

**RR+PR**ಸಂಕೇತ ಸಂಖ್ಯೆ : **83-E**Code No. : **83-E**

ವಿಷಯ : ವಿಜ್ಞಾನ

**Subject : SCIENCE**(ಭೌತಶಾಸ್ತ್ರ, ರಸಾಯನಶಾಸ್ತ್ರ ಮತ್ತು ಜೀವಶಾಸ್ತ್ರ / **Physics, Chemistry & Biology** )(ಇಂಗ್ಲಿಷ್ ಭಾಷಾಂತರ / **English Version** )( ಹಳೆ ಪಠ್ಯಕ್ರಮ / **Old Syllabus** )( ಪುನರಾವರ್ತಿತ ಅಭ್ಯರ್ಥಿ + ಪುನರಾವರ್ತಿತ ಖಾಸಗಿ ಅಭ್ಯರ್ಥಿ / **Regular Repeater + Private Repeater** )*General Instructions :*

- i) The Question-cum-Answer Booklet consists of objective and subjective types of questions having 55 questions.
- ii) This question-cum-answer booklet contains *two* Parts. **Part - A** contains the questions of Physics and Chemistry and **Part - B** contains Biology questions.
- iii) The question-cum-answer booklet has 36 questions in **Part - A** and 19 questions in **Part - B**.
- iv) 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.
- v) For subjective type questions enough space for each question has been provided. You have to answer the questions in the space.
- vi) Follow the instructions given against both the objective and subjective types of questions.
- vii) Candidate should not write the answer with pencil. Answers written in pencil will not be evaluated. ( Except Graphs, Diagrams & Maps )
- viii) In case of Multiple Choice, Fill in the blanks and Matching questions, scratching / rewriting / marking is not permitted, thereby rendering to disqualification for evaluation.
- ix) **Space for Rough Work** has been printed and provided at the bottom of each page.
- x) Candidates have extra 15 minutes for reading the question paper.
- xi) Do not write anything in the space provided in the right side margin.

**PART - A**  
**( Physics & Chemistry )**

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 principle of a dynamo is
  - (A) Magnetic effect of electric current
  - (B) Chemical effect of electric current
  - (C) Electromagnetic induction
  - (D) Heating effect of electric current.
  
2. The first Indian satellite is
  - (A) Bhaskara-I
  - (B) Aryabhata
  - (C) Rohini-RH-75
  - (D) Insat-3E.
  
3. The wave used to break gall stones is
  - (A) Ultrasonics
  - (B) Infra-red rays
  - (C) Gamma rays
  - (D) Radio waves.
  
4. The law that is used to calculate the distance of a planet from the sun is
  - (A) law of gravitation
  - (B) Kepler's second law
  - (C) Kepler's third law
  - (D) Kepler's first law.

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( SPACE FOR ROUGH WORK )

5. The red shift is found in the spectrum of a light source. From this we can decide that the light source
- (A) is stationary
  - (B) is moving away from us
  - (C) is moving towards us
  - (D) appears to have high frequency.
6. Main cause of energy crisis is
- (A) using LED bulbs
  - (B) encouraging public transport system
  - (C) simple life style
  - (D) population explosion.
7. The compound used to remove hardness of water is
- (A) sodium aluminium silicate
  - (B) silica
  - (C) silicon carbide
  - (D) sodium silicate.
8. Example for simplest hydrocarbon is
- (A) butane
  - (B) propene
  - (C) methane
  - (D) ethyne.
9. Polythene is used to prepare
- (A) seals
  - (B) medical articles
  - (C) gaskets
  - (D) bags.
10. A pair of ionic compounds which causes hardness of water is
- (A)  $\text{CaCl}_2$  and  $\text{MgCl}_2$
  - (B)  $\text{Na}_2\text{CO}_3$  and  $\text{MgCO}_3$
  - (C)  $\text{Ca(OH)}_2$  and  $\text{Mg(OH)}_2$
  - (D)  $\text{NaHCO}_3$  and  $\text{Mg(HCO}_3)_2$ .

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( SPACE FOR ROUGH WORK )

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Fill in the blanks :

 $3 \times 1 = 3$ 

11. Water that gives lather with soap easily is called .....
12. The monomer of polyvinyl chloride is .....
13. The reaction in which a heavy nucleus splits up into two medium nuclei with the liberation of energy is called .....
14. Match the electromagnetic waves in **Column-A** with their applications in

**Column-B.** Write the correct answer in the space provided : $4 \times 1 = 4$ **Column-A****Column-B**

- |                    |                                     |
|--------------------|-------------------------------------|
| (a) Radio waves    | (i) photosynthesis in plants        |
| (b) Infra-red rays | (ii) treatment of cancer            |
| (c) Visible light  | (iii) locating the fracture of bone |
| (d) Gamma rays     | (iv) treatment of skin diseases     |
|                    | (v) long distance photography       |
|                    | (vi) television broadcasting        |
|                    | (vii) in exposure meters.           |

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( SPACE FOR ROUGH WORK )

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**RR+PR-Y4021**

**RR+PR**

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Answer the following questions :

 $6 \times 1 = 6$ 

15. What is a motor ?
16. Rockets carry oxidants with them. Why ?
17. Write the differences between crystalline silicon and amorphous silicon.
18. In the preparation of cement which are the main two raw materials ?
19. Silicon is intrinsic semiconductor. Why ?
20. Hard water is not suitable for washing clothes. Why ?

