Roll No.												Serial No. of ಪ್ರ. 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. 2013] [Date : 03. 04. 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

FOR OFFICE USE ONLY

PART – A

ಪ್ರ. No.	Marks	ಪ್ರ. No.	Marks	ಪ್ರ. No.	Marks	ಪ್ರ. No.	Marks	ಪ್ರ. 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

ಪ್ರ. No.	Marks	ಪ್ರ. No.	Marks	ಪ್ರ. No.	Marks	ಪ್ರ. No.	Marks	ಪ್ರ. 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 :

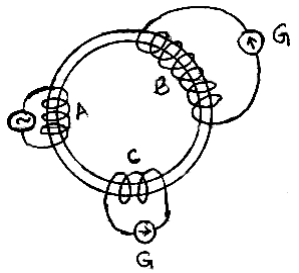
i) The Question-cum-Answer Booklet consists of objective and subjective types of questions having 55 questions.
ii) This question-cum-answer booklet contains *two* Parts. **Part – A** contains the questions of Physics and Chemistry and **Part – B** contains Biology questions.
iii) The question-cum-answer 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. *A, B* and *C* are the three coils of conductor having different number of turns, wound around a soft iron ring as shown in the figure. Ends of coils *B* and *C* are connected to the galvanometers. The observation that can be made when ends of coil *A* are connected to an *A.C.* source is



(A) same electric current is induced in *B* and *C*
(B) no electric current is induced in *B* and *C*
(C) induced electric current is more in *B* than in *C*
(D) induced electric current is less in *B* than in *C*.

Ans : _____

(SPACE FOR ROUGH WORK)

2. The induced electromotive force increases when a magnet is moved fast in a stationary coil of wire because,

   (A) magnetic field increases

   (B) rate of change of magnetic field increases

   (C) rate of change of magnetic field decreases

   (D) magnetic field decreases.

   Ans : _____

3. A photoelectric cell emits electrons when illuminated by a 60 W bulb. If the same cell is illuminated by replacing it with a 40 W bulb, the observation that can be made is

   (A) no photoelectric effect takes place

   (B) number of photoelectrons increases

   (C) the kinetic energy of photoelectrons decreases

   (D) number of photoelectrons decreases.

   Ans : _____

4. The defect in an engine is detected by using *X*-rays. The gamma radiation can also be used for the same purpose because gamma radiation has,

   (A) higher frequency than *X*-ray

   (B) same frequency as that of *X*-ray

   (C) higher wavelength than *X*-ray

   (D) same wavelength as that of *X*-ray.

   Ans : _____

(SPACE FOR ROUGH WORK)

5. The transducer used in television transmission works on the principle of

(A) electromagnetic induction

(B) photoelectric effect

(C) Raman's effect

(D) Rayleigh's effect.

Ans : _____

6. The source that gives line emission spectrum when subjected to dispersion is

(A) Molten iron

(B) Sun

(C) Mercury vapour

(D) Candle flame.

Ans : _____

7. The application of Doppler effect of microwave among the following is

(A) Ultrasound scanner

(B) Echocardiography

(C) Tracking of artificial satellites

(D) Determining velocity of submarine.

Ans : _____

(SPACE FOR ROUGH WORK)

8. Which of the following is not a good practice to conserve fuel ?

(A) Using public transport system

(B) Using motor bike to travel short distances

(C) Using bicycle to travel short distances

(D) Walking the short distances.

Ans : _____

9. The ratio of number of moles of butane to the number of moles of oxygen necessary for complete combustion of butane is

(A) 1 : 2

(B) 2 : 3

(C) 1 : 5

(D) 2 : 13.

Ans : _____

10. Human beings are interfering in bio-geochemical cycle by using

(A) soaps

(B) detergents

(C) paper

(D) cotton.

Ans : _____

(SPACE FOR ROUGH WORK)

11. Match the statements given in **List-A** with appropriate names given in **List-B**. Write the correct answer in the space provided : $4 \times 1 = 4$

List-A		**List-B**	
(a)	First Indian satellite	(i)	Bhaskara-1
(b)	First Indian remote sensing satellite	(ii)	Polar Satellite Launch Vehicle (PSLV)
(c)	First Indian geostationary satellite	(iii)	Satellite Launch Vehicle-3 (SLV-3)
(d)	First Indian rocket	(iv)	Aryabhatta
		(v)	Rohini RH-75
		(vi)	INSAT-3E
		(vii)	Ariane Passenger Payload Experiment (APPLE)

Ans. : a) _____

b) _____

c) _____

d) _____

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

12. The gravitational force between earth and an object of mass 10 kg on its surface in newtons is ..... .

_____

_____

13. 'I' is the intensity of scattered light of wavelength λ. The mathematical form of the statement "Intensity of scattered light is inversely proportional to fourth power of its wavelength" is ..... .

_____

_____

14. Name of the simplest hydrocarbon is ..... .

_____

_____

(SPACE FOR ROUGH WORK)

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

15. What is a heat engine ?

16. A composite light containing yellow, blue and orange colours is passed through a prism. Which colour bends the most ?

17. What is the minimum frequency of sound wave needed to prepare emulsion from two immiscible liquids ?

(SPACE FOR ROUGH WORK)

18. By how many times a 3rd magnitude star is brighter than 5th magnitude star ?

19. Calcium bicarbonate causes hardness in water but not calcium carbonate. Why ?

20. What is Saponification ?

(SPACE FOR ROUGH WORK)

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

21. Draw a neat diagram of AC dynamo and label the parts.

(SPACE FOR ROUGH WORK)

22. A robot sent to the moon sends a laser light towards the earth. If it takes 1·3 seconds to reach the earth then calculate the distance between moon and the earth in kilometres.

(Given : Velocity of light is 3×10^8 m/s)

23. Write two differences between intrinsic semiconductor and extrinsic semiconductor.

(SPACE FOR ROUGH WORK)

24. Write two differences between centripetal force and centrifugal force.

25. Two masses m_1 and m_2 are separated by a distance d. Find by how many times the force of gravity increases if mass of each of the objects is doubled without change in the distance between them.

(SPACE FOR ROUGH WORK)

26. Which reaction is responsible for solar energy ? Name the major component of solar energy that reaches us.

27. Draw a neat diagram of electrolytic cell used in the purification of copper and label the following :

a) Anode b) Cathode.

(SPACE FOR ROUGH WORK)

28. Explain the method of extraction of amorphous silicon using silica.

(SPACE FOR ROUGH WORK)

29. Draw a neat diagram showing permutit process of softening hard water and label the following :

a) Zeolite layer b) Soft water layer.

(SPACE FOR ROUGH WORK)

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

30. Draw a neat diagram of petrol engine and label the following parts :

a) Piston b) Spark plug c) Crank shaft.

(SPACE FOR ROUGH WORK)

31. What is induced radioactivity ? Name the radioactive element obtained when $_{13}Al^{27}$ is bombarded with alpha particle. Write one use of this radioactive element.

(SPACE FOR ROUGH WORK)

32. Write the structural formulae of the following :

a) Benzene b) Cyclopropane c) Ethene.

