SL. No. : K

ಒಟ್ಟು ಪ್ರಶ್ನೆಗಳ ಸಂಖ್ಯೆ : 52]
Total No. of Questions : 52]

CCE PR

[ಒಟ್ಟು ಮುದ್ರಿತ ಪುಟಗಳ ಸಂಖ್ಯೆ : 12
[Total No. of Printed Pages : 12

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 ಖಾಸಗಿ ಅಭ್ಯರ್ಥಿ / Private Repeater)

ದಿನಾಂಕ : 21. 06. 2017] [Date : 21. 06. 2017

ಸಮಯ : ಬೆಳಿಗ್ಗೆ 9-30 ರಿಂದ ಮಧ್ಯಾಹ್ನ–12-45 ರವರೆಗೆ] [Time : 9-30 A.M. to 12-45 P.M.

ಗರಿಷ್ಠ ಅಂಕಗಳು : 100] [Max. Marks : 100

TEAR HERE TO OPEN THE QUESTION PAPER
ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯನ್ನು ತೆರೆಯಲು ಇಲ್ಲಿ ಕತ್ತರಿಸಿ

General Instructions to the Candidate :

1. This Question Paper consists of 52 objective and subjective types of questions.
2. This question paper has been sealed by reverse jacket. You have to cut on the right side to open the paper at the time of commencement of the examination. Check whether all the pages of the question paper are intact.
3. Follow the instructions given against both the objective and subjective types of questions.
4. Figures in the right hand margin indicate maximum marks for the questions.
5. The maximum time to answer the paper is given at the top of the question paper. It includes 15 minutes for reading the question paper.

Tear here

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.**

$10 \times 1 = 10$

1. According to Graham's law of diffusion, at the given temperature and pressure the rate of diffusion of a gas is

   (A) directly proportional to the square root of its density.

   (B) directly proportional to its mass.

   (C) inversely proportional to the square root of its density.

   (D) inversely proportional to the square of its mass.

2. When the source of the sound is moving away from the observer, the observer feels the sound to be of lower frequency because,

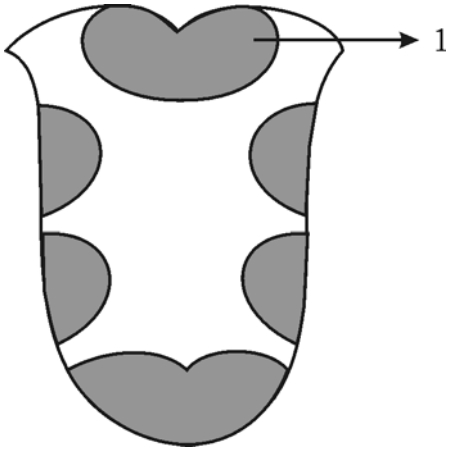
   (A) the waves behind the source of sound are compressed.

   (B) the wavelength of the source of sound decreases.

   (C) the waves behind the source of sound are farther apart.

   (D) the observer receives more number of waves.

3. The distribution of taste buds in the human tongue is shown in this figure. The part labelled as '1', senses this taste.



(A) Sweet (B) Bitter

(C) Salt (D) Sour.

4. 'Norit' is used in the manufacture of sugar because

(A) the impurities in the sugarcane juice get precipitated

(B) the crystallisation of sugar becomes fast

(C) sugar gets decolourised

(D) the protein matter of sugarcane juice is coagulated.

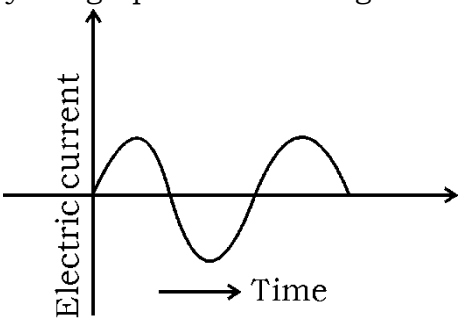
5. When Mendel crossed pure varieties of a tall plant with red flowers and a dwarf plant with white flowers, the number of dwarf plants with white flowers obtained in F_1 generation is

(A) 0 (B) 9

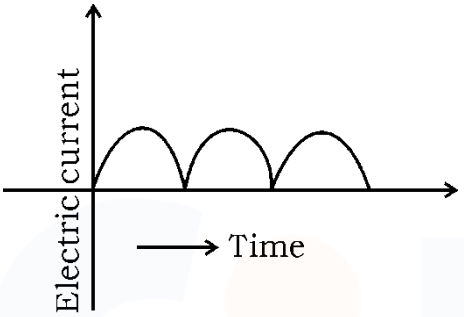
(C) 3 (D) 1.

