ಒಟ್ಟು ಪ್ರಶ್ನೆಗಳ ಸಂಖ್ಯೆ : 36 + 19 = 55]　　　　　　[ಒಟ್ಟು ಮುದ್ರಿತ ಪುಟಗಳ ಸಂಖ್ಯೆ : 32

Total No. of Questions : 36 + 19 = 55]　　　　　[Total No. of Printed Pages : 32

ಸಂಕೇತ ಸಂಖ್ಯೆ : **83-E**　　　　ವಿಷಯ : ವಿಜ್ಞಾನ

Code No. : 83-E　　　　**Subject : SCIENCE**

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

(ಇಂಗ್ಲಿಷ್ ಭಾಷಾಂತರ / English Version)

ದಿನಾಂಕ : 19. 06. 2013]　　　　　　[Date : 19. 06. 2013

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

ಪರಮಾವಧಿ ಅಂಕಗಳು : 100]　　　　　　[Max. Marks : 100

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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 alphabet 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.

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 alphabet in the space provided against each question. $10 \times 1 = 10$

1.   A doctor suggests a child with retarded growth of bones to walk in the morning sunlight. The radiation that is helpful, is

    (A)   *X*-rays

    (B)   infrared rays

    (C)   ultraviolet rays

    (D)   gamma rays.

    Ans : _____

(SPACE FOR ROUGH WORK)

2. If we keep an iron plate exposed to sunlight for many hours, there will be no photoelectric effect because the threshold frequency of the iron is

    (A)   more than that of visible light

    (B)   less than that of visible light

    (C)   less than that of infrared light

    (D)   less than that of radio waves.

    Ans : _____

3. If a shallow dish containing some mercury and water is rotated about a vertical axis, mercury collects at the edge of the dish because of

    (A)   centripetal force

    (B)   gravitational force

    (C)   repulsive force

    (D)   centrifugal force.

    Ans : _____

4. A 40% efficient car performs a work of 400 kilojoules. The total amount of heat energy that it utilises in kilojoules is

    (A)   1000

    (B)   10000

    (C)   160

    (D)   800

    Ans : _____

(SPACE FOR ROUGH WORK)

5. White light is passed through a transparent medium and the spectrum of the light obtained is observed through a spectroscope. In the place of green light dark lines are observed. The phenomenon is comparable to

   (A) Raman effect

   (B) Rayleigh effect

   (C) Fraunhofer lines

   (D) continuous emission spectrum.

   Ans : _____

6. Which of the following methods one can follow to keep mosquitoes away without using any chemicals ?

   (A) Using strong source of light

   (B) Using ultraviolet rays

   (C) Using infrared rays

   (D) Using ultrasonic sound.

   Ans : _____

7. The ultrasonic signals sent by sonar return in 4 seconds after striking an underwater object. If the velocity of ultrasound in water is 1·5 kms/second, then the total distance travelled by the ultrasound in metres is

   (A) 4500   (B) 2250

   (C) 6750   (D) 6000.

   Ans : _____

(SPACE FOR ROUGH WORK)

8. To which of the following types of reactions does the fission of an atom belong ?

   (A) Physical reaction   (B) Chemical reaction

   (C) Nuclear reaction   (D) Biological reaction.

   Ans : _____

9. Bengaluru is called silicon city. The property of silicon that can be applied to this statement is

   (A) semiconductivity of silicon

   (B) catenation of silicon

   (C) chemical reactivity of silicon

   (D) allotropy of silicon.

   Ans : _____

10. The inner wall of a stainless steel vessel used for boiling water at your home develops a rough surface and a white layer on the inner walls. The reason for this is the presence of which salt in the water ?

    (A) Sodium chloride

    (B) Calcium chloride

    (C) Calcium bicarbonate

    (D) Magnesium chloride.