(SPACE FOR ROUGH WORK)

33. Based on the following statements identify the type of polymer-plastic to which it belongs :

a) Polythene — Loses its shape everytime when it is heated.

b) Bakelite — It does not become soft on heating.

c) Terylene — During polymerisation simple molecule is released.

(SPACE FOR ROUGH WORK)

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

34. Name the two types of star clusters. Write any two differences between them. Mention one use of study of star clusters.

(SPACE FOR ROUGH WORK)

35. Draw a neat diagram of nuclear reactor and label the following parts :

a) Control rods b) Concrete shield.

(SPACE FOR ROUGH WORK)

36. a) Explain an experiment with chemical equation to establish that iron is more reactive than silver.

b) Write the chemical equation representing the reaction of zinc with the following :

i) Dilute hydrochloric acid

ii) Dilute sulphuric acid.

(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. $5 \times 1 = 5$

37. The blue pigment present in red algae along with phycoerythrin is

(A) Chlorophyll-*c*

(B) Phycocyanin

(C) Chlorophyll-*b*

(D) Xanthophyll.

Ans : _____

38. If reverse transcriptase enzyme is absent in HIV then it

(A) cannot survive

(B) can synthesise DNA

(C) cannot synthesise DNA

(D) cannot adapt itself to the host.

Ans : _____

(SPACE FOR ROUGH WORK)

39. Concentrated hydrochloric acid is added to a sample taken in a test-tube. After some time, it turns to crimson red. The sample is adulterated

(A) cooking oil (B) ghee

(C) turmeric powder (D) honey.

Ans : _____

40. The microbe present in paddy fields which has the capacity to absorb and store atmospheric nitrogen is

(A) Rhizobium (B) Nitrobacter

(C) Anabaena (D) Pseudomonas.

Ans : _____

41. The technique of breaking DNA into fragments by using specific enzymes and gel electrophoresis is

(A) recombinant DNA technology

(B) DNA fingerprint technology

(C) tissue culture

(D) cloning.

Ans : _____

(SPACE FOR ROUGH WORK)

42. Match the types of environmental pollutions given in **Column 'A'** with their effects given in **Column 'B'**. Write the correct answer in the space provided : 4 × 1 = 4

A	***B***
(a) Air pollution	(i) causes diseases in plants
(b) Water pollution	(ii) causes radioactive hazards
(c) Soil pollution	(iii) causes blindness
(d) Noise pollution	(iv) cholera and amoebiasis are caused
	(v) skin cancer and mutations are caused
	(vi) increases the growth of lichens
	(vii) causes deafness.

Ans. : (a) _____

(b) _____

(c) _____

(d) _____

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

43. A fish which has escaped from a fisherman's net has lost one of its pectoral fins. What difficulty will it face while swimming ?

_____

_____

_____

_____

_____

(SPACE FOR ROUGH WORK)

44. A boy observes the cross-section of an angiosperm stem under a compound microscope. He infers that the leaves of that plant have parallel venation. What observation led him to arrive at this inference ?

45. Write any one function of cerebellum.

46. It is found that desired genes can be transferred from one plant to another plant. Write any one advantage of this process to the plant.

(SPACE FOR ROUGH WORK)

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

47. Differentiate between the two types of root systems found in angiosperms.

48. What are Dendrites and Axons ? Write any one difference between them.

(SPACE FOR ROUGH WORK)

49. The rate of heart-beat and breathing has increased in a person, while running in a race. After sometimes the heart-beat and breathing becomes normal. Which two components of the nervous system control these processes and how ?

50. A person living in a coastal area is suffering from nervous problems and protruded eyes. What may be the cause for this condition ? How can it be controlled ?

(SPACE FOR ROUGH WORK)

51. Which are the four methods of HIV transmission ?

52. As a consumer what are your roles and responsibilities in preventing food adulteration ?

(SPACE FOR ROUGH WORK)

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

53. Explain the function of the constituents of plasma.

(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)

55. Draw a diagram to show the vertical section of human eye and label the following parts : 4

a) Aqueous humour b) Yellow spot.

(SPACE FOR ROUGH WORK)

(SPACE FOR ROUGH WORK)

ಕರ್ನಾಟಕ ಪ್ರೌಢ ಶಿಕ್ಷಣ ಪರೀಕ್ಷಾ ಮಂಡಳಿ, ಮಲ್ಲೇಶ್ವರಂ, ಬೆಂಗಳೂರು – 560 003

KARNATAKA SECONDARY EDUCATION EXAMINATION BOARD, MALLESWARAM, BANGALORE – 560 003

ಎಸ್.ಎಸ್.ಎಲ್.ಸಿ. ಪರೀಕ್ಷೆ, ಏಪ್ರಿಲ್ — 2013

S. S. L. C. EXAMINATION, APRIL, 2013

ಮಾದರಿ ಉತ್ತರಗಳು

MODEL ANSWERS

ದಿನಾಂಕ : 03. 04. 2013]

Date : 03. 04. 2013]

ಸಂಕೇತ ಸಂಖ್ಯೆ : **83-E**

CODE NO. : 83-E

ವಿಷಯ : ವಿಜ್ಞಾನ

Subject : SCIENCE

(ಭೌತಶಾಸ್ತ್ರ, ರಸಾಯನಶಾಸ್ತ್ರ ಮತ್ತು ಜೀವಶಾಸ್ತ್ರ)

(Physics, Chemistry & Biology)

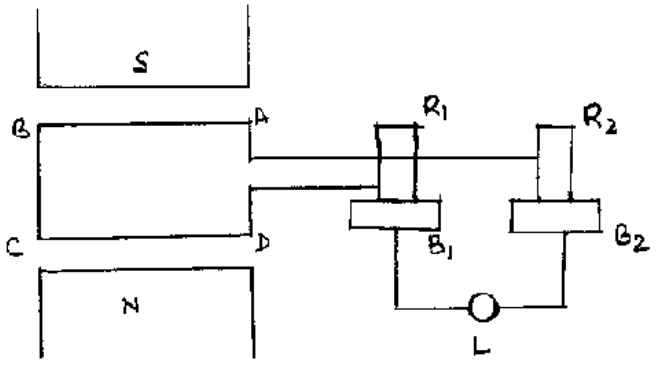
[ಪರಮಾವಧಿ ಅಂಕಗಳು : **100**

[Max. Marks : 100

(English Version)

