Roll No.												Serial No. of Q. C. A. B.

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 : 03. 04. 2014] [Date : 03. 04. 2014

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

FOR OFFICE USE ONLY

PART – A

Q. No.	Marks	Q. No.	Marks	Q. No.	Marks	Q. No.	Marks	Q. No.	Marks
1.		9.		17.		25.		33.	
2.		10.		18.		26.		34.	
3.		11.		19.		27.		35.	
4.		12.		20.		28.		36.	
5.		13.		21.		29.		×	
6.		14.		22.		30.		×	
7.		15.		23.		31.		×	
8.		16.		24.		32.		×	
Total Marks of Part – A									

PART – B

Q. No.	Marks	Q. No.	Marks	Q. No.	Marks	Q. No.	Marks	Q. No.	Marks
37.		41.		45.		49.		53.	
38.		42.		46.		50.		54.	
39.		43.		47.		51.		55.	
40.		44.		48.		52.		×	
Total Marks of Part – B									

Total Marks in words		**Grand Total**	

1. ✓			
2. ✓		✓	✓
Signature of Evaluators	*Registration No.*	*Signature of the Deputy Chief*	*Signature of the Room Invigilator*

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. The silicon compound used in calico printing is

(A) Quartz (B) Silicon carbide

(C) Sodium silicate (D) Silica.

Ans : _____

(SPACE FOR ROUGH WORK)

2. The device that uses solar energy in the form of heat is

(A) solar light

(B) solar panel used in artificial satellites

(C) solar cell

(D) solar cooker.

Ans : _____

3. A body *A* is moving in a straight line with a constant speed of 10 ms^{-1}. Another body *B* having same mass as that of *A* is moving in a circular path with a constant speed of 10 ms^{-1}. The correct statement related to their acceleration is

(A) the acceleration of body *A* is more than the acceleration of body *B*

(B) the acceleration of body *B* is zero

(C) only *B* has acceleration

(D) the accelerations of both *A* and *B* are same.

Ans : _____

4. The different stages of preparing amorphous silicon are given below :

I. Silica is finely powdered.

II. The product is washed with hydrochloric acid.

III. The mixture of powdered silica and magnesium is heated in a fire-clay crucible.

IV. The product is washed with hydrofluoric acid to remove unchanged silica.

The correct arrangement of the above stages is

(A) I, III, II and IV (B) I, II, III and IV

(C) IV, I, II and III (D) I, IV, III and II.

Ans : _____

(SPACE FOR ROUGH WORK)

5. Which of the following measures do you take to conserve water ?

(A) Washing utensils in a pond.

(B) Using detergents to wash clothes.

(C) Disposing idols painted with artificial colours in a pond.

(D) Using water after washing vegetables for plants.

Ans : _____

6. In a group of hydrocarbons, the ratio between the carbon and hydrogen atoms is 1 : 2. These hydrocarbons belong to which class ?

(A) Alkanes (B) Alkenes

(C) Alkynes (D) Aromatic hydrocarbons.

Ans : _____

7. Four metals *P*, *Q*, *R* and *S* react with water as given below :

I. *P* reacts with cold water

II. *Q* reacts with hot water

III. *R* reacts with steam

IV. Red hot *S* reacts with steam.

Then, highly reactive metal is

(A) *P* (B) *Q*

(C) *R* (D) *S*.

Ans : _____

(SPACE FOR ROUGH WORK)

8. In which of the following cases a listener experiences Doppler effect ?

(A) The listener and the source of sound are stationary.

(B) The listener and source of sound are moving with same velocity.

(C) The listener is moving towards the source of sound.

(D) The listener is with the source of sound.

Ans : _____

9. Which of the following is the best measure to save energy ?

(A) Each individual uses his own vehicle.

(B) Four colleagues residing in the same colony travel to the office together by the same car.

(C) Using vehicles to travel small distances.

(D) Keeping the vehicle engine 'on' during traffic jam.

Ans : _____

10. The dopant to be added to make silicon an *n*-type of semiconductor is

(A) Boron

(B) Antimony

(C) Indium

(D) Gallium.

Ans : _____

(SPACE FOR ROUGH WORK)

Fill in the blanks : $3 \times 1 = 3$

11. The device used to measure the distance and direction of underwater substances using ultrosonic waves is ..... .

_____

_____

12. The basic source of wind energy, hydroenergy, and fossil fuel energy is ..... .

_____

_____

13. In a radio receiver, the device that separates AF signals from RF signals is ..... .

_____

_____

14. Match the components of nuclear power reactor given in **Column-A** with their functions given in **Column-B**. Write the correct answer in the space provided :

$4 \times 1 = 4$

Column-A		**Column-B**	
(a)	Enriched Uranium	(i)	causes nuclear fusion
(b)	Liquid Sodium	(ii)	turns turbines
(c)	Cadmium Rods	(iii)	nuclear fuel
(d)	Concrete building with lead sheets	(iv)	acts as coolant
		(v)	produces steam
		(vi)	absorbs neutrons
		(vii)	stops radiation.

Ans. : a) _____

b) _____

c) _____

d) _____

(SPACE FOR ROUGH WORK)

Answer the following questions : $6 \times 1 = 6$

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

16. Why Ethyl mercaptan is added to liquid petroleum gas ?

17. Define solar luminosity.

(SPACE FOR ROUGH WORK)

18. Write an application of Radiocarbon.

19. Write the balanced chemical equation for the following chemical reaction :

Zinc reacts with dilute nitric acid.