6. Identify the graph of alternating current in the following :

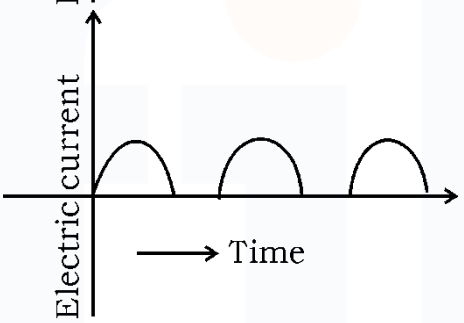
(A)



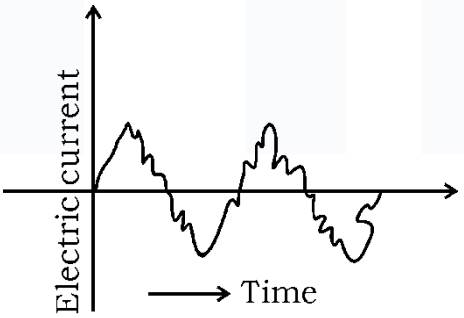
(B)



(C)



(D)



7. If the number of blood cells present in 1 mm^3 blood of a healthy person is written in the increasing order, then the correct order obtained is

(A) platelets, red blood cells, white blood cells

(B) white blood cells, red blood cells, platelets

(C) red blood cells, platelets, white blood cells

(D) white blood cells, platelets, red blood cells.

8. The main feature of the red giant stage of a star is

(A) the star has hydrogen core

(B) the radiation pressure acting outwards is equal to the inward gravitational pull of the star

(C) the temperature of the star increases and emits radiation of high frequency

(D) the star swells, loss of radiation takes place, the temperature decreases.

9. The disease Syphilis is caused by the bacterium

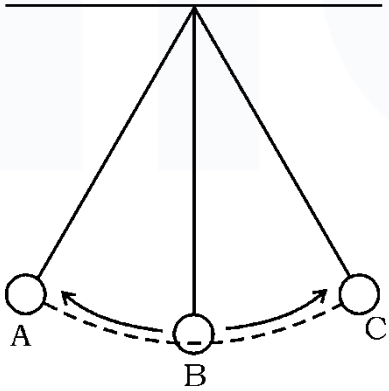
(A) *Neisseria gonorrhoeae*

(B) *Vibreo cholerae*

(C) *Treponema pallidum*

(D) *Salmonella typhae*.

10. The motion of a simple pendulum is shown in the figure. Identify the correct statement related to this figure.



(A) The pendulum has maximum potential energy at the point *B*.

(B) The pendulum has maximum kinetic energy at the point *A*.

(C) The pendulum has maximum potential energy at the points *A* and *C*.

(D) The pendulum has maximum kinetic energy at the points *A* and *C*.

11. **A few terms used in metallurgy are given in Column-A and their meanings are given in Column-B. Match them and write the answers along with its letter :** $4 \times 1 = 4$

Column - A	***Column - B***
(A) Concentration of the ore	(i) The substance added to the ore before heating
(B) Calcination	(ii) Heating the ore just below its melting point in the presence of air
(C) Flux	(iii) Impurities present in the ore
(D) Roasting	(iv) Subjecting the ore to the method of electrolysis
	(v) Increasing the percentage of desired component of the ore
	(vi) Heating the ore just below its melting point in the absence of air
	(vii) Crystallising the ore.

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

12. Effluents coming from furnaces of the industries must be cooled to atmospheric temperature before releasing into water bodies. Why ?

13. What are mechanical waves ?

14. Define Charles law.

15. Moss plants do not grow to greater heights. Why ?

16. Draw the circuit symbol of *p-n-p* transistor.

17. If an A.C. source of 220 volts has to be stepped down to 10 volts, then calculate the turns ratio of the primary coil and secondary coil.

18. The electrochemical equivalent of copper and gold are 0·0003 gm/coulomb and 0·000681 gm/coulomb respectively. If the equal amount of current is passed for the equal time interval in copper and gold voltameters, then in which voltameter the deposition of the metal at the cathode is more ? Why ?