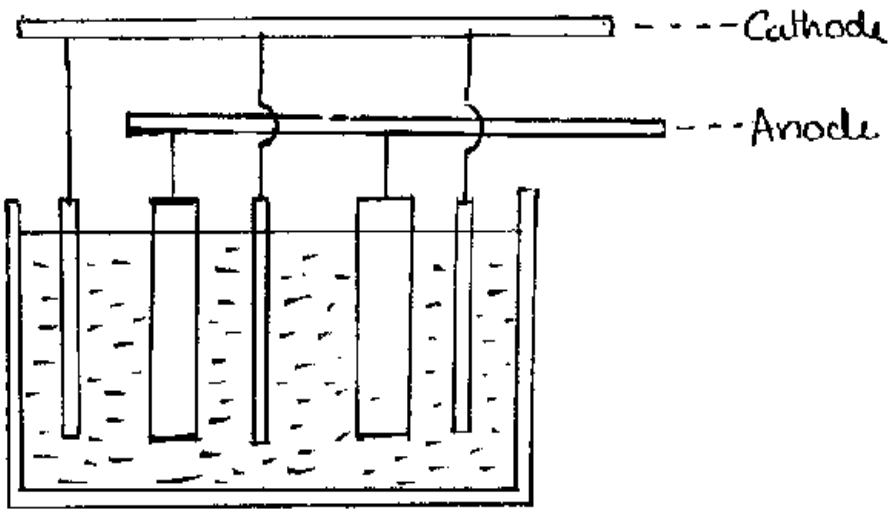
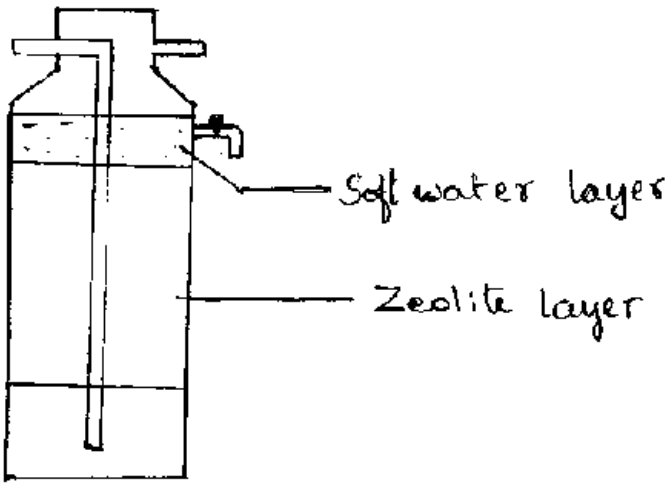
Qn. Nos.	Ans. Key	Value Points	Marks Allotted
		PART - A	
		(Physics & Chemistry)	
		(Marks : 65)	
1.	C	induced electric current is more in *B* than in *C*	1
2.	B	rate of change of magnetic field increases	1
3.	D	number of photoelectrons decreases.	1
4.	A	higher frequency than *X*-ray	1
5.	B	photoelectric effect	1
6.	C	Mercury vapour	1
7.	C	Tracking of artificial satellites	1
8.	B	Using motor bike to travel short distances	1
9.	D	2 : 13.	1
10.	B	detergents	1

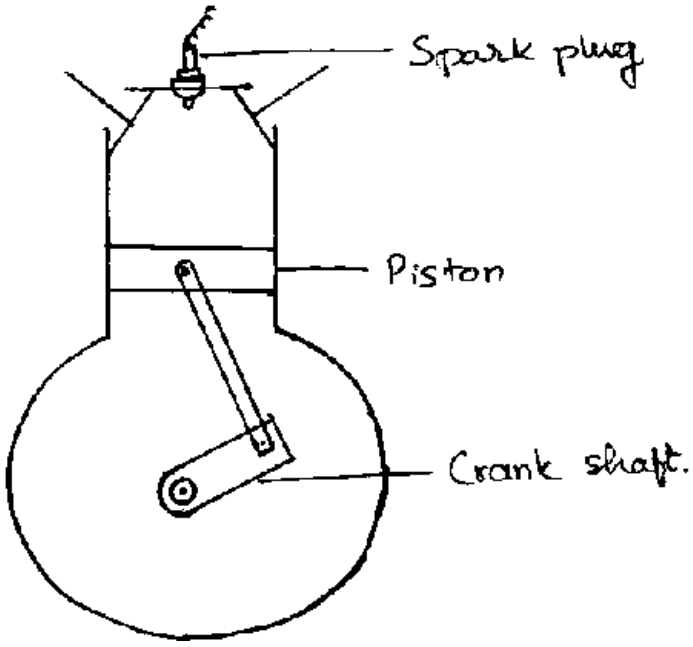
[Turn over

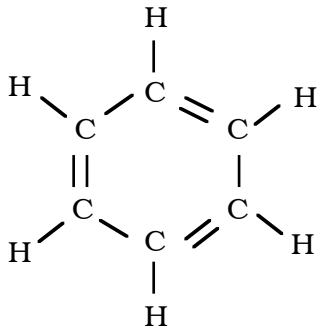
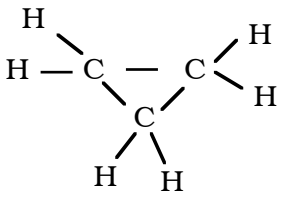
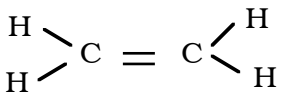
Qn. Nos.	Value Points	Marks Allotted
11.	a) (iv) Aryabhatta b) (i) Bhaskara-1 c) (vii) Ariane Passenger Payload Experiment (APPLE) d) (v) Rohini RH-75 4×1	4
12.	98 newtons	1
13.	$I \propto \frac{1}{\lambda^4}$	1
14.	Methane	1
15.	Heat engine is a device which converts heat into useful mechanical energy.	1
16.	Blue	1
17.	20000 Hz or 20 kHz.	1
18.	6·25 times or $(2{\cdot}5)^2$	1
19.	Because calcium carbonate is insoluble in water.	1
20.	The process of hydrolyzing oil or fat with bases such as sodium hydroxide or potassium hydroxide to obtain soap is called saponification. OR The process of preparing soap is called saponification.	1
21.		

