್ತ್ರ, ರಸಾಯನಶಾಸ್ತ್ರ ಮತ್ತು ಜೀವಶಾಸ್ತ್ರ / Physics, Chemistry & Biology)

(ಇಂಗ್ಲಿಷ್ ಭಾಷಾಂತರ / English Version)

(ಹೊಸ ಪಠ್ಯಕ್ರಮ / New Syllabus)

(ಪುನರಾವರ್ತಿತ ಶಾಲಾ ಅಭ್ಯರ್ಥಿ / Regular Repeater)

General Instructions :

i) The Question-cum-Answer Booklet consists of objective and subjective types of questions having 42 questions.

ii) Space has been provided against each objective type question. You have to choose the correct choice and write the complete answer along with its letter in the space provided.

iii) For subjective type questions enough space for each question has been provided. You have to answer the questions in the space.

iv) Candidate should not write the answer with pencil. Answers written in pencil will not be evaluated. (Except Graphs, Diagrams & Maps)

v) Answer only one question each for the choice questions.

vi) Follow the instructions given against both the objective and subjective types of questions.

vii) In case of Multiple Choice, Fill in the blanks and Matching questions, scratching / rewriting / marking is not permitted, thereby rendering to disqualification for evaluation.

viii) **Space for Rough Work** has been printed and provided at the bottom of each page.

ix) Candidates have extra 15 minutes for reading the question paper.

x) Do not write anything in the space provided in the right side margin.

Four alternatives are given for each of the following questions / incomplete statements. Only one of them is correct or most appropriate. Choose the correct alternative and write the complete answer along with its letter in the space provided against each question. $10 \times 1 = 10$

1. The substance used as flux during the extraction of iron by the Haematite ore is

   (A) coke (B) limestone

   (C) silica (D) calcium silicate.

2. The correct statement with respect to simple harmonic motion is

   (A) acceleration remains the same throughout its motion

   (B) velocity remains the same throughout its motion

   (C) acceleration and velocity change on its own

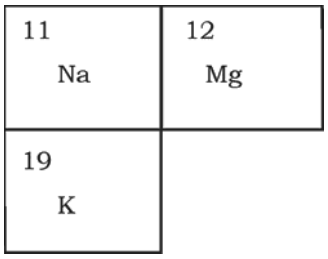
   (D) the direction of motion remains the same throughout the motion.

3. The technology that helps to transfer nitrogen fixing gene from bacteria directly into plants which enable them to meet their nitrogen requirement is

   (A) Genetic engineering (B) DNA fingerprint technology

   (C) Recombinant DNA technology (D) Cloning.

4. A part of *s*-block in the modern periodic table is given here. The correct arrangement of these atoms in the increasing order of their atomic size is

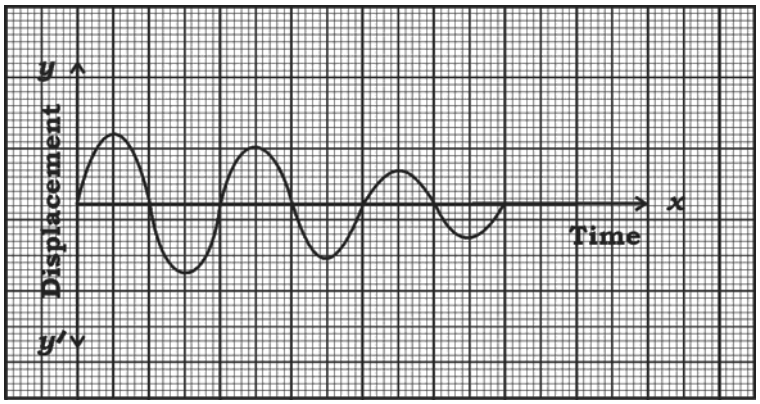


   (A) Na, Mg, K (B) K, Na, Mg

   (C) Mg, Na, K (D) Na, K, Mg.

(SPACE FOR ROUGH WORK)

5. The motion that represents the following graph is



(A) The motion of a pendulum where amplitude is decreasing gradually

(B) The motion of a pendulum where frequency is decreasing gradually

(C) The motion of a pendulum where frequency is increasing gradually

(D) The motion of a pendulum where period is decreasing gradually.

