EXAMINATION CODE: 04					
Dist. Code	Registration No.				
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QUESTION	BOOKLET	SL.	NO.
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QUESTION BOOKLET - PAPER-II

(Before answering questions read carefully the instructions given in the Question Booklet)

SUBJECTS: CHEMISTRY, BOTANY, ZOOLOGY

MAXIMUM MARKS: 100

MAXIMUM TIME: 2 HOURS

SUBJECT CODE:

BS

2.00 p.m. to 4.00 p.m.

(Including initial 10 minutes for filling O.M.R. Answer Sheet)

INSTRUCTIONS TO THE CANDIDATES

- 1. The sealed Question Booklet containing **100** questions enclosed with O.M.R. Answer Sheet is given to you.
- 2. Verify whether the given question booklet is of the same subject which you have opted.
- 3. Open the question paper seal carefully and take out the enclosed O.M.R. Answer sheet outside the question booklet. Fill up the general information and shade the relevant circle from Sl. No. 1 to 8 of O.M.R. Answer Sheet. If you fail to fill up the details in the form of alphabet and signs as instructed, you will be personally responsible for consequences arising during scoring of your answer sheet.
- 4. See that the Question Paper Booklet No. and the O.M.R. Answer Sheet No. are same. If there is difference, inform the Room Supervisor immediately.
- 5. Enter the Question Paper Booklet Sl. No. in the O.M.R. Answer Sheet at Sl. No. 4.
- 6. Enter the Code of the subject you have opted at Sl. No. 9 of O.M.R. Answer Sheet and shade the circle given before the subject.
- 7. During the Examination:-
 - (a) Read each question carefully.
 - (b) Select the correct answer out of the four choices given under each Question.
 - Completely darken/shade the relevant circle against Question No. in the O.M.R. Answer Sheet. For example, in a question paper if Sl. No. 3 is correct answer for Question No. 20, then darken before Sl. No. 20 of O.M.R. Answer Sheet using blue / black ball point pen as follows:

- (Only example)
- 8. Rough work should the done only on the blank space provided in the Question Booklet. Rough work should not be done on the O.M.R. Answer Sheet.
- 9. If more than one circle is darkened for a given question, such answer is treated as wrong and no mark will be given. See the example in O.M.R. Answer Sheet.
- 10. The candidate and the Room Supervisor should sign in the O.M.R. Sheet at specified place. Candidate has to put left hand thumb impression at specified place compulsorily.
- 11. Each of the candidate is given carbonless O.M.R. Answer sheet in duplicate. Candidate should return the original O.M.R. Answer sheet to the Room Supervisor and retain carbon copy of the same with him after the examination.
- 12.Log Tables, Calculator, Pager & Mobile phones are not allowed inside the examination hall.
- 13. After answering the questions writing the information at \$1. No. 8 is compulsory.
- 14.Do not use white fluid to change the answer, such answer will not be considered for valuation.
- 15. If a candidate is found committing malpractice, such a candidate shall not be considered for recruitment and action will be taken against such candidate as per rules.

INSTRUCTIONS TO FILL UP THE O.M.R. SHEET

- 1. There is only one correct answer for each question.
- 2. Circles must be darkened with BLUE or BLACK ball point pen only. Do not try to alter the entry.
- 3. Circle should be darkened completely so that the numeral inside the circle is not visible.
- 4. Do not make any stray marks on this sheet.
- 5. This is a carbonless Answer Sheet. There is no need to shade the second copy separately.
- Paper-II BS



- 1. In Wurtz reaction, ethyl bromide and isopropyl bromide on heating with metallic sodium gives a mixture of alkanes.
 - (1) two
- (2) three
- (3) four
- (4) one
- 2. In the reaction,

$$CaC_2 + H_2O \longrightarrow A \xrightarrow{Hg^{+2}} H_2SO_4 \to E$$

B is

- (1) Methane
- (2) Ethyne
- (3) Ethanal
- (4) Aldol
- 3. Benzene reacts with isobutyl bromide in the presence of $AlCl_3$ to give
 - (1) n-Butyl benzene
 - (2) Isobutyl benzene
 - (3) Sec-butyl benzene
 - (4) tert-Butyl benzene
- 4. α-D-Glucopyranose reacts with
 - (1) Fehling's solution
 - (2) Grignard reagent
 - (3) Sodium bisulphate
 - (4) Schiff's reagent

