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# SCIENCE (Theory) — Paper II (Botany and Zoology)

Time Allowed :  $2\frac{1}{2}$  Hours ]

[ Maximum Marks : 100

			SECTIO	N - A	
			вота	NY	
			( Marks	: 50)	. 0.
I. ·	Cho	ose a	nd write the correct answer:		5 x 1 = 5
	1.	The	plant body of fungi is called		
		a)	hyphae	b)	mycelium
		c)	chitin	d)	conidia.
	2.	Vela	men is seen in		
		a)	epiphytes	b)	hydrophytes
		c)	land plants	d)	orchids.
	3.	Thr	ee nitrogenous bases code for	one	
		a)	protein	b)	amino acid
		c)	DNA	d)	RNA.
	4.	The	endocarp is hard and stony in	1	est belieff has is ward 'Ss
		a)	mango	b)	tomato
		cl	polyalthia	d)	jackfruit.
	5.	Wh	ich of the following is the mair	sourc	e of fresh water?
		a)	Ocean	b)	Sea
		c)	Rain	d)	Ground water.

-		
II.	Fill	in the blanks with suitable terms: $5 \times 1 = 5$
	6.	The nuclear material in bacteria is called
	7.	The 'V' shaped structure of chromosome is called
	8.	Leaves of neem yield
	9.	The environment is derived from
	10.	are valuable rotation crops.
III.	Ans	wer any five of the following questions in one or two sentences each:
		$5 \times 2 = 10$
	11.	What is gram stain?
	12.	Define photolysis of water.
	13.	Define abscission.
	14.	What are biofertilizers?
	15.	What is lenticular transpiration?
	16.	What is autochory?
	17.	What are the internal factors necessary for seed germination?
	18.	What is the basis of Ayurveda?
	19.	What is acid rain?
	20.	What are the three basic elements of green revolution?
IV.		e short answers for any <i>four</i> of the following questions in 100 words each. w diagrams wherever necessary. Question No. 22 is compulsory. $4 \times 5 = 20$
	21.	Explain autotrophic nutrition in bacteria.
	22.	Draw a neat labelled diagram of ultra structure of chloroplast.
	23.	Distinguish between DNA and RNA.
	24.	Explain the special types of chromosomes.
	25.	Write about aggregate fruits with an example.
	26.	What are the causes of fresh water crisis?

27. What are the different types of crops?

- Write a detailed answer for any one of the following questions in about V. 200 words. Draw diagram wherever necessary.  $1 \times 10 = 10$ 
  - 28. Explain the mechanism of aerobic respiration.
  - 29. Describe the types of dry fruit and their types.

### SECTION - B

#### ZOOLOGY

			( Marks	: 50)	Andrewson Service State of the
VI.	Che	oose	and write the correct answer:		5 × 1 = 5
	30.	In f	frog the sperms are given out th	iroug	h
		a)	anus	b)	cloaca
		c)	mouth	d)	genitalia.
	31.	The	hardest substance in the hum	ian bo	ody is
		a)	dentine	b)	cement
		c)	enamel	d)	root canal.
	32.	The	corpus luteum secretes a horn	none	called
		a)	insulin	b)	glucagon
		c)	parathormone	d)	progesterone.
	33.	Hae	ematopoietic stem cells give rise	to	
		a)	nerve cells	b)	epithelial cells
		c)	blood cells	d)	brain cells.
	34.	Ulce	eration in the nasal membrane	is cau	used due to
		a)	cocaine	b)	cannabies
		c)	opiates •	d)	amphetamines.
JΙΙ.	Fill:	in the	e blanks with suitable terms :		$5 \times 1 = 5$
	35.	Bloc	od pressure is measured by an	instru	
	36.	The	black buck is at the verge of		
			introduction of a new gene into		
					astes in the blood and tissues
		is			
	39.	In o	ne group of people have no ar	ntigen	in their blood. This type of blood
		grou	ip is called		

VIII. Answer any five of the following questions in one or two sentences each:

 $5 \times 2 = 10$ 

- 40. What is assimilation?
- 41. Write about the role of Haemoglobin.
- 42. Draw and label the structure of pancreas showing islets of Langerhans.
- 43. What is called morula?
- 44. Define Endometrium.
- 45. Expand the following:
  - i) GRAIN
  - ii) ISF.
- 46. Write a note on Project Tiger.
- 47. Mention the factors causing disease.
- 48. What is meant by polyurea?
- 49. Write the uses of C.T. scan.

IX. Write short answers for any *four* of the following questions in 100 words each.

Draw diagrams wherever necessary. Question No. 53 is compulsory.

 $4 \times 5 = 20$ 

- 50. Explain the urinogenital system of Male Frog.
- 51. Write about the Head of Frog.
- 52. Describe the role of Insulin in the body.
- 53. Draw a neat labelled sketch of matured human sperm.
- 54. Write short notes on Man in the Biosphere.
- 55. Give an account on obesity.
- 56. Explain Algal culture.
- X. Write detailed answer for any one of the following questions in 200 words. Draw diagram wherever necessary.  $1 \times 10 = 10$ 
  - 57. Explain the process involved in tissue culture in animals.
  - 58. Describe the origin and conduction of Heartbeat.