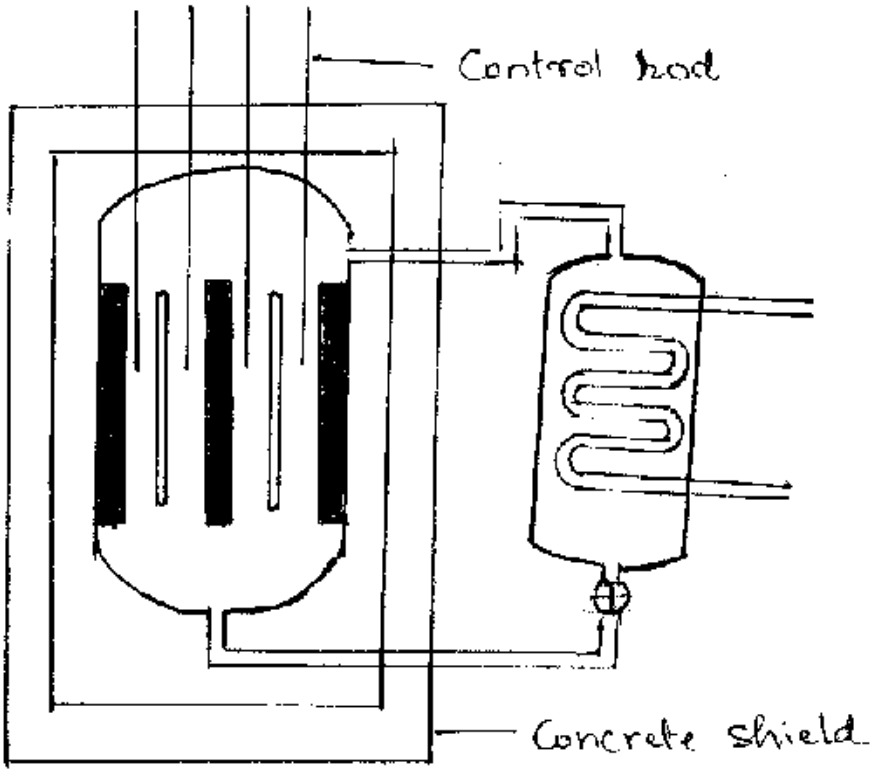
Qn. Nos.	Value Points	Marks Allotted
	N, S → Poles of the magnet — For diagram	$1\frac{1}{2}$
	$ABCD$ → Coil of conductor — For any *one* part	$\frac{1}{2}$ 2
	R_1 , R_2 → Slip rings	
	B_1 , B_2 → Brushes	
	L → Load.	
22.	*Given* : velocity $v = 3 \times 10^8$ m/s	
	time $t = 1{\cdot}3$ seconds	
	formula $d = v \times t$	1
	Substitution : $d = 3 \times 10^8 \times 1{\cdot}3$	$\frac{1}{2}$
	$= 3{\cdot}9 \times 10^8$ m	
	$= 3{\cdot}9 \times 10^5$ km	
	Final answer : Distance between the moon and the earth is $3{\cdot}9 \times 10^5$ km	$\frac{1}{2}$ 2
	(For converting metre into kilometre — $\frac{1}{2}$ mark)	
23.	***Intrinsic semiconductor*** / ***Extrinsic semiconductor***	
	a) These are pure semiconductors / i) These are doped semiconductors	
	b) Charge carriers are equal in numbers when biased / ii) Charge carriers are unequal in numbers when biased	
	c) Electrical conductivity is less / iii) Electrical conductivity is more.	
	One pair of difference — 1	
	Two pairs of differences	1 + 1 = 2

Qn. Nos.	Value Points	Marks Allotted
24.	***Centripetal force*** — ***Centrifugal force***	
	a) It is directed towards the centre — i) It is directed away from the centre	1
	b) It is a real force — ii) It is a pseudo force.	1
	One pair of difference — 1	
	Two pairs of differences — 1 + 1	
25.	*Formula* $F = \frac{G.m_1 m_2}{d^2}$	1
	Initial force $= \frac{G.m_1 m_2}{d^2}$	
	Force after change in masses	
	Substitution :	
	$F' = \frac{G.2m_1 \times 2m_2}{d^2}$	$\frac{1}{2}$
	$F' = \frac{4G\, m_1 m_2}{d^2}$	
	$\therefore \quad F' = 4\left(\frac{G\, m_1 m_2}{d^2}\right)$	
	$F' = 4\,(F)$.	
	Gravitational force increases by 4 times.	$\frac{1}{2}$ 2
26.	Thermo-nuclear fusion reaction is responsible for solar energy.	1
	OR	
	Proton-proton chain is responsible for solar energy.	
	Infra-red radiation	1 2
	OR	
	Heat radiation.	

Qn. Nos.	Value Points	Marks Allotted
27.	 For diagram ..... 1 For labelling cathode ..... $\frac{1}{2}$ For labelling anode ..... $\frac{1}{2}$	2
28.	Finely powdered silica is mixed with magnesium powder and heated in a fire-clay crucible. Magnesium oxide and silicon are formed. $\frac{1}{2}$ $SiO_2 + 2Mg \rightarrow Si + 2MgO$. $\frac{1}{2}$ The product is washed with dilute hydrochloric acid to dissolve magnesium oxide. $\frac{1}{2}$ Then it is washed with hydrofluoric acid to remove unchanged silica. $\frac{1}{2}$	2
29.	 For diagram ..... 1 For labelling water layer ..... $\frac{1}{2}$ For labelling zeolite layer ..... $\frac{1}{2}$	2

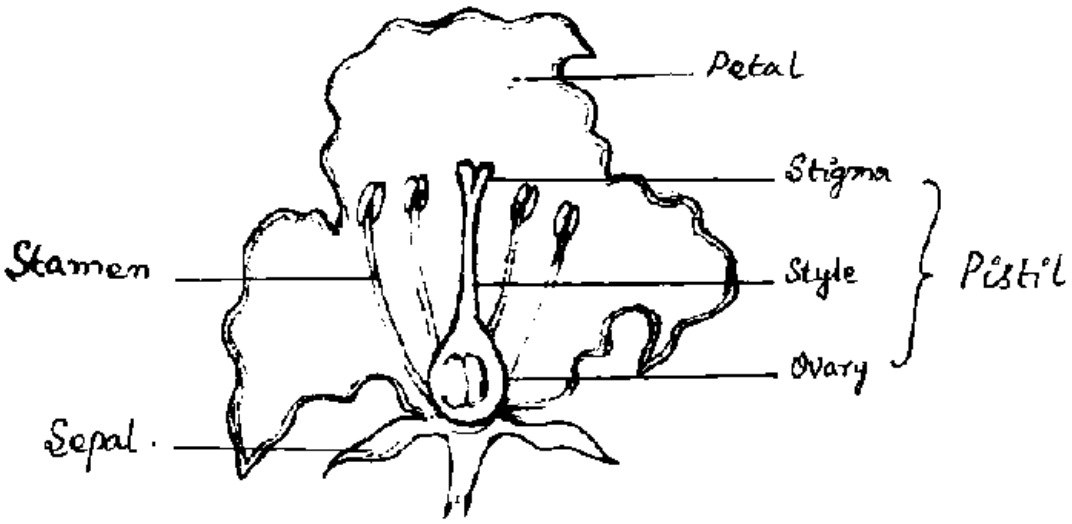
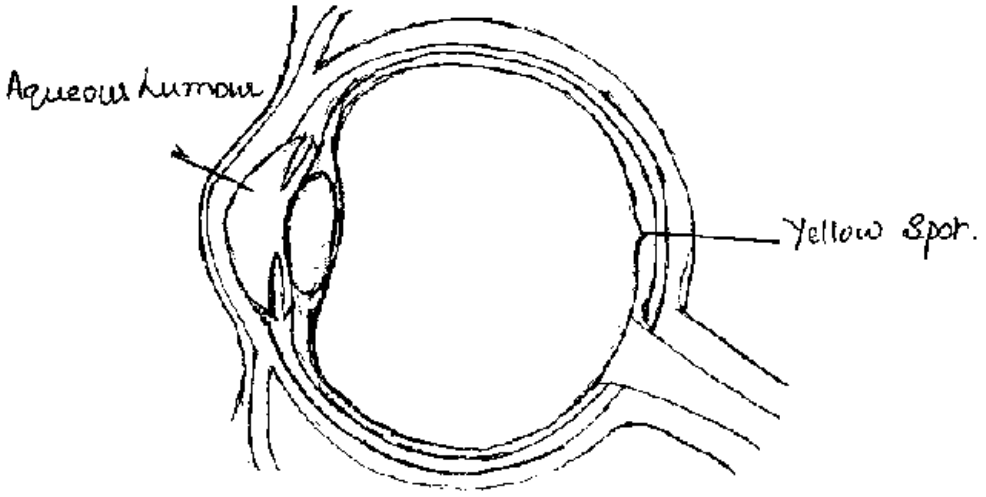
Qn. Nos.	Value Points	Marks Allotted
30.	 For diagram ..... $1\frac{1}{2}$ For labelling spark plug ..... $\frac{1}{2}$ For labelling piston ..... $\frac{1}{2}$ For labelling crank shaft ..... $\frac{1}{2}$	3
31.	The phenomenon by which radioactivity is induced in an element is called induced radioactivity.	1
	Radio phosphorus ($_{15}P^{30}$)	1
	It is used in agriculture to determine the kind of phosphate necessary for a given soil and crop.	1 3