5. Bond order and bond dissociation energy follow the order:

(1)
$$O_2 > O_2^- > O_2^{2-} > O_2^+$$

(2)
$$O_2^- > O_2^{2-} > O_2^+ > O_2$$

(3)
$$O_2^{2-} > O_2^+ > O_2 > O_2^-$$

(4)
$$O_2^+ > O_2 > O_2^- > O_2^{2-}$$

- 6. Which of the following has smallest de-Broglie wavelength?
 - (1) Molecule of CO₂
 - (2) Proton
 - (3) Molecule of SO₂
 - (4) Electron
- 7. The energy of an electron in Bohr's second orbit of H atom is -E. The energy of the electron in the Bohr's first orbit is
 - (1) 4E
- (2) –4E
- (3) -E/4
- (4) -2E
- 8. Zr and Hf have almost equal atomic and ionic radii because
 - (1) of lanthanide contraction
 - (2) of actinide contraction
 - (3) both belong to f-block elements
 - (4) of diagonal relationship

	(3) (4)	Dehydrating Strong oxid	gagent			(3)	Ruby glass	·	
	(1) (2)	Strong redu Strong com				(1) (2)	Gold sol Sodium stear	ate	
•	Hypo is used in photography because it is a		20.		xample of mic	celle is			
	Hype	s is used in m	h 040 0	_1_ 1 •.			·	(4)	Cisplatin
	(3)	4	(4).	2		(3)	Uracil	(2) (4)	Transplatin
	(1)	6	(2)	3		(1)	 Zeise's salt	(2)	T1-4'
The number of ions produced from $[Co(NH_3)_6]Cl_3$ is			19.				$[0]_2Cl_2$] is used under the name		
	(3)	Co	(4)	Fe		F4	,		
	(1)	Rh	(2-)	Al		(3)	Cu	(4)	Mg
		ogeneous rogenation of	catalys alkenes	t in the contains		(1)	Al	(2)	Fe
2. Wilkinson's catalyst used as a		18.	The H ₂ f	metal whic rom dil. H ₂ SC	h does	not liberate			
	(3)	Mn_2O_3	(4)	Mn_2O_7			· · · · · · · · · · · · · · · · · · ·	(1)	Manufaces
	(1)	Mn_3O_4	(2)	MnO		(3)	Pine oils	(2) (4)	Cresols Xanthates
••	oxio	de?	onowin	g is an acidic		ore (1)	NaCN		depressant.
1. Which of the following is an		~ · 1•	17		he separation	of Zn	S ore and PbS		
	(3)	1	(4)	4/5			• •		
	(1)	ution is 2/5	(2)	3/5		(3)	Al^{3+}	(4)	Mg
	one	mole of fe	rrous ox	alate in acidic		(1)	Mg ²⁺	(2)	Al
			number of moles of KMnO ₄ that be needed to react completely with		16	. Wh	nich of the fogest size?	llowing	will have the
•	(3)	+8	(4)	+6		(3)	$ZnCO_3$	(4)	Al_2O_3
	(1)	+9	(2)	+7		(1)	SiC	(2)	SiO ₂
_	by	a transition e	element i	state exhibited	1:	5. Th	e formula of c	orundu	m is

(o(w+yb))(db) Compatible Festor HID

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Paper-II 🖶

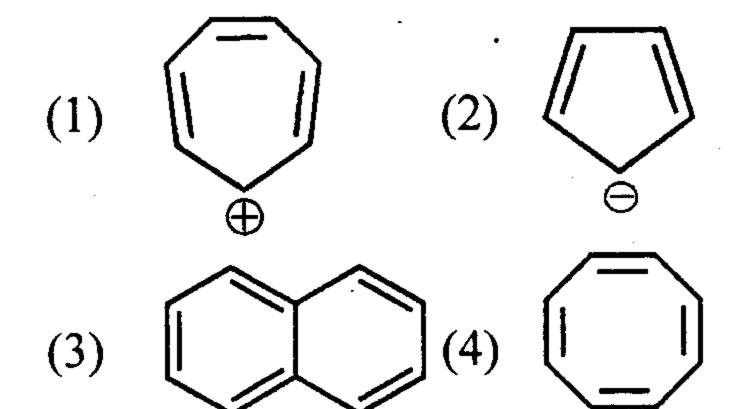
- 15
- 21. In which of the following, entropy decreases?
 - (1) A liquid crystallizes into a solid
 - $(2) \quad H_{2(g)} \longrightarrow 2H_{(g)}$
 - (3) $2\text{NaHCO}_{3(s)} \longrightarrow \text{Na}_2\text{CO}_{3(s)} +$ $CO_{2(g)} + H_2O_{(g)}$
 - (4) Rusting of iron
- 22. Match the following:
 - (a) Tyndall effect (i) Smoke precipitator
 - (b) Electrophoresis (ii) Ultramicroscope
 - (c) Coagulation (iii) Medicine
 - (d) Adsorption (iv) Sewage water disposal
 - (a) (b) (c) (d)
 - (1) (iv) (iii) (ii) (i)
 - (2) (ii) (i) (iv) (iii)
 - (3) (iii) (ii) (iv)
 - (4) (i) (iv) (iii) (ii)
- 23. At high altitudes, the boiling point of liquid decreases because
 - (1) the atmospheric pressure is high.
 - (2) the temperature is high.
 - (3) the temperature is low.
 - (4) the atmospheric pressure is low.