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## SCIENCE (Theory) — Paper I (Physics and Chemistry)

Time Allowed: $2\frac{1}{2}$	Hours ]	[ Maximum Marks : 100

				SECTION - A	the settlement of the settleme	
			TOTAL CONTROL	PHYSICS	O	
				Marks: 50)	10	
Ī.	Cho	ose	the correct alternative	and write it ag	gainst the question number in y	our
	ans	wer-	book:	The source of	10 × 1 =	10
	1.	The	e average value of accele	eration due to	gravity is	
		a)	$9.8\mathrm{ms}^{-2}$	(b)	9 · 8 cm <sup>-2</sup>	
		c)	19 · 8 ms <sup>-2</sup>	d)	$8 \cdot 9 \text{ ms}^{-2}$ .	
	2.	The	ratio of the wavelength	hs of two colou	ars is 3:2. The ratio of the amo	unt
		of t	hese colours scattered	by air molecule	es is	
		a)	3:2	b)	2:3	
		c)	24:34	d)	3 <sup>4</sup> : 2 <sup>4</sup> .	
	3.	Wh	ich of the following is b	ased on electro	omagnetic induction?	
		a)	Transformer	b)	Galvanometer	
		c)	Loudspeaker	d)	Motor.	
	4.	The	magnetic flux linked	with a coil of a	area 0.5 cm² placed at right ar	igle
		to a	magnetic field of indu	ction 0·1 tesla	is	

b)  $5 \times 10^{-6}$  weber

d)

 $5 \times 10^{-4}$  weber.

 $5 \times 10^{-5}$  weber

 $5 \times 10^{-3}$  weber

II.

5.	Inte	rmolecular force of attraction	exists	between the molecules separated
	by a	distance of about		
	a)	10 <sup>-3</sup> m	b)	10 <sup>-5</sup> m
	c)	10 <sup>-9</sup> m	d)	10 <sup>-6</sup> m.
6.		trons are embedded in a positi	vely cl	harged sphere. This was suggested
	by			
	a)	Thomson	b)	Rutherford
	c)	Bohr	d)	Dalton.
7.	The	coolant used in a nuclear react	tor is	0
	a)	graphite	b)	heavy water
	c)	water	d)	uranium.
8.	The	radio-isotope used to treat can	cer in	the human body is
	a)	Cr <sup>51</sup>	b)	Fe <sup>59</sup>
	c)	I <sup>131</sup>	d)	Co <sup>60</sup> .
9.	The	objects which are found between	en the	orbits of Mars and Jupiter are
	a)	meteorites	b)	asteroids
	c)	comets	d)	meteors.
10.		ratio of the velocities with whis 3:5. The ratio of their dist		two galaxies move away from the
	13	5:3	b)	2.5
	a)		b)	3:5
	c)	9:25	d)	25 : 9.
Ans	wer a	ny five of the following question	ns in o	one or two sentences each:
				$5 \times 2 = 10$

11. Define moment of interia.

12. Calculate the momentum of a particle associated with a wave of wavelength 2Å.

- 13. State Fleming's left hand rule.
- 14. Convert one kilowatt-hour into joules.
- 15. Why do small pieces of camphor dance about on the surface of water?
- 16. Define coefficient of viscosity.
- 17. Define mass number and atomic number.
- 18. What is artificial radioactivity?
- 19. What is remote sensing?

### III. Answer any five of the following questions:

 $5 \times 3 = 15$ 

- 20. Define the relation between linear velocity and angular velocity.
- 21. Compare the motion of freely falling body with that of a projectile.
- 22. Calculate the wavelength associated with a particle of mass  $5 \times 10^{-24}$  kg moving with a velocity  $2 \times 10^{7}$  ms<sup>-1</sup>.
- 23. On what factors does the photoelectric current depend?
- 24. A transformer in a distribution station reduces AC voltage from 36000V to 2400V. The primary coil has 15000 turns. What is the number of turns in the secondary?
- 25. Mention the factors on which the rate of flow of a liquid through a pipe depends.
- 26. Define reproduction factor. Give its significance.
- 27. Mention the applications of radioisotopes in the field of medicines.
- 28. Write notes on (a) meteors and (b) meteorites.

IV.	Answer	any	three of	the	following	questions	:
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 $3 \times 5 = 15$ 

- 29. A toy car is dropped from the top of a building. It reaches the ground in 3 sec. Calculate (a) the velocity with which it strikes the ground, (b) the height of the building.
- 30. Derive an expression for de-Broglie wavelength.
- 31. Explain the role of transformer in the transmission of power.
- 32. State Bernoulli's principle and explain the lift of an aeroplane
- 33. Write a note on chain reaction.
- 34. Mention the properties of X-rays.