20. Define centripetal force.

(SPACE FOR ROUGH WORK)

Answer the following questions : $9 \times 2 = 18$

21. Draw the diagram of a DC motor and label the parts.

22. What are geostationary satellites ? Write any one use of them.

(SPACE FOR ROUGH WORK)

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

24. List the uses of detergents.

(SPACE FOR ROUGH WORK)

25. Draw the diagram of Permutit column used in softening hard water and label the parts.

(SPACE FOR ROUGH WORK)

26. The wavelength of electromagnetic radiations *A*, *B* and *C* are given below :

Electromagnetic radiation	***Wavelength***
A	4×10^{-9} m
B	$0{\cdot}1 \times 10^{-9}$ m
C	10×10^{-9} m

Which of the above electromagnetic radiations causes photoelectric effect in most number of metals ? Give scientific reason for this.

(SPACE FOR ROUGH WORK)

27. Draw the diagram of a Helium-Neon laser tube and label the parts.

28. State Faraday's laws of electromagnetic induction.

(SPACE FOR ROUGH WORK)

29. A radioactive element Y emits an alpha particle and a beta particle successively and changes into an element ${}_{82}X^{206}$. Find the atomic mass and atomic number of radioactive element Y.

(SPACE FOR ROUGH WORK)

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

30. Imagine a planet *M* having mass same as the earth and having radius 3 times that of the earth.

a) Calculate the ratio of acceleration due to gravity on the surface of the planet *M* to the acceleration due to gravity on the surface of the earth.

b) If the average value of acceleration due to gravity on the surface of the earth is $9{\cdot}8\ ms^{-2}$, then find the value of average acceleration due to gravity on the surface of planet *M*.

(SPACE FOR ROUGH WORK)

31. Name the alkane having 4 carbon atoms and write the two distinct structural formula of the same.

(SPACE FOR ROUGH WORK)

32. a) A spectrum is obtained by emitting light from sodium vapour. Name the type of the spectrum.

b) A monochromatic light is passed through benzene. What change can be observed in the wavelength of scattered light ? Write one application of this phenomenon.

(SPACE FOR ROUGH WORK)

33. a) Differentiate between thermoplastics and thermosetting plastics with an example each. 2

b) Write the monomer unit of Teflon and write any one use of Teflon. 1

(SPACE FOR ROUGH WORK)

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

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

a) Molten iron b) Cone cup arrangement.

(SPACE FOR ROUGH WORK)

35. a) Explain how a protostar is formed.

b) The mass of a red giant staged star is less than 1·4 solar mass. Name the last two stages of that star and explain them.

(SPACE FOR ROUGH WORK)

36. Explain the following stages in the working cycle of an internal combustion engine.

a) Intake stroke b) Power stroke.

(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. In which group of plants, cotyledons appear above the soil during germination ?

(A) Ragi and mustard

(B) Mustard and beans

(C) Groundnut and jowar

(D) Wheat and paddy.

Ans : _____

38. The ghee packet should have which of the following stamps ?

(A) CFTRI

(B) ISI

(C) FPO

(D) AGMARK.

Ans : _____

(SPACE FOR ROUGH WORK)

39. Which is one of the functions of adrenaline ?

(A) It increases the heartbeat

(B) It decreases the heartbeat

(C) It excretes water from kidneys

(D) It regulates growth.

Ans : _____

40. A new variety plant can be produced by which of the following techniques ?

(A) Tissue culture

(B) Recombinant DNA technology

(C) DNA fingerprinting

(D) Cloning.

Ans : _____

41. Which of the following tissues in mammals show least capacity for regeneration ?

(A) Blood (B) Bone

(C) Nerve (D) Cartilage.

Ans : _____

(SPACE FOR ROUGH WORK)

42. Match the names of Endocrine glands given in **Column 'A'** with their functions and symptoms of disorders given in **Column 'B'**. Write the correct answer in the space provided : $4 \times 1 = 4$

A		***B***	
(a)	Pituitary gland	(i)	development of uterus, irregular menstrual cycle
(b)	Thyroid gland	(ii)	co-ordination of rate of respiration and heartbeat, spongy bones
(c)	Parathyroid gland	(iii)	excretion of water from kidneys, protruded jaws
(d)	Ovary	(iv)	controls the amount of glucose, rapid pulse rate
		(v)	promotes growth, protruded tongue
		(vi)	controls the amount of salts in the bone, soft bones
		(vii)	increases the rate of metabolism, high blood glucose level

Ans. : (a) _____

(b) _____

(c) _____

(d) _____

Answer the following in a sentence each : $4 \times 1 = 4$

43. A student observes the footprints of an animal and groups it under Amphibia. Justify.

_____

_____

_____

_____

(SPACE FOR ROUGH WORK)

44. How do bilirubin pigments increase in human blood ?

45. Decomposition also has a role to play during photosynthesis. Support the statement.

46. What is Bio-technology ?

(SPACE FOR ROUGH WORK)

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

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

48. While observing a micro-organism under an electron microscope, there is a confusion between two students as to whether it is a bacterium or a diatom. Help them to overcome their confusion.

(SPACE FOR ROUGH WORK)

49. HIV is dreadful due to the enzyme present in it. Justify.

50. Differentiate between gaseous and sedimentary cycles.

(SPACE FOR ROUGH WORK)

51. Write the steps involved during effluent treatment.

52. What changes bring about transformation of meristem to sclerenchyma ?

(SPACE FOR ROUGH WORK)

Answer the following questions : $2 \times 3 = 6$

53. Explain the structure of neuron.

(SPACE FOR ROUGH WORK)

54. Draw a diagram showing the external features of a fish and label any two parts.

(SPACE FOR ROUGH WORK)

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

a) Cerebrum b) Cerebellum.

(SPACE FOR ROUGH WORK)

(SPACE FOR ROUGH WORK)