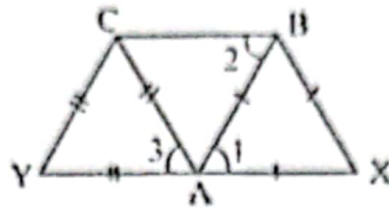


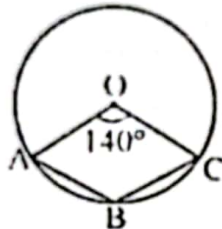
1. If  $\frac{1}{1+x^m-n} + \frac{1}{1+x^n-m} = x^p$ , the value of p is :  
 (a) 0 (b) 1  
 (c)  $\frac{m}{n}$  (d)  $\frac{n}{m}$
2. What is the value of  $4.\overline{86} - 3.\overline{71}$ ?  
 (a) 1. $\overline{6}$  (b) 1. $\overline{5}$   
 (c) 1. $\overline{14}$  (d) 1. $\overline{15}$
3. If  $\log_{10} 5 + \log_{10} (5x + 1) = \log_{10} (x + 5) + 1$ , then x is equal to  
 (a) 4 (b) 3  
 (c) 2 (d) 1
4. The speed of a boat in still water is 8 km/hr. If it can travel 1 km upstream in 1 hr., what time it would take to travel the same distance downstream?  
 (a) 1 min. (b) 2 min.  
 (c) 3 min. (d) 4 min.
5. In a division, the remainder is 0 when a student mistook the divisor as 12 instead of 21 and obtained 35 as quotient. The correct quotient is  
 (a) 25 (b) 20  
 (c) 15 (d) 10
6. For what value of k, the following system of linear equations has no solution?  

$$(3k + 1)x + 3y = 2, (k^2 + 1)x + (k - 2)y = 5$$
 (a) 1 (b) -1  
 (c) 5 (d) -2
7. Let  $f(x) = ax^2 + bx + c$ ,  $a, b \in \mathbb{R}$ ,  $a \neq 0$  satisfying  $f(1) + f(2) = 0$ . Then the quadratic equation  $f(x) = 0$  has  
 (a) no real root (b) 1 & 2 as real roots  
 (c) two equal roots (d) two distinct real roots
8. If  $\alpha, \beta$  be the zeros of the polynomial  $2x^2 + 5x + k$  such that  $\alpha^2 + \beta^2 + \alpha\beta = \frac{21}{4}$ , then k is  
 (a) 3 (b) -3  
 (c) 2 (d) -2
9. If the  $m^{\text{th}}$  term of an A.P. be  $\frac{1}{n}$  and its  $n^{\text{th}}$  term be  $\frac{1}{m}$ , then its  $(mn)^{\text{th}}$  term will be  
 (a) 4 (b) 0  
 (c) 2 (d) 1
10. If  $\sin\theta + \cos\theta = \sqrt{3}$ , then the value of  $\tan\theta + \cot\theta$  is  
 (a) 2 (b)  $\frac{1}{\sqrt{2}}$   
 (c) 1 (d)  $\sqrt{3}$

11.  $\tan 1^\circ \cdot \tan 2^\circ \cdot \tan 3^\circ \dots \tan 89^\circ$  will be equal to  
 (a) 1 (b) 0  
 (c) cannot be determined (d)  $\infty$
12. In the figure, if  $AB = BX = AX$  and  $CY = AC = AY$ , then



- (a)  $\angle 1 + \angle 2 = \angle 2 + \angle 3$  (b)  $\angle 1 + \angle 3 = \angle 2 + \angle 3$   
 (c)  $\angle 1 + \angle 2 = \angle 1 + \angle 3$  (d)  $\angle 1 + \angle 3 = 2\angle 2$
13. In the figure, if it is given that O is the centre of the circle and  $\angle AUC = 140^\circ$ , then  $\angle ABC$  is



- (a)  $110^\circ$  (b)  $130^\circ$   
 (c)  $150^\circ$  (d)  $105^\circ$
14. In  $\triangle ABC$ , if D is the midpoint of BC and E is the midpoint of AD then  $ar(\triangle BED) = \dots\dots\dots$   
 (a)  $\frac{1}{2} ar(\triangle ABC)$  (b)  $\frac{1}{3} ar(\triangle ABC)$   
 (c)  $\frac{1}{4} ar(\triangle ABC)$  (d)  $\frac{2}{3} ar(\triangle ABC)$
15. The base of a parallelogram is  $(p + 4)$ , altitude to the base is  $(p - 3)$  and the area is  $(p^2 - 4)$ , find actual area  
 (a) 40 square units (b) 54 square units  
 (c) 36 square units (d) 60 square units
16. The length of the longest pole that can be kept in a room  $(12m \times 9m \times 8m)$  is:  
 (a) 29 m (b) 21m  
 (c) 19 m (d) 17 m
17. The areas of three adjacent faces of a cuboid are  $24 \text{ cm}^2$ ,  $8 \text{ cm}^2$  and  $12 \text{ cm}^2$  respectively. volume of the cuboid is  
 (a)  $16 \text{ cm}^3$  (b)  $48 \text{ cm}^3$   
 (c)  $24 \text{ cm}^3$  (d)  $36 \text{ cm}^3$
18. If the points  $A(6, 4)$ ,  $B(8, 2)$ ,  $C(9, 4)$  and  $D(p, 3)$  are the vertices of a parallelogram, taken in order the value of p is  
 (a) 7 (b) 6  
 (c) 5 (d) 4