6. The disease caused by bacterium is

(A) Bird flu (B) Gonorrhoea

(C) Dengue (D) Genital Herpes.

7. A dynamo having split rings in its armature is inducing certain voltage in the external circuit. The device that can be used to increase this voltage is

(A) rectifier (B) transformer

(C) induction coil (D) oscillator.

8. A student wears spectacles with concave lenses for proper vision. When he is not using the spectacles, the image of the object is formed

(A) in front of the retina (B) on the blind spot

(C) behind the retina (D) on the yellow spot.

(SPACE FOR ROUGH WORK)

9. A person is trying to electroplate a brass article with silver. Even after passing electric current through the electrolyte, he finds that silver has not been deposited. Identify the mistake here.

(A) He has used concentrated silver nitrate solution

(B) He has used dilute silver nitrate solution

(C) He has used brass article as cathode

(D) He has used silver as cathode.

10. In bryophytes,

(A) the two generations are independent

(B) gametophyte is dependent on sporophyte

(C) sporophyte completes life cycle on its own

(D) sporophyte is dependent on gametophyte.

11. Match the stages of working of a petrol engine listed in **Column-A** with the process taking place in these stages listed in **Column-B**. Write the complete answer in the space provided : $4 \times 1 = 4$

Column - A	***Column - B***
(A) Intake stroke	(i) The temperature of fuel and air mixture rises.
(B) Compression stroke	(ii) Air mixes with fuel.
(C) Ignition stroke	(iii) Inlet valve is opened and outlet valve is closed.
(D) Expansion stroke	(iv) Inlet valve is closed and outlet valve is opened.
	(v) Fuel burns quickly and produces heat and gases.
	(vi) Gaseous products of combustion are pushed through outlet valve.
	(vii) Spark plug generates spark.

(SPACE FOR ROUGH WORK)

Answer the following questions : $7 \times 1 = 7$

12. What is the function of moderator in a nuclear reactor ?

13. Among radioactive radiations, alpha particles are less harmful to man. Why ?

14. What is saponification ?

15. The spectrum of a star which is moving away from us shows red shift. Why ?

16. Write the structural formula of salicylic acid.

17. What is metamorphosis ?

18. Write the circuit symbol of *npn* transistor.

Answer the following questions : $16 \times 2 = 32$

19. What is ionisation energy ? How does ionisation energy vary along the period in modern periodic table ?

OR

What are electropositive atoms ? How does electropositivity vary along the period in modern periodic table ?

20. What is doping ? What is the valency of dopant used to get *n*-type semi-conductor ?

OR

What is superconductivity ? Write any one of the uses of superconductors.

(SPACE FOR ROUGH WORK)

21. Draw the diagram showing the structure of HIV.

22. Write any two differences between Caucasoids and Mongoloids.

23. Give scientific reasons for the following :

    (a) Wave energy is more reliable than wind energy.

    (b) Conventional sources of energy are not eco-friendly.

24. Write any two differences between crystalline silicon and amorphous silicon.

25. Explain first two stages of manufacturing paper.

OR

Write one special property of the following glasses and mention one use of each :

(a) Borosilicate glass (b) Sodalime glass.

26. Write any four functions of epithelial tissue.

OR

Write the function of the following :

(a) Fibroblasts (b) Plasma cells

(c) Macrophages (d) Mast cells.

27. A person who is standing in front of a rigid wall at a distance of 42.5 m shouts. After how many seconds will he be able to hear the echo of his shout ? (Speed of sound is 340 m/s)

28. In cities and towns, increase in the population of insects and rodents is the indication of land pollution. Justify.

29. 'Though establishing nuclear power reactors is a solution for the shortage of electricity, it is dangerous.' Justify with two reasons.

30. Draw the diagram of the apparatus used in electrolysis.

(SPACE FOR ROUGH WORK)

31. Give scientific reason for the following :

(a) Parenchyma is a simple permanent tissue

(b) Sclereids are called stone cells.