Answer the following questions : 26 × 2 = 52

19. Explain the structure of male and female cones of gymnosperms.

20. List any four characteristic features of fishes.

OR

List any four characteristic features of reptiles.

21. Explain the method of manufacturing 95% pure ethyl alcohol from molasses.

22. Draw the diagram of the apparatus used in electroplating.

23. "In agriculture, growing genetically modified plants can reduce the water pollution caused by agricultural wastes." Justify this statement.

24. Mention the differences between *n*-type and *p*-type semiconductors.

OR

Mention the differences between intrinsic semiconductors and extrinsic semiconductors.

25. Draw the diagram showing the structure of HIV.

26. "Limited use of fossil fuels helps to reduce acid rain." Give scientific reason for this statement.

27. Draw the diagram of a D.C. motor.

28. Explain the working of SONAR.

OR

Explain the working of an ultrasound scanner.

29. Draw the diagram of the apparatus used in the electrolytic refining of copper.

30. List the physical features of Neanderthal man.

OR

List the physical features of Australopithecus.

31. Name the reaction that causes enormous amount of energy in the sun. Mention the two uses of solar cells.

32. Name the type of glass used in the following situations :

(a) Manufacture of laboratory equipments

(b) Manufacture of lens

(c) Manufacture of window glass

(d) Used as wind shield in aeroplane industries.

OR

Name the type of paper used in the following situations :

(a) To wipe the face

(b) Manufacture of post card

(c) To separate fine solids from liquids

(d) To wrap the cookies.

33. Explain the method of extraction of crystalline silicon with chemical equation.

34. In a specific group of unsaturated hydrocarbons, though the ratio of carbon and hydrogen atoms is 1 : 2, CH_2 is not the first member of those hydrocarbons. What is the reason for this ? Write the structural formula of the first member of that hydrocarbon group.

35. Draw the diagram showing the expansion stroke of a steam engine.

36. What is allotropy ? Mention the two crystalline allotropes of carbon.

37. Draw the diagram showing the structure of a dicot plant.

38. Write the balanced chemical equation for the following chemical reactions :

    (a) Sodium reacts with water

    (b) Zinc reacts with dilute sulphuric acid.

39. Explain the supernova stage of a star.

40. Name the components of Xylem tissue.

41. List any four uses of ceramics.

42. Why adrenaline is called the emergency hormone ?

43. List the advantages of hydroponics.

44. Which is the heavily doped segment of a transistor ? Mention its function.

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

45. Draw the diagram of a single stage rocket and label the parts.

46. Mention the similarities and differences found in the striated muscle fibres and the cardiac muscle fibres based on their structure.

47. (a) The element uranium which is used in the nuclear power reactor is enriched. Why ?

    (b) Explain the function of control rods and moderator in a nuclear power reactor.

OR

(a) $_{92}U^{235} + {}_{0}n^{1} \rightarrow {}_{56}Ba^{142} + {}_{36}Kr^{91} + 3\,{}_{0}n^{1}$ + Energy.

This reaction is called nuclear fission reaction. What is the reason ?

(b) List the effects of harmful radiations arising from the nuclear power reactor. Explain the measure to get protection from these radiations.

48. Explain the process of replication of DNA.

OR

Explain the double helix structure of DNA molecule.

49. The electronic configuration of four elements is given in the following table :

Element	*Electronic Configuration*
A	$1s^2 2s^2 2p^6 3s^1$
B	$1s^2 2s^2 2p^4$
C	$1s^2 2s^2 2p^6 3s^2 3p^6 4s^1$
D	$1s^2 2s^2 2p^6 3s^2$

(a) Which element has greatest atomic size in these elements ? Why ?

(b) Among these elements, the element having least atomic size, belongs to which period ? Why ?

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

50. (a) Explain the expansion stroke and exhaust stroke of a petrol engine.

(b) Name the stroke of a diesel engine in which diesel in the form of micelles is injected into the cylinder.

51. (a) What are functional groups ? Write the structural formula of the compound obtained when one atom of hydrogen in 'Ethane' is replaced by — CHO group.

(b) Write the balanced chemical equations for the four chemical reactions occurring when the mixture of methane and chlorine is exposed to ultraviolet light, till the production of tetrachloromethane.

OR

(a) Explain the preparation of methane with chemical equation. Name the products formed when methane completely burns in oxygen.

(b) Oils have very little shelf life. What is the reason ?

52. Draw the diagram showing the vertical section of the human eye and label the following parts :

(a) Lens

(b) Optic nerve.