- 24. A solution of CuSO₄ is electrolyzed for 10 minutes with a current of 1.5 amperes. The mass of copper deposited at the cathode is
 - (1) 0.5876 g
- (2) 0.009794 g
- (3) 0.2938 g
- (4) 0.004897 g
- 25. The standard reduction potentials of Cu^{2+/}Cu and Cu^{2+/}Cu⁺ are 0.337 and 0.153 V respectively. The standard electrode potential of Cu⁺/Cu half cell is
 - (1) 0.521 V
- (2) 0.827 V
- (3) 0.490 V
- (4) 0.184 V
- 26. Saturated solution of KNO₃ is used to make salt bridge because
 - (1) KNO_3 is highly soluble in H_2O .
 - (2) Velocity of K^+ is greater than that of NO_3^- .
 - (3) Velocity of NO_3^- is greater than that of K^+ .
 - (4) Velocity of K^+ and NO_3^- are nearly the same.
- 27. The compound whose aqueous solution has highest pH.
 - (1) NH₄Cl
 - (2) NaCl
 - (3) Na₂CO₃
 - (4) CH₃COONH₄

- 28. The solubility products of AgCl and AgI are 1.1×10^{-10} and 1.6×10^{-16} respectively. If AgNO₃ is added drop by drop to the solution containing equal concentration of both chloride and iodide ions, the salt precipitated first is
 - (1) AgI
 - (2) Both AgCl and AgI
 - (3) AgNO₃
 - (4) AgCl
- 29. The heat of neutralization of HCl by NaOH is -55.9 kJ/mole. If the heat of neutralization of HCN by NaOH is -12.1 kJ/mole, the energy of dissociation in HCN is
 - (1) 43.8 kJ
- (2) 68 kJ
- (3) -43.8 kJ
- (4) -68 kJ
- . 30. According to Langmuir adsorption isotherm the amount of gas adsorbed at very high pressure
 - (1) goes on increasing with pressure
 - (2) reaches a constant limiting value
 - (3) increases first and decreases later with pressure
 - (4) goes on decreasing with pressure

- 31. In a spontaneous change, a system undergoes
 - (1) increase in internal energy.
 - (2) lowering the free energy.
 - (3) no energy change.
 - (4) lowering of entropy.
- 32. The new neutron and proton ratio after a nuclide, $_{92}U^{238}$ loses an α -particle is
 - (1) 144/90
- (2) 234/90
- (3) 239/90
- (4) 146/92
- 33. Which of the following is considered as a synthetic element?
 - (1) Lead
- (2) Plutonium
- (3) Uranium
- (4) Thorium
- 34. The equipment used to carry out the fission reaction in a controlled manner is called
 - (1) Nuclear fusion
 - (2) Thermonuclear fission
 - (3) Nuclear reactor
 - (4) Moderator

- The IUPAC name of CH₃COCH₂CHO is **35.**
 - 4-Formylbut-2-one (1)
 - 3-Oxobutanal
 - 1-Formylbut-3-one (3)
 - 3-Oxobutanol **(4)**
- CH₃CH₂COCH₂CH₃ and **36.** CH₃COCH₂CH₂CH₃ are
 - Metamers
 - Chain isomers (2)
 - Tautomers (3)
 - Functional isomers (4)
- Which of the following does not obey **37.**.. Huckel rule?



- Propene is separated from propyne by **38.** using the reagent
 - Alkali KMnO₄ (1)
 - (2) Br₂ water
 - Ammonical AgNO₃ (3)
 - (4) Schiff's reagent

- IUPAC name of $CH \equiv C CH = CH -$ **39.** $CH = CH_2$
 - Hexa-3, 5-diene-1-yne
 - Penta-1, 3-dien-5-yne (2)
 - Penta-3, 5-diene-1-yne (3)
 - Hexa-1, 3-dien-5-yne (4)
- The decreasing order of their relative **40.** reactivity with an electrophile of the following compounds is:
 - Toluene (i)
 - p-Xylene (ii)
 - p-Nitro toluene
 - p-Dinitrobenzene
 - (ii) > (i) > (iii) > (iv)(1)
 - (ii) > (iii) > (iv) > (i)
 - (iii) > (iv) > (i) > (ii)(3)
 - (i) > (ii) > (iii) > (iv)