Qn. Nos.	Value Points	Marks Allotted
32.	a) *Benzene* 	1
	b) *Cyclopropane* : 	1
	c) *Ethene* : 	1 3
33.	a) Polythene — Thermoplastic	1
	b) Bakelite — Thermosetting plastic	1
	c) Terylene — Condensation polymer.	1 3
34.	Two types of star clusters are	
	i) Open cluster	$\frac{1}{2}$
	ii) Globular cluster	$\frac{1}{2}$
	Open cluster / ***Globular cluster***	
	a) Stars appear to be loosely bound / i) Stars appear to be tightly bound	1
	b) Have many blue stars which are young / ii) Have many red stars which are old.	1
	For one pair of difference — 1 mark For two pairs of differences — 1 + 1	
	Study of star clusters can verify theories of stellar evolution.	1 4

Qn. Nos.		Value Points	Marks Allotted	
35.				
		For diagram	3	
		For labelling control rod	$\frac{1}{2}$	
		For labelling concrete shield	$\frac{1}{2}$	4
36.	a)	Take some silver nitrate solution in a beaker. Dip a new iron nail in it with the help of a thread. When it is observed after some time, we can find that silver will be deposited on the surface of iron nail.	1	
		$Fe + 2AgNO_3 \rightarrow Fe(NO_3)_2 + 2Ag \downarrow$	1	
	b)	i) $Zn + 2HCl \rightarrow ZnCl_2 + H_2 \neq$	1	
		ii) $Zn + H_2SO_4 \rightarrow ZnSO_4 + H_2$	1	4

Qn. Nos.	Ans. Key	Value Points	Marks Allotted
		PART – B **(Biology)** **(Marks : 35)**	
37.	B	Phycocyanin	1
38.	C	cannot synthesise DNA	1
39.	B	ghee	1
40.	C	Anabaena	1
41.	B	DNA fingerprint technology	1
42.		a) — v) skin cancer and mutations are caused	1
		b) — iv) cholera and amoebiasis are caused	1
		c) — i) causes diseases in plants	1
		d) — vii) causes deafness.	1 4
		Answer in *one* sentence :	
43.		It may face difficulty in balancing.	1
44.		He observes scattered vascular bundles.	1
45.		i) It is responsible for the maintenance of the equilibrium and posture of the body.	
		ii) It controls and co-ordinates the movement of muscles.	
		(Any *one*)	1
46.		i) Plants can fulfil the nitrogen requirement	
		ii) Plants can yield more	
		iii) Plants can resist the diseases	
		iv) Plants can yield in less time. (Any *one*)	1

Qn. Nos.	Value Points	Marks Allotted
	Answer in *two* or *three* sentences :	
47.	***Fibrous root system*** / ***Tap root system***	
	a) Primary root dies before the plant matures / i) Primary root survives and becomes main root	
	b) Develops roots from the base of the stem / ii) Develops many secondary and tertiary roots from the main root.	2
48.	Short brush like structures arising from the nerve cell are called Dendrites.	$\frac{1}{2}$
	Long extension of the nerve cell body is Axon.	$\frac{1}{2}$
	Dendrites carry impulses towards the cell body.	$\frac{1}{2}$
	Axon carries impulses away from the cell body.	$\frac{1}{2}$ 2
49.	Sympathetic nervous system increases the rate of heartbeat and breathing.	1
	Parasympathetic nervous system brings these processes to normal condition.	1 2
50.	This condition is due to increased secretion of thyroxine (hyperthyroidism).	1
	It can be controlled by administering medicines which normalise the functioning of the thyroid gland.	1 2
51.	i) Unsafe sexual contact with an infected person	
	ii) Transfusion of infected blood	
	iii) From infected mother to her infant	
	iv) By sharing unsterilized needles and syringes with HIV^+ .	$4 \times \frac{1}{2} = 2$
52.	i) Identify the stamp of quality controlling agencies like ISI. AGMARK, FPO.	
	ii) Check for the manufacturing date and expiry date.	
	iii) Avoid buying low quality commodities at cheap rates.	
	iv) Lodge complaint to the concerned authorities if adulteration is detected. (Any *two*)	1 + 1 = 2

Qn. Nos.	Value Points	Marks Allotted
	Answer the following questions : $2 \times 3 = 6$	
53.	i) Red blood cells involve in supplying oxygen and removal of carbon dioxide in the cells.	
	ii) White blood cells help in body defence.	
	iii) Platelets bring about clotting of blood.	$3 \times 1 = 3$
54.		$2 + \frac{1}{2} + \frac{1}{2} = 3$
55.		$3 + \frac{1}{2} + \frac{1}{2} = 4$

ಕರ್ನಾಟಕ ಪ್ರೌಢ ಶಿಕ್ಷಣ ಪರೀಕ್ಷಾ ಮಂಡಳಿ, ಮಲ್ಲೇಶ್ವರಂ, ಬೆಂಗಳೂರು – 560 003

KARNATAKA SECONDARY EDUCATION EXAMINATION BOARD, MALLESWARAM, BANGALORE – 560 003

ಎಸ್.ಎಸ್.ಎಲ್.ಸಿ. ಪರೀಕ್ಷೆ, ಏಪ್ರಿಲ್ — 2013

S. S. L. C. EXAMINATION, APRIL, 2013

ಮಾದರಿ ಉತ್ತರಗಳು

MODEL ANSWERS

ದಿನಾಂಕ : 03. 04. 2013]

Date : 03. 04. 2013]

ಸಂಕೇತ ಸಂಖ್ಯೆ : **83-E**

CODE NO. : 83-E

ವಿಷಯ : ವಿಜ್ಞಾನ

Subject : SCIENCE

(ಭೌತಶಾಸ್ತ್ರ, ರಸಾಯನಶಾಸ್ತ್ರ ಮತ್ತು ಜೀವಶಾಸ್ತ್ರ)

(Physics, Chemistry & Biology)