    Ans : _____

(SPACE FOR ROUGH WORK)

11. Match the colour of stars in **List-A** with the stars in **List-B**. Write the correct answer in the space provided :   4 × 1 = 4

	List-A		**List-B**
(a)	Bluish white	(i)	Sun
(b)	Yellowish white	(ii)	Neutron star
(c)	Red	(iii)	Arcturus
(d)	Orange yellow	(iv)	Betelgeuse
		(v)	Rigel
		(vi)	Black hole
		(vii)	Sirius.

Ans. :   a) _____

b) _____

c) _____

d) _____

Fill in the blanks :   3 × 1 = 3

12. The number of electrons present in the outermost shell of silicon is ....

_____

_____

13. The principle of working of solar cell is ....

_____

_____

14. The type of plastic which becomes soft on heating is ....

_____

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(SPACE FOR ROUGH WORK)

Answer the following : 6 × 1 = 6

15. In which direction a motorcyclist skids if he does not bend towards the centre of the curve while riding in a curved path ?

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16. What is the reason for lower temperature on sunspots when compared to the other surface of the sun ?

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17. Which are the important radiations emitted by the sun that reach you ?

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(SPACE FOR ROUGH WORK)

18. State two factors responsible for the energy crisis.

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19. Name the chemicals present in the equation of the following reaction :

   $Si + C \rightarrow SiC$

_____

_____

_____

_____
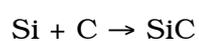
20. Write the structural formula of Isobutane.

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(SPACE FOR ROUGH WORK)

Answer the following questions :   9 × 2 = 18

21.   a)   Why is gravitational law called universal law of gravitation ?

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       b)   If the acceleration due to gravity on earth is $9 \cdot 8$ m/sec^2 and the mass of an object is 10 kilograms, calculate the weight of the object.

(SPACE FOR ROUGH WORK)

22. Draw a neat diagram of nuclear power plant and label the parts.

(SPACE FOR ROUGH WORK)

23. Name the radio isotopes which are used in the following situations :

    i)   To estimate the age of fossils

_____

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    ii)   In agricultural research

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    iii)   To study the action of medicines.

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(SPACE FOR ROUGH WORK)

24. Draw a neat diagram of exhaust stroke of external combustion engine (steam engine) and label the parts.

(SPACE FOR ROUGH WORK)

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25. With respect to electromagnetic induction write two methods to increase the induced electromotive force in the coil.

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26. Draw a neat diagram of DC dynamo and label the parts.

(SPACE FOR ROUGH WORK)

27. Write the two properties of 'Laser' which are used in cutting metals and to find the distance between two objects which are away from each other respectively.

28. What are the functions of transducer and oscillator present in radio transmitter ?

(SPACE FOR ROUGH WORK)

29. What is the invention of Sir C. V. Raman for which he was awarded Nobel Prize ? What is the use of this invention ?

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(SPACE FOR ROUGH WORK)

Answer the following : 4 × 3 = 12

30. A zinc nail is immersed in copper sulphate solution for a short period. Write the chemical equation of the reaction taking place and name the products.

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31. Liquids should not be stored in porcelain jars which are not glazed. Why ?

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(SPACE FOR ROUGH WORK)

32. Even if the hard water is softened by permutit process, the water will not be potable.
Why ?

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(SPACE FOR ROUGH WORK)

33. Draw a neat diagram of apparatus used in the preparation of soap.

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(**SPACE FOR ROUGH WORK**)

Answer the following :   3 × 4 = 12

34. a) What is a geostationary satellite ? How much of the globe is covered by one
         geostationary satellite for communication ?

         _____

         _____

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     b) What is orbital velocity of a satellite ? Write its mathematical formula.

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(SPACE FOR ROUGH WORK)

35. Draw a neat diagram of the apparatus used in electrolytic refining of impure copper and label the following :

    a) Cathode   b) Anode   c) Copper sulphate solution.

