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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 : 18. 06. 2014]

[Date : 18. 06. 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

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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. ✓								✓		✓	
<i>Signature of Evaluators</i>				<i>Registration No.</i>				<i>Signature of the Deputy Chief</i>		<i>Signature of the Room Invigilator</i>	

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 × 1 = 10

1. The method of concentration of copper pyrites is

- | | |
|------------------------|------------------------------|
| (A) Froth flotation | (B) Electrolysis |
| (C) Washing with water | (D) Fractional distillation. |

Ans : _____

(SPACE FOR ROUGH WORK)

2. Petrol engine is more advantageous than steam engine because

- (A) efficiency of the petrol engine is less
- (B) petrol engine cannot be started instantaneously
- (C) petrol engine can be manufactured in various sizes
- (D) fuel can be stored at high pressure.

Ans : _____

3. During the extraction of amorphous silicon the reducing agent used is

- (A) Magnesium
- (B) Quartz
- (C) Coke
- (D) Sand.

Ans : _____

4. If a diode is connected to an A.C. source then the diode

- (A) gets forward biased
- (B) gets reverse biased
- (C) gets forward and reverse biased periodically
- (D) does not get biased.

Ans : _____

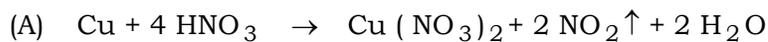
5. A robot of mass M kg lands on the planet X whose acceleration due to gravity is twice that of the earth. Mass of the robot on the planet X is

- (A) $2 M$ kg
- (B) $\frac{M}{4}$ kg
- (C) $\frac{M}{2}$ kg
- (D) M kg.

Ans : _____

(SPACE FOR ROUGH WORK)

6. Which of the following reactions cannot take place ?



Ans : _____

7. A student decides that a nylon rope can be cut by using the candle flame. The reason for this decision is

(A) nylon is a plastic material

(B) nylon is a polymer

(C) nylon is a thermosetting plastic

(D) nylon is a thermoplastic.

Ans : _____

8. The corporation of a town may take which step to save energy with respect to the street lights ?

(A) Using sodium vapour lamp

(B) Using lamps assembled with compact fluorescent tubes

(C) Using incandescent lamps

(D) Using common tube light.

Ans : _____

(SPACE FOR ROUGH WORK)

9. A student who wants to demonstrate the presence of hardness in water, takes hard water and soft water in two separate test tubes and adds little common cleaning substance. He observes that in both the test tubes lather is formed without scum. The cleaning substance that might have been added is

(A) Sodium *n*-dodecyl benzene sulphonate

(B) Sodium palmitate

(C) Sodium stearate

(D) Potassium stearate.

Ans : _____

10. An ambulance is moving fast with its siren switched 'ON'. The person who does not experience the Doppler effect is

(A) the listener at rest, and the ambulance is approaching him

(B) the driver of the ambulance

(C) the listener at rest and the ambulance is moving away from him

(D) the listener who is running towards the ambulance.

Ans : _____

(SPACE FOR ROUGH WORK)

Fill in the blanks :

$3 \times 1 = 3$

11. The device that converts mechanical energy into electrical energy is

12. The sound wave of frequency more than 20,000 Hz is called

13. Structural formula of acetylene is

14. Different stages of stellar evolution are listed in **Column-A** and prominent features of the stages are listed in **Column-B**. Match them and write the correct answer in the space provided :

$4 \times 1 = 4$

Column-A

Column-B

- | | |
|------------------|--|
| (a) Protostar | (i) layers of different elements are formed around iron core |
| (b) Steady state | (ii) sphere of neutron is present at the centre |
| (c) White dwarf | (iii) cocoon stage of the star |
| (d) Black hole | (iv) red gigantic star |
| | (v) outward pressure balances inward gravitational pull |
| | (vi) dwarf star with high temperature |
| | (vii) has intense gravitational field. |

- Ans. : a) _____
- b) _____
- c) _____
- d) _____

(SPACE FOR ROUGH WORK)

Answer the following questions :

$6 \times 1 = 6$

15. What is a solar panel ?

16. State Faraday's first law of electromagnetic induction.

17. Define nuclear fusion reaction.

(SPACE FOR ROUGH WORK)

18. The efficiency of the solar cooker decreases if the interior of the cooker is painted with white colour. Justify.

19. "Red hot silicon decomposes steam liberating hydrogen." Write the balanced chemical equation of this reaction.

20. The spectrum of a celestial body *A* is showing red shift and that of the celestial body *B* is showing blue shift. The velocity of which celestial body is gradually decreasing ?