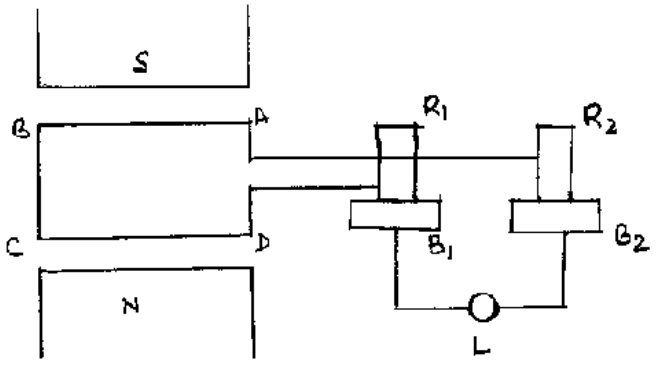
[ಪರಮಾವಧಿ ಅಂಕಗಳು : **100**

[Max. Marks : 100

(English Version)

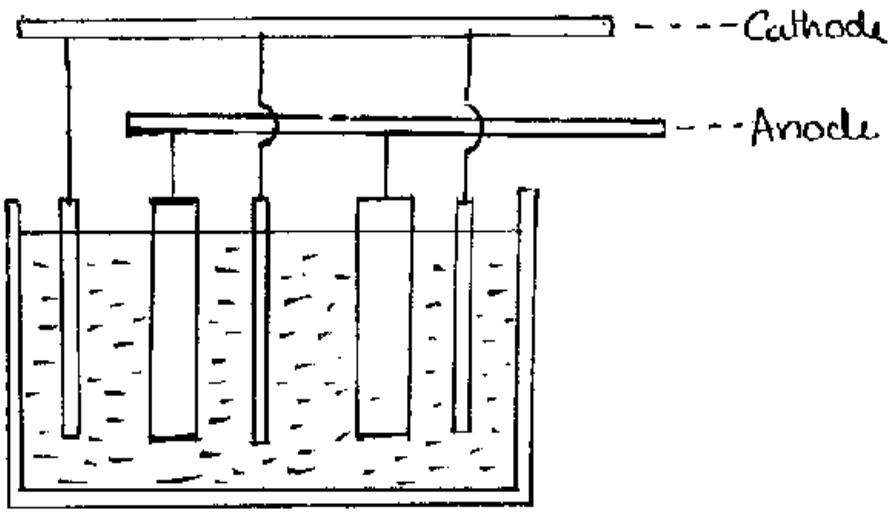
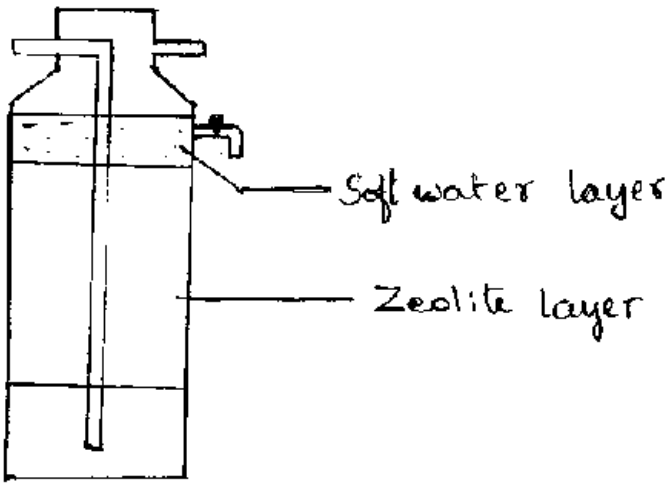
Qn. Nos.	Ans. Key	Value Points	Marks Allotted
		PART - A	
		(Physics & Chemistry)	
		(Marks : 65)	
1.	C	induced electric current is more in *B* than in *C*	1
2.	B	rate of change of magnetic field increases	1
3.	D	number of photoelectrons decreases.	1
4.	A	higher frequency than *X*-ray	1
5.	B	photoelectric effect	1
6.	C	Mercury vapour	1
7.	C	Tracking of artificial satellites	1
8.	B	Using motor bike to travel short distances	1
9.	D	2 : 13.	1
10.	B	detergents	1

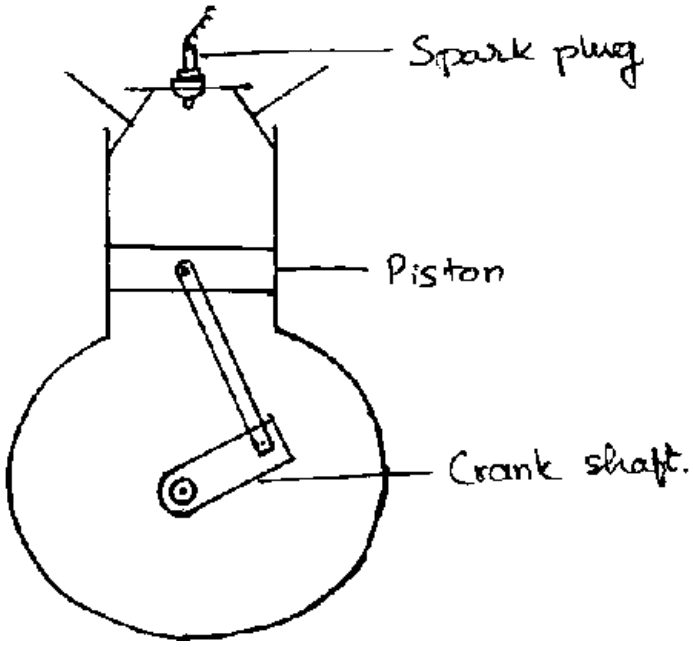
[Turn over

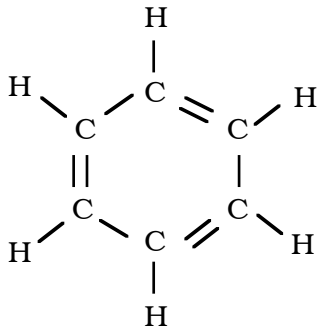
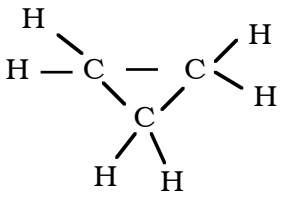
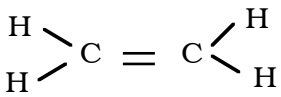
Qn. Nos.	Value Points	Marks Allotted
11.	a) (iv) Aryabhatta b) (i) Bhaskara-1 c) (vii) Ariane Passenger Payload Experiment (APPLE) d) (v) Rohini RH-75 4×1	4
12.	98 newtons	1
13.	$I \propto \frac{1}{\lambda^4}$	1
14.	Methane	1
15.	Heat engine is a device which converts heat into useful mechanical energy.	1
16.	Blue	1
17.	20000 Hz or 20 kHz.	1
18.	6·25 times or $(2{\cdot}5)^2$	1
19.	Because calcium carbonate is insoluble in water.	1
20.	The process of hydrolyzing oil or fat with bases such as sodium hydroxide or potassium hydroxide to obtain soap is called saponification. OR The process of preparing soap is called saponification.	1
21.		