(SPACE FOR ROUGH WORK)

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36. What is cracking of petroleum ? Write the equation of the chemical reaction taking place when octane is heated to a temperature of 650°C in the absence of oxygen using a catalyst. Name the products formed.

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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 alphabet in the space provided against each question.   5 × 1 = 5

37. HIV affected person is prone to various diseases because

    (A)   the genetic material of HIV is RNA

    (B)   the genetic material of HIV is DNA

    (C)   the number of lymphocytes is decreasing drastically

    (D)   the number of red blood cells is decreasing drastically.

    Ans : _____

38. Ravi buys milk everyday from a dairy. To detect the purity of the milk he uses a lactometer. What should be the density of unadulterated milk ?

    (A)   1·206

    (B)   1·620

    (C)   1·260

    (D)   1·026.

    Ans : _____

(SPACE FOR ROUGH WORK)

39. Which one of the following does not belong to the group ?

    (A) Oxygen cycle   (B) Sulphur cycle

    (C) Nitrogen cycle   (D) Carbon cycle.

    Ans : _____

40. Industrial effluents are let into a nearby pond. A person consumes fishes continuously from that pond. He suffers from numbness of limbs and degeneration of brain cells. The pollutant in the industrial effluent is

    (A) Mercuric compounds

    (B) Phosphorus compounds

    (C) Sodium compounds

    (D) Zinc compounds.

    Ans : _____

41. The technique of effecting desirable changes in the genetic material is

    (A) cloning

    (B) tissue culture

    (C) DNA finger print technology

    (D) genetic engineering.

    Ans : _____

(**SPACE FOR ROUGH WORK**)

42. Match the names of Animal tissues given in **Part 'A'** with their functions given in **Part 'B'**. Write the correct answer in the space provided : 4 × 1 = 4

A		*B*	
(a)	Squamous epithelium	(i)	helps in movement of materials
(b)	Columnar epithelium	(ii)	helps in secretion
(c)	Ciliated columnar epthelium	(iii)	helps in diffusion of materials
(d)	Cuboidal epithelium	(iv)	acts as an insulator
		(v)	carries the impulses towards the cell body
		(vi)	protects the wall of the stomach from acidic contents
		(vii)	protects the heart.

Ans. : (a) _____

(b) _____

(c) _____

(d) _____

Answer the following in a sentence each : 4 × 1 = 4

43. Why is AIDS called a syndrome ?

_____

_____

_____

_____

(SPACE FOR ROUGH WORK)

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44. A person has lost much of blood after having met with an accident. He receives blood of the same group directly from another person. What may be the risk involved ?

45. Name any two algae which are capable of fixing atmospheric nitrogen to soil.

46. Though tissue culture is beneficial, environmentalists oppose it. Why ?

(SPACE FOR ROUGH WORK)

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

47. Mention any four uses of feathers to birds.

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48. Raju and Rashmi observe an elongated creature in their school garden. Raju infers that to be a garden lizard, whereas Rashmi infers that to be a salamander. Help them to overcome their confusion.

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(SPACE FOR ROUGH WORK)

49.   What are vascular bundles ? How are they arranged in monocot and dicot plants ?

50.   Explain an experiment to detect the presence of argemone oil in edible oil.

(SPACE FOR ROUGH WORK)

51. We not only see through our eyes but we also see through our brain. Explain this statement.

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52. A person is advised to shift his residence from the heart of the city to the city outskirts. How is this beneficial to him in terms of his health ?

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(SPACE FOR ROUGH WORK)

Answer the following questions : 2 × 3 = 6

53. List any six functions of pituitary gland.

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(SPACE FOR ROUGH WORK)

54. Draw a diagram of a typical flower and label any two parts.

(**SPACE FOR ROUGH WORK**)

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55. Draw a diagram of vertical section of human eye and label the following parts :

$4 \times 1 = 4$

a) Lens

b) Fovea

c) Retina

d) Pupil.

(SPACE FOR ROUGH WORK)

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