 $CH(CH_3)_2$ $CH(CH_3)_2$ 41. nitration NO_2 CH_3 CH₃

This can be explained on the basis of

- Inductive effect (1)
- (2) Resonance
- Hyperconjugation (3)
- Electromeric effect **(4)**

Space For Rough Work

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CH=C-2+=CH=CH2

BS

Paper-II 🖶

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1	U

- 42. Which of the following compounds will show cis-trans isomerism?
 - (1) $(CH_3)_2C = CHCH_3$
 - $(2) \quad CH_2 = CCl_2$
 - (3) $(CH_3)_2C = C(CH_3)_2$
 - (4) $CH_3 CH = C Br(CH_3)$
- 43. The incorrect statement is
 - (1) Ribose is an aldopentose
 - (2) Maltose is a ketohexose
 - (3) Fructose is a ketohexose
 - (4) Galactose is an aldohexose
- 44. Which of the following is a communicable disease?
 - (1) Scurvy
- (2) Typhoid
- (3) Beriberi
- (4) Rickets
- 45. Which of the following is not a plant hormone?
 - (1) Equilenin
- (2) Gibberellins
- (3) Cytokinins
- (4) Auxins
- 46. The alkaloid which is used as agent for the relief of pain is
 - (1) Quinine
- (2) Atropine
- (3) Morphine
- (4) Nicotine

- 47. Which of the following is having weakest C-H bond?
 - (1) Ethene
- (2) Ethane
- (3) Benzene
- (4) Ethyne
- 48. Only two isomeric monochloro derivatives are possible for
 - (1) 2-Methylpropene
 - (2) Benzene
 - (3) n-Hexane
 - (4) 2, 4-Dimethylpentane
- 49. Which of the following is not a test for carbohydrates?
 - (1) Molish test
 - (2) Biuret test
 - (3) Seliwanoff's test
 - (4) Tollen's test
- 50. Kolbe's electrolysis of potassium succinate gives CO₂ and
 - (1) Ethane
 - (2) Ethyne
 - (3) Ethene
 - (4) Ethanoic acid

51.	In C ₄ plants the CO ₂ acceptor is	56.	Law of independent assortment can be
	(1) Pyruvate		explained with the help of
	(2) Posphoenol pyruvate		(1) Dihybrid cross
	(3) Aspartate		(2) Back cross
	(4) Malate		(3) Test cross
52.	Respiration is an		(4) Monohybrid cross
	(1) Endothermic process		
	(2) Anabolic process	57.	When chromosome sets are present in
	(3) None of these		multiple of 'n' the condition is called
	(4) Exothermic process		as
			(1) Aneuploidy
53.	The pigment that absorbs red and far- red light in plants is		(2) Euploidy
	(1) Xnathophyll		(3) Diploidy
	(2) Phytochrome		(4) Polyploidy
	(3) Carotene		
	(4) Cytochrome	58.	The main components of plasma
			membrane are
54.	The plants growing on saline soils are called as		(1) Lipids, proteins and carbohydrates
	(1) Xerophytes		(2) Lipids only
	(2) Halophytes		(3) Proteins only
	(3) Hydrophytes		(4) Lipids and proteins
	(4) Oxylophytes		•
		59.	Chromatids exchange segments at
55.	The formation of m-RNA from DNA		•
	is called		(1) Zygotene
	(1) Transformation	•	(2) Diakinesis
	(2) Transduction		
	(3) Transcription		(3) Leptotene (4) Rechystene
	(4) Translation		(4) Pachytene

- 60. Plasmids are ideal vectors for gene cloning as
 - (1) They can be multiplied in the laboratory using enzymes
 - (2) They can replicate freely outside the bacterial cell
 - (3) They are self replicating within the bacterial cell
 - (4) They can be multiplied by culturing
- Which one of the following technique is not associated with DNA fingerprinting?
 - (1) Gel electrophoresis
 - (2) Southern blotting
 - (3) Identification of genes
 - (4) Autoradiography
- 62. Read the statements A and B:
 - Statement A: A virus may contain both RNA and DNA.
 - Statement B: Viruses can infect only animals.

Which of these is correct?

- (1) Both statements are incorrect.
- (2) Statement A is correct and B is incorrect.
- (3) Statement A is incorrect and B is correct.
- (4) Both statements are correct.