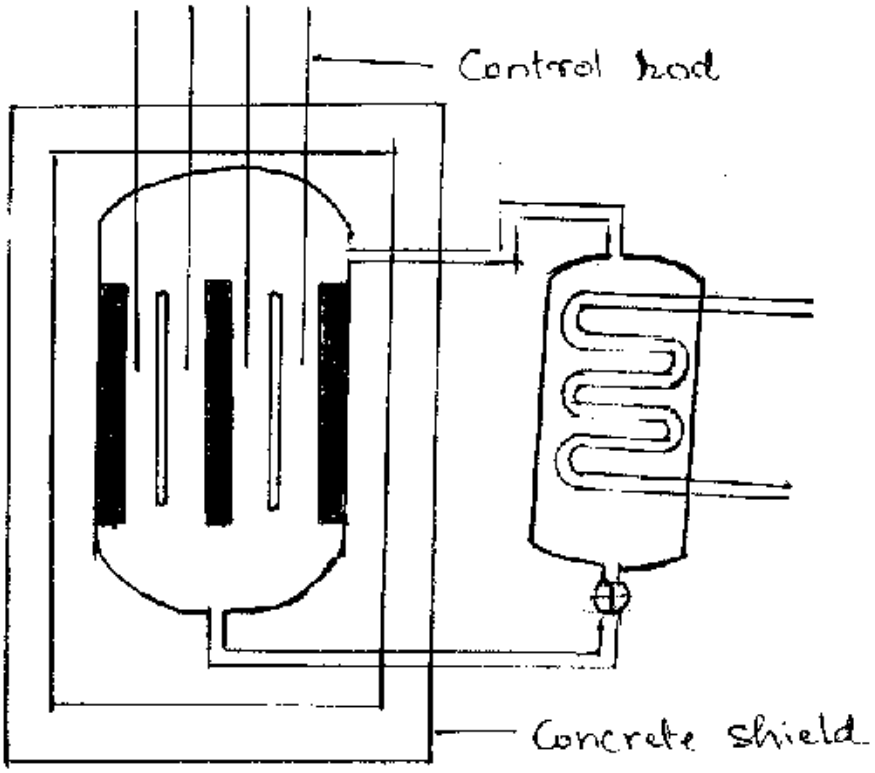
Qn. Nos.	Value Points	Marks Allotted
	N, S → Poles of the magnet — For diagram	$1\frac{1}{2}$
	$ABCD$ → Coil of conductor — For any *one* part	$\frac{1}{2}$ 2
	R_1 , R_2 → Slip rings	
	B_1 , B_2 → Brushes	
	L → Load.	
22.	*Given* : velocity $v = 3 \times 10^8$ m/s	
	time $t = 1{\cdot}3$ seconds	
	formula $d = v \times t$	1
	Substitution : $d = 3 \times 10^8 \times 1{\cdot}3$	$\frac{1}{2}$
	$= 3{\cdot}9 \times 10^8$ m	
	$= 3{\cdot}9 \times 10^5$ km	
	Final answer : Distance between the moon and the earth is $3{\cdot}9 \times 10^5$ km	$\frac{1}{2}$ 2
	(For converting metre into kilometre — $\frac{1}{2}$ mark)	
23.	***Intrinsic semiconductor*** / ***Extrinsic semiconductor***	
	a) These are pure semiconductors / i) These are doped semiconductors	
	b) Charge carriers are equal in numbers when biased / ii) Charge carriers are unequal in numbers when biased	
	c) Electrical conductivity is less / iii) Electrical conductivity is more.	
	One pair of difference — 1	
	Two pairs of differences	1 + 1 = 2

Qn. Nos.	Value Points	Marks Allotted
24.	***Centripetal force*** — ***Centrifugal force***	
	a) It is directed towards the centre — i) It is directed away from the centre	1
	b) It is a real force — ii) It is a pseudo force.	1
	One pair of difference — 1	
	Two pairs of differences — 1 + 1	
25.	*Formula* $F = \frac{G.m_1 m_2}{d^2}$	1
	Initial force $= \frac{G.m_1 m_2}{d^2}$	
	Force after change in masses	
	Substitution :	
	$F' = \frac{G.2m_1 \times 2m_2}{d^2}$	$\frac{1}{2}$
	$F' = \frac{4G\, m_1 m_2}{d^2}$	
	$\therefore \quad F' = 4\left(\frac{G\, m_1 m_2}{d^2}\right)$	
	$F' = 4\,(F)$.	
	Gravitational force increases by 4 times.	$\frac{1}{2}$ 2
26.	Thermo-nuclear fusion reaction is responsible for solar energy.	1
	OR	
	Proton-proton chain is responsible for solar energy.	
	Infra-red radiation	1 2
	OR	
	Heat radiation.	

Qn. Nos.	Value Points	Marks Allotted
27.	 For diagram ..... 1 For labelling cathode ..... $\frac{1}{2}$ For labelling anode ..... $\frac{1}{2}$	2
28.	Finely powdered silica is mixed with magnesium powder and heated in a fire-clay crucible. Magnesium oxide and silicon are formed. $\frac{1}{2}$ $SiO_2 + 2Mg \rightarrow Si + 2MgO$. $\frac{1}{2}$ The product is washed with dilute hydrochloric acid to dissolve magnesium oxide. $\frac{1}{2}$ Then it is washed with hydrofluoric acid to remove unchanged silica. $\frac{1}{2}$	2
29.	 For diagram ..... 1 For labelling water layer ..... $\frac{1}{2}$ For labelling zeolite layer ..... $\frac{1}{2}$	2

Qn. Nos.	Value Points	Marks Allotted
30.	 For diagram ..... $1\frac{1}{2}$ For labelling spark plug ..... $\frac{1}{2}$ For labelling piston ..... $\frac{1}{2}$ For labelling crank shaft ..... $\frac{1}{2}$	3
31.	The phenomenon by which radioactivity is induced in an element is called induced radioactivity.	1
	Radio phosphorus ($_{15}P^{30}$)	1
	It is used in agriculture to determine the kind of phosphate necessary for a given soil and crop.	1 3

Qn. Nos.	Value Points	Marks Allotted
32.	a) *Benzene* 	1
	b) *Cyclopropane* : 	1
	c) *Ethene* : 	1 3
33.	a) Polythene — Thermoplastic	1
	b) Bakelite — Thermosetting plastic	1
	c) Terylene — Condensation polymer.	1 3
34.	Two types of star clusters are	
	i) Open cluster	$\frac{1}{2}$
	ii) Globular cluster	$\frac{1}{2}$
	Open cluster / ***Globular cluster***	
	a) Stars appear to be loosely bound / i) Stars appear to be tightly bound	1
	b) Have many blue stars which are young / ii) Have many red stars which are old.	1
	For one pair of difference — 1 mark For two pairs of differences — 1 + 1	
	Study of star clusters can verify theories of stellar evolution.	1 4