(SPACE FOR ROUGH WORK)

23. Classify the following into natural polymer and synthetic polymer :

(a) Polyester

(b) Protein

(c) Neoprene

(d) Teflon.

24. It is a usual practice to treat sprain with hot water. Write the electromagnetic wave related to it. How does it relieve the pain ?

(SPACE FOR ROUGH WORK)

25. A sample of hard water contains dissolved magnesium bicarbonate in it. Hardness is removed by adding sodium carbonate to it. Write the balanced chemical equation of the reaction taking place. What is the name of this method ?
26. Draw the diagram of a D.C. dynamo and label the parts.

(SPACE FOR ROUGH WORK)

27. An object from the surface of earth is taken to a height equal to the radius of the earth. Show that the acceleration due to gravity acting on it is four times less than the acceleration due to gravity on earth's surface.

$$\left[\text{Hint : } g = \frac{GM_E}{R_E^2}, g' = \frac{GM_E}{(R_E + h)^2} \right]$$

(SPACE FOR ROUGH WORK)

28. Draw the circuit symbols of

(a) Diode

(b) *n-p-n* transistor.

(SPACE FOR ROUGH WORK)

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29. Draw the diagram of the device used to manufacture soap and label the parts.

(SPACE FOR ROUGH WORK)

971214

Answer the following questions :

4 × 3 = 12

30. Give scientific reason :

a) Dispersion is caused when a polychromatic light is passed through a glass prism.

b) Rayleigh's scattering is called coherent scattering.

c) Solar absorption spectrum has dark lines.

(SPACE FOR ROUGH WORK)

31. a) Explain induced radioactivity with an example.

b) "Carbon-14 isotope changes into Nitrogen-14 by emitting β -particle." Identify the parent nucleus and the daughter nucleus in this nuclear reaction.

(SPACE FOR ROUGH WORK)

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33. Draw a diagram showing expansion stroke of steam engine and label the parts.

(SPACE FOR ROUGH WORK)

971214

35. a) Write the structural formulae of
- simplest aromatic hydrocarbon

(ii) first member of the alkene.

- b) What is thermal cracking ? Give an example.

(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. Which is commonly called the personality hormone ?

- (A) Adrenaline
- (B) Parathormone
- (C) Insulin
- (D) Thyroxin.

Ans : _____

38. In which of the following animals heart does not have right and left ventricles ?

- (A) Rat
- (B) Crocodile
- (C) Frog
- (D) Whale.

Ans : _____

(SPACE FOR ROUGH WORK)

39. In which of the following animals the skin is covered by hair ?

- (A) Amphibians
- (B) Mammals
- (C) Reptiles
- (D) Birds.

Ans : _____

40. A bird migrates from a region of 27°C to a region of 20°C. The difference in body temperature of the bird is

- (A) 0°C
- (B) 20°C
- (C) 27°C
- (D) 7°C.

Ans : _____

41. Which one of the following is the correct sequence of the steps of nitrogen cycle ?

- (A) Fixation → Ammonification → Nitrification → Denitrification
- (B) Fixation → Nitrification → Denitrification → Ammonification
- (C) Ammonification → Fixation → Denitrification → Nitrification
- (D) Denitrification → Ammonification → Fixation → Nitrification.

Ans : _____

(SPACE FOR ROUGH WORK)

42. Match the names of connective tissues given in **Column 'A'** with their types and functions given in **Column 'B'**. Write the correct answer in the space provided :

4 × 1 = 4

Column-A	Column-B
(a) Areolar tissue	(i) dense connective, stores fat
(b) Adipose tissue	(ii) loose connective, attaches muscles to bones
(c) Tendons	(iii) dense connective, helps in body defence
(d) Ligaments	(iv) dense connective, connects bones to bones
	(v) loose connective, connects bones to bones
	(vi) loose connective, helps in body defence
	(vii) loose connective, stores fat.

Ans. : (a) _____
 (b) _____
 (c) _____
 (d) _____

Answer the following in a sentence each :

4 × 1 = 4

43. What is immunity ?

(SPACE FOR ROUGH WORK)

44. How do you detect the presence of sand particles in soji ?

45. A person suffering from dryness of nose cannot enjoy the taste of food. Give scientific reason.

46. "Appreciate the beauty of the petals of a flower, but do not pluck them." Support the statement giving scientific reason.

(SPACE FOR ROUGH WORK)

Answer the following questions in *two* to *three* sentences each :

6 × 2 = 12

47. Write any two symptoms of dropsy.

48. Explain the structure of HIV.

(SPACE FOR ROUGH WORK)

54. Draw a diagram to show the structure of a typical flower and label any two parts.

(SPACE FOR ROUGH WORK)

(SPACE FOR ROUGH WORK)