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					SEC	TION - B	0	of esticloses		
					CHE	MISTRY				
					( Ma	rks: 50)				
V.			the con	rect ans	swer and w	rite it a	gainst	the questio	n number in t $10 \times 1 =$	
	35.	The	oxidat	ion num	ber of lithiu	m in lithi	um hy	vdride (LiH) i	S	
		a)	+1	C		b)	-1			
		c) _	+2			d)	-2.			
	36.	Mas	s of 1 r	nole of w	ater is equa	al to				
		a)	2 g			b)	44 g			
		c)	18 g			d)	12 g.			
	37.				olumes of rogen and hy			products in	the formation	of
		a)	1:3:	2		b)	1:2	: 3		

c) 1:1:2

- d) 1:2:1.
- 38.  $C + O_2 \rightarrow CO_2$ ,  $\Delta H = -393 \cdot 5 \text{ kJ}$ . This reaction is an example of
  - a) photochemical reaction
- b) electrochemical reaction
- c) endothermic reaction
- d) exothermic reaction.

Geri	manium is purified by		method.
a)	zone refining	b)	distillation
c)	oxidation	d)	liquation.
Amr	monal is mixture of aluminium	powo	der and
a)	ammonium chloride	b)	ammonium phosphate
c)	ammonium nitrate	d)	ammonium carbonate.
Carl	bonic acid is		
a)	CH <sub>3</sub> COOH	b)	нсоон
c)	H <sub>2</sub> CO <sub>3</sub>	d)	C <sub>6</sub> H <sub>5</sub> COOH.
Eth	ylene glycol is an example for		
a)	primary alcohol	b)	secondary alcohol
c)	tertiary alcohol	d)	dihydric alcohol.
The	IUPAC name of HCOOH is		
a)	methanal	b)	methanol
c)	formic acid	d)	methanoic acid.
The	e main source of sulphur dioxic	le pol	llutant is
a)	volcanic activity	b)	chemical industry
c)	power house	d)	textile mill.
swer	any five of the following question	ons in	one or two sentences each:
2			$5 \times 2 = 10$
Sta	te Hund's rule.		
		100	
Wh	at is the present day position of	of law	of conservation of mass?
De	fine rate of a reaction.		
	a) c) Amr a) c) Carl a) c) Eth; c) The a) c) Swer Sta	a) zone refining c) oxidation  Ammonal is mixture of aluminium a) ammonium chloride c) ammonium nitrate  Carbonic acid is a) CH <sub>3</sub> COOH c) H <sub>2</sub> CO <sub>3</sub> Ethylene glycol is an example for a) primary alcohol c) tertiary alcohol c) tertiary alcohol The IUPAC name of HCOOH is a) methanal c) formic acid The main source of sulphur dioxid a) volcanic activity c) power house swer any five of the following question  State Hund's rule. Give the limitations of law of multi- What is the present day position of	c) oxidation d)  Ammonal is mixture of aluminium power a) ammonium chloride b) c) ammonium nitrate d)  Carbonic acid is a) CH <sub>3</sub> COOH b) c) H <sub>2</sub> CO <sub>3</sub> d)  Ethylene glycol is an example for a) primary alcohol b) c) tertiary alcohol d)  The IUPAC name of HCOOH is a) methanal b) c) formic acid d)  The main source of sulphur dioxide polarity by c) power house d) swer any five of the following questions in  State Hund's rule. Give the limitations of law of multiple polarity is the present day position of law

VI.

- 49. What is liquation?
- 50. How is phosphine obtained from white phosphorus?
- 51. What is denatured alcohol?
- 52. How is diethyl ether prepared by Williamson's ether synthesis?
- 53. What are the changes occurring in water due to pollutants?
- VII. Answer any five of the following questions in brief:

 $5 \times 3 = 15$ 

- 54. Draw the shapes of p-orbitals.
- 55. Explain magnetic quantum number.
- 56. Calculate the equivalent mass of sodium hydroxide (NaOH). (Atomic mass of sodium is 23, oxygen is 16 and hydrogen is 1 respectively)
- 57. In an experiment 5.0 g of CaCO<sub>3</sub> on heating gave 2.8 g of CaO and 2.2 g of CO<sub>2</sub>. Show that these results are in accordance to the law of conservation of mass.
- 58. What are the conditions for reversible reaction?
- 59. What is bessemerisation? Give example.
- 60. What is the action of ether with
  - i) chlorine in dark
  - ii) chlorine in light?
- 61. Give two tests for carboxylic acid.
- 62. Write a note on quick vinegar process.

- VIII. Answer any three of the following questions in detail with necessary diagrams and equations wherever necessary:  $3 \times 5 = 15$ 
  - 63. Derive the relation between vapour density and relative molecular mass of a gas.
  - 64. Distinguish metals and non-metals based on their physical properties.

    Mention any five points.
  - 65. Explain the methods of preventing corrosion by
    - i) Galvanisation
    - ii) Tinning.
  - 66. How do you extract sulphur by Frasch process?
  - 67. Describe the manufacture of ethanol from molasses.
  - 68. Mention any five points to conserve energy.

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