Qn. Nos.		Value Points	Marks Allotted	
35.				
		For diagram	3	
		For labelling control rod	$\frac{1}{2}$	
		For labelling concrete shield	$\frac{1}{2}$	4
36.	a)	Take some silver nitrate solution in a beaker. Dip a new iron nail in it with the help of a thread. When it is observed after some time, we can find that silver will be deposited on the surface of iron nail.	1	
		$Fe + 2AgNO_3 \rightarrow Fe(NO_3)_2 + 2Ag \downarrow$	1	
	b)	i) $Zn + 2HCl \rightarrow ZnCl_2 + H_2 \neq$	1	
		ii) $Zn + H_2SO_4 \rightarrow ZnSO_4 + H_2$	1	4

Qn. Nos.	Ans. Key	Value Points	Marks Allotted
		PART – B **(Biology)** **(Marks : 35)**	
37.	B	Phycocyanin	1
38.	C	cannot synthesise DNA	1
39.	B	ghee	1
40.	C	Anabaena	1
41.	B	DNA fingerprint technology	1
42.		a) — v) skin cancer and mutations are caused	1
		b) — iv) cholera and amoebiasis are caused	1
		c) — i) causes diseases in plants	1
		d) — vii) causes deafness.	1 4
		Answer in *one* sentence :	
43.		It may face difficulty in balancing.	1
44.		He observes scattered vascular bundles.	1
45.		i) It is responsible for the maintenance of the equilibrium and posture of the body.	
		ii) It controls and co-ordinates the movement of muscles.	
		(Any *one*)	1
46.		i) Plants can fulfil the nitrogen requirement	
		ii) Plants can yield more	
		iii) Plants can resist the diseases	
		iv) Plants can yield in less time. (Any *one*)	1

Qn. Nos.	Value Points	Marks Allotted
	Answer in *two* or *three* sentences :	
47.	***Fibrous root system*** / ***Tap root system***	
	a) Primary root dies before the plant matures / i) Primary root survives and becomes main root	
	b) Develops roots from the base of the stem / ii) Develops many secondary and tertiary roots from the main root.	2
48.	Short brush like structures arising from the nerve cell are called Dendrites.	$\frac{1}{2}$
	Long extension of the nerve cell body is Axon.	$\frac{1}{2}$
	Dendrites carry impulses towards the cell body.	$\frac{1}{2}$
	Axon carries impulses away from the cell body.	$\frac{1}{2}$ 2
49.	Sympathetic nervous system increases the rate of heartbeat and breathing.	1
	Parasympathetic nervous system brings these processes to normal condition.	1 2
50.	This condition is due to increased secretion of thyroxine (hyperthyroidism).	1
	It can be controlled by administering medicines which normalise the functioning of the thyroid gland.	1 2
51.	i) Unsafe sexual contact with an infected person	
	ii) Transfusion of infected blood	
	iii) From infected mother to her infant	
	iv) By sharing unsterilized needles and syringes with HIV^+ .	$4 \times \frac{1}{2} = 2$
52.	i) Identify the stamp of quality controlling agencies like ISI. AGMARK, FPO.	
	ii) Check for the manufacturing date and expiry date.	
	iii) Avoid buying low quality commodities at cheap rates.	
	iv) Lodge complaint to the concerned authorities if adulteration is detected. (Any *two*)	1 + 1 = 2

Qn. Nos.	Value Points	Marks Allotted
	Answer the following questions : $2 \times 3 = 6$	
53.	i) Red blood cells involve in supplying oxygen and removal of carbon dioxide in the cells.	
	ii) White blood cells help in body defence.	
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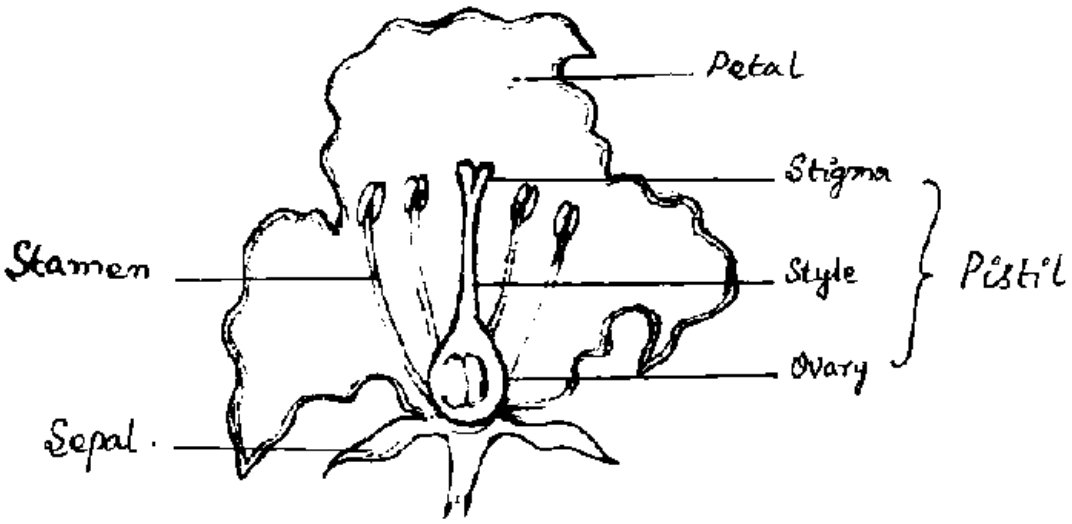
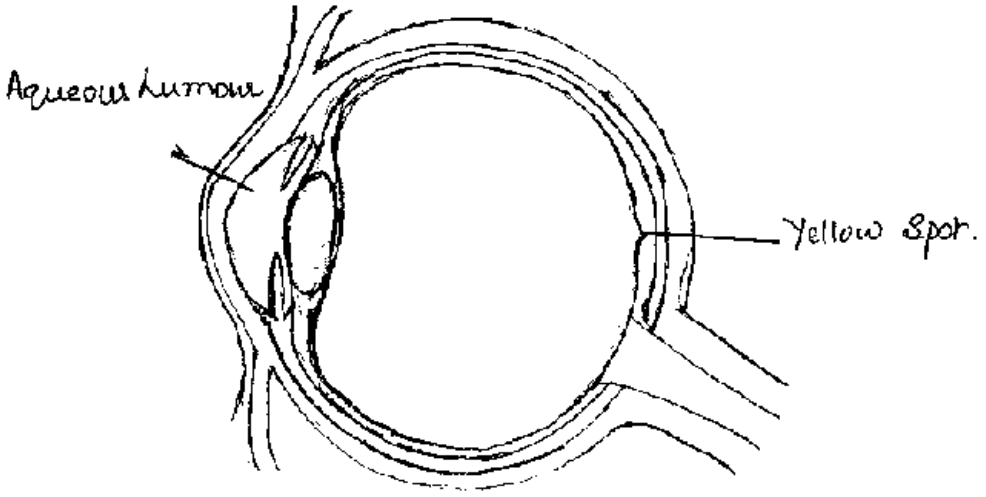
54.		$2 + \frac{1}{2} + \frac{1}{2} = 3$
55.		$3 + \frac{1}{2} + \frac{1}{2} = 4$