OR

Give scientific reason for the following :

(a) Striped muscles are called skeletal muscles

(b) Fibres are not easily visible in the matrix of cartilage.

32. In test tubes *A* and *B*, zinc sulphate solution and silver nitrate solution are taken respectively. Copper turnings are added to both test tubes. In which of the two test tubes do you observe the reaction ? Justify your answer with scientific reason.

33. "Tissue culture helps to improve the nation's economy." Justify.

34. A balloon filled with helium gas is kept inside the refrigerator. What change do you observe in the size of the balloon after some time ? State the law that justifies your answer.

Answer the following questions : $5 \times 3 = 15$

35. Explain the process of manufacturing common sugar from sugarcane juice.

OR

Explain the process of manufacturing ethyl alcohol using molasses. Name the enzymes involved in this process.

36. Draw the diagram of induction coil and label the following parts :

(a) Secondary coil

(b) Make and break arrangement.

(SPACE FOR ROUGH WORK)

37. (a) Write any two differences between monocot and dicot plants.

(b) Polysiphonia is red in colour. Why ?

OR

(a) How does notochord differ in the four subphyla — Hemichordata, Urochordata, Cephalochordata and Vertebrata of chordates.

(b) Write one difference between locomotor structures of Amphibia and Reptilia.

38. Draw the diagram of blast furnace used in the extraction of iron and label the following parts :

(a) Waste gases (b) Molten iron.

39. A tall plant with yellow coloured seeds (*TTYY*) and a dwarf plant with green coloured seeds (*ttyy*) are crossed. Represent the plants obtained in the F_2 generation with the help of checker board and write the dihybrid ratio.

Answer the following questions : $3 \times 4 = 12$

40. (a) Read the following statement and name the stage of stellar evolution.

(i) The outward force from interior of the star is balanced by the inward gravitational pull.

(ii) The star is having intense gravitational field due to huge mass compressed into a very small volume.

(b) What is payload ? What do R and V_{ex} indicate in the equation —

Thrust on the rocket = $R \times V_{ex}$?

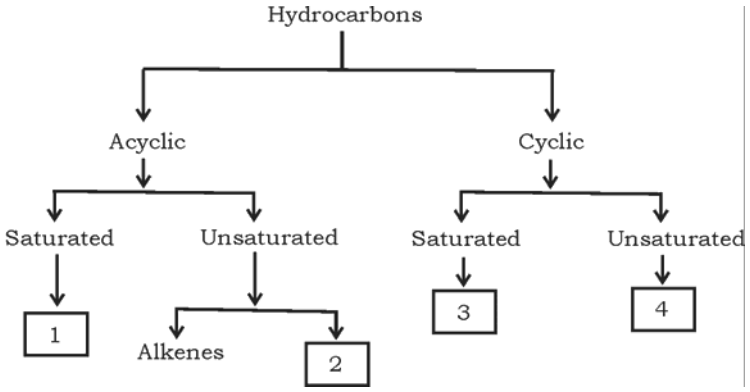
OR

(a) State the law of conservation of momentum. Explain how rocket works on this principle ?

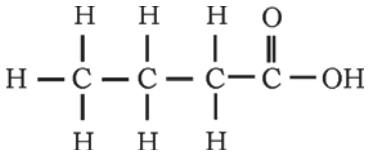
(b) What is a galaxy ? Name the galaxy to which the sun belongs.

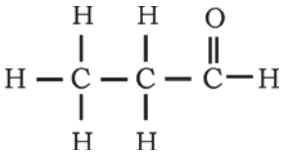
(SPACE FOR ROUGH WORK)

41. (a) The boxes given here with numbers 1, 2, 3 and 4 represent a class of hydrocarbons. Write the name of first member of that respective class according to the numbers given.



(b) Name the functional group in the following structures of hydrocarbon compounds and name these hydrocarbon compounds :

(i) 

(ii) 

42. Draw the diagram showing the internal structure of human ear and label the following parts :

(a) Ear canal (b) Cochlea.

(SPACE FOR ROUGH WORK)