Answer the following questions :

 $9 \times 2 = 18$ 

21. What is a transistor ? Mention the use of transistor.
22. Justify :
  - (a) Cyclist going round a curve, leans towards the centre of the curve.
  - (b) Uniform circular motion is an accelerated motion.
23. Mention two points, which are successfully explained by the law of gravitation.
24. Draw the diagram of single stage rocket.

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[ Turn over

25. Name the two types of fusion reactions, considered to be the source of solar energy.
26. Give reasons :
- (a) Sodium is kept under kerosene.
  - (b) Aluminium is used to manufacture kitchenwares ( utensils ).
27. Draw schematic representation of the structure of the sun and label photosphere.
28. Now a days people use more detergents than soap. How can you justify this ?
29. Draw the diagram of A.C. dynamo.

Answer the following questions :

4 × 3 = 12

30. (a) What is a galaxy ?
- (b) Name the three types of galaxies.
- (c) What is the name of our galaxy ? To which type of galaxy does it belong ?
31. (a) Mention the uses of spectroscope.
- (b) Write the differences between Rayleigh scattering and Raman effect ( scattering ).

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( SPACE FOR ROUGH WORK )

32. (a) If the initial mass of radium is 24 mg, then calculate the mass of radium after 4800 years. ( Given : Half-life of radium is 1600 years )
- (b) Mention the use of radio-phosphorus.
33. Draw the schematic representation of nuclear reactor. Label the following parts :
- (i) Control rods (ii) Moderator.

Answer the following questions :

3 × 4 = 12

34. (a) In internal combustion engine mention the functions of  
(i) Crankshaft (ii) Carburettor.
- (b) Mention the differences between diesel engine and petrol engine.
35. Draw a schematic representation of the blast furnace. Label the following parts :
- (a) Charge (b) Slag.
36. (a) Write the molecular formula and the structural formula of alkane and alkene containing two carbon atoms.
- (b) Why is LPG called an efficient fuel ? Give two reasons.

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( SPACE FOR ROUGH WORK )

**PART - B****( Biology )**

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.  $5 \times 1 = 5$

37. Number of chambers in the heart of fish is

- (A) 1 (B) 2  
(C) 3 (D) 4.

38. The part of the brain which maintains the equilibrium of the body is

- (A) Cerebellum (B) Hypothalamus  
(C) Medulla oblongata (D) Pons.

39. After the bone examination, it is found that bones of a person are soft.

Which of the following hormones is produced in excess ?

- (A) Adrenaline (B) Thyroxine  
(C) Nor-adrenaline (D) Parathormone.

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( SPACE FOR ROUGH WORK )

40. When infected by HIV, in earlier stages the defence system of the body is broken down. Because HIV
- (A) synthesises DNA in the host cell
  - (B) has the enzyme reverse transcriptase
  - (C) destroys *T*-lymphocytes
  - (D) gets adapted to the host body.
41. The disadvantage found in plants produced by tissue culture is
- (A) period of life span is reduced
  - (B) desirable pure characteristics are not protected
  - (C) plants die rapidly
  - (D) sterility of seeds.
42. Names of certain plant tissues are given in **Column-A**. Match them with their functions given in **Column-B**. Write the correct answer in the space provided : 4 × 1 = 4

**Column-A****Column-B**

- |                         |                                    |
|-------------------------|------------------------------------|
| (a) Meristematic tissue | (i) provides support to plant body |
| (b) Parenchyma          | (ii) transports minerals           |
| (c) Sclerenchyma        | (iii) protects the plant body      |
| (d) Epidermal tissue    | (iv) stores food and water         |
|                         | (v) transports food                |
|                         | (vi) helps in growth               |
|                         | (vii) transports water.            |

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( SPACE FOR ROUGH WORK )

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Answer the following in a sentence each :

4 × 1 = 4

43. Why pteridophytes are called trachaeophytes ?
44. Colours cannot be identified in dim light. Why ?
45. It is better to drink tender coconut than processed cool drinks. Justify.
46. What is recombinant DNA technology ?

Answer the following questions in *two* or *three* sentences each : 6 × 2 = 12

47. Some adaptations in the body of birds help them in flying. Justify your answer with two reasons.
48. List any four functions of epithelial tissue.
49. Give reasons :
  - (i) Pancreas is called a mixed gland.
  - (ii) Hormones are called chemical messengers.
50. "Though the blood groups match, certain tests are conducted for the donor's blood sample before transfusion." Give two reasons.
51. Name the common adulterants found in the following food items :
  - (i) Pepper
  - (ii) Honey
  - (iii) Turmeric powder
  - (iv) Ghee.

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52. A 'No Horn' notice is displayed near hospitals. Give reasons.

Answer the following questions :

2 × 3 = 6

53. Draw the diagram of mustard plant and label the parts.

54. Mention the differences between biodegradable pollutants and non-biodegradable pollutants. Give one example to each.

55. Draw the diagram of the vertical section of the brain and label the following parts : 4

(a) Cerebrum

(b) Medulla oblongata.

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( SPACE FOR ROUGH WORK )