- Which one of the following algae has the ability to fix the atmospheric nitrogen?
 - (1) Nostoc
 - (2) Spirogyra
 - (3) Oedogonium
 - (4) Ulothrix
- 64. Brain fever (Japanese Encephalitis) is caused by
 - (1) Cauliflower mosaic virus
 - (2) Musa virus
 - (3) Arbovirus
 - (4) Lyssavirus
- 65. Downy mildew of 'Jowar' is caused by
 - (1) Sclerospora sorghii
 - (2) Sphacelotheca sorghii
 - (3) Sclerospora graminicola
 - (4) Erysiphe graminis-tritici
- 66. Chemical compounds produced by host plants as defense reaction to pathogen are called
 - (1) Phytoalexins
 - (2) Phytotoxins
 - (3) Phytohormones
 - (4) Phytochromes

- Which one of the following are called 'Amphibians of Plants Kingdom'?
 - (1) Pteridophytes
 - (2) Fungi
 - (3) Algae
 - (4) Bryophytes
- 68. A fern is a
 - (1) Non-vascular non-flowering plant
 - (2) Vascular flowering plant
 - (3) Non-vascular flowering plant
 - (4) Vascular non-flowering plant
- 69. Pinus seed have
 - (1) Two cotyledons
 - (2) Three cotyledons
 - (3) Many cotyledons
 - (4) Single cotyledon
- 70. Pneumatophores are characteristics of the family
 - (1) Orchidaceae
 - (2) Loranthaceae
 - (3) Leguminosae
 - (4) Rhizophoraceae
- 71. An orthotropous ovule is one in which the microphyle and chalaza are
 - (1) at right angle to the funiculus
 - (2) oblique with respect to the funiculus
 - (3) parallel to the funiculus
 - (4) in a straight line with the funiculus

- 72. Natural system of classification is proposed by _____.
 - (1) John Hutchninson
 - (2) Bentham and Hooker
 - (3) Oswald Tippo
 - (4) Carolus Linnaeus
- 73. Capitulum inflorescence is found in
 - (1) Fabaceae
 - (2) Asteraceae
 - (3) Solanaceae
 - (4) Malvaceae
- 74. Coir fibers are obtained from which part of the coconut?
 - (1) Mesocarp
 - (2) Endocarp
 - (3) Seed coat
 - (4) Epicarp
- 75. Meristematic tissues of plants include
 - (1) Stem and root tips, vascular cambium and cork cambium
 - (2) Tips of stem, tips of mature leaves and cork cambium
 - (3) Tips of mature leaves and vascular cambium
 - (4) Vascular cambium, cork cambium and the tips of mature leaves

Paper-II 🕈

- (1) Wasp
- (2) Honey bee

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- (3) Butterfly
- (4) Moth

77. Which of the following is an insect hormone?

- (1) Ecdysone
- (2) Thyroxine
- (3) Testosterone
- (4) FSH

78. Column – I lists the cell organelles and Column – II lists their function. Match the two columns and choose the correct answer from those given below:

Column – II Column – II

r.

- A. Mitochondria
- p. Protein synthesis
- B. Ribosome
- q. Synthesis of energy molecule
- C. Golgi complex
- Cellular digestion
- D. Endoplasmic reticulum
- s. Secretion
- t. Transport
- (1) A = t, B = p, C = q, D = r
- (2) A = q, B = p, C = s, D = t
- (3) A = r, B = p, C = q, D = t
- (4) A = p, B = q, C = s, D = t

79. Which of the following is used to make antibiotic penicillin?

- (1) Penicillium chrysogenum
- (2) Penicillium digitatum
- (3) Penicillium candidum
- (4) Penicillium marneffei

80. Read the statements A and B and choose the correct answer from below:

Statement A: Mitochondria are present in prokaryotes.

Statement B: Nuclear envelope is absent in prokaryotes.

- (1) Both the statements are wrong.
- (2) Statement A is correct, B is wrong.
- (3) Statement B is correct, A is wrong.
- (4) Both the statements are correct.

81. Which of the following belongs to the order Gynophiona?

- (1) Salamanders
- (2) Newts
- (3) Toads
- (4) Caecilians

82. What is the common name of Naja naja?

- (1) Krait
- (2) Indian cobra
- (3) Viper
- (4) Coral snake

83. Which of the following is the highest fish producing State in India?

- (1) Karnataka
- (2) Tamil Nadu
- (3) West Bengal (4)
- (4) Gujarat

84. Which of the following organism is used extensively for composting the waste organic compounds?

- (1) Earthworm
- (2) Bacteria
- (3) Fungi
- (4) Algae

85. Which of the following is a non-green house gas?

- (1) Methane
- (2) Carbon monoxide
- (3) Nitrous oxide
- (4) Carbon dioxide