19. Two dice are thrown simultaneously. The probability of getting a doublet is
- (a)  $\frac{1}{6}$  (b)  $\frac{2}{6}$   
(c)  $\frac{3}{6}$  (d)  $\frac{5}{6}$
20. The mean of the data  $x_1, x_2, x_3, \dots, x_n$  is  $\bar{x}$  then the mean of the data  $x_1 + \bar{x}, x_2 + \bar{x}, x_3 + \bar{x}, \dots, x_n + \bar{x}$  is
- (a)  $\bar{x}$  (b)  $2\bar{x}$   
(c)  $\frac{1}{2}\bar{x}$  (d) None of these
21. What will be the colour of florescence when a slide of human skin fibroblasts stained with actin specific antibody conjugated with FITC dye is observed under the fluorescence microscope?
- (a) Red (b) Orange  
(c) Green (d) Purple
22. The ciliated epithelium is present in all of following except:
- (a) Trachea (b) Bronchi  
(c) Oviducts (d) Intestine
23. During contraction the configuration of troponin is altered by which of the following ions?
- (a)  $\text{Cl}^-$  (b)  $\text{K}^+$   
(c)  $\text{Ca}^{2+}$  (d)  $\text{Mg}^{2+}$
24. Which of the following hormone is not secreted by Pars distalis part of pituitary gland?
- (a) FSH (b) ACTH  
(c) ADH (d) TSH
25. The aldosterone from adrenal glands is secreted by \_\_\_\_\_
- (a) zona glomerulosa (b) zona reticularis  
(c) adrenal medulla (d) adrenal capsule
26. The Grave's disease occurs due to
- (a) hyperthyroidism (b) hypothyroidism  
(c) hyperparathyroidism (d) hypoparathyroidism
27. Which of the following is associated with the protonephridial system of excretion in liver fluke?
- (a) Asplanchna (b) Flame cells  
(c) Green glands (d) Malpighian tubules
28. Which of the following animals successfully digest cellulose through 'coprophagy'?
- (a) Goat (b) Sheep  
(c) Rabbit (d) Buffaloes
29. Which one of the following sequence is logically correct for glycogen synthesis?
- (a) CRH – ACTH – Corticosteroid – glycogen (b) Glycogen – CRH – corticosteroid – ACTH  
(c) ACTH – CRH – Glycogen – Corticosteroid (d) Corticosteroid – CRH – Glycogen – ACTH

30. The stomach lining is protected from acidic contents of the stomach by  
 (a) enzymes in stomach (b) mucus secretions  
 (c) alkaline secretions in stomach (d) Ptyalin secretion
31. In a four chambered stomach of the small ruminants, the abomasum is the:  
 (a) first chamber (b) second chamber  
 (c) third chamber (d) fourth chamber
32. Vitamin-D in the liver and kidneys is converted to active form to promote absorption of which of the following from intestine?  
 (a) Calcium (b) Magnesium  
 (c) Iron (d) Manganese
33. Which of the following female vector is responsible for the transmission of lethal malarial parasite *P. falciparum*?  
 (a) *Culex* sp. (b) *Anopheles* sp.  
 (c) *Pulex* sp. (d) *Aedes* sp.
34. The number of histone molecules in a nucleosome is  
 (a) 4 (b) 8  
 (c) 12 (d) 16
35. Which of the following is not a genetic disorder?  
 (a) Klinefelter's syndrome (b) Down's syndrome  
 (c) Turner's syndrome (d) Sjogren's syndrome
36. The condition in which similar parts are arranged about a common centre like the spokes of a wheel is:  
 (a) Biradial symmetry (b) Bilateral symmetry  
 (c) Radial symmetry (d) Asymmetry
37. The eggs of *Amphioxus* are:  
 (a) Alecithal (b) Macrolecithal  
 (c) Microlecithal (d) Homolecithal
38. Continuous evolution of the immunogenic surface epitopes is the characteristic feature of:  
 (a) Trypanosomes (b) Round worms  
 (c) Parasitic amoebae (d) Hook worms
39. Which of the following cells possess phenomenon of diapedesis?  
 (a) Neurons (b) Fibroblasts  
 (c) Neutrophils (d) RBCs
40. Diuresis leading to diabetes insipidus is due to the deficiency or absence of:  
 (a) ADH (b) FSH  
 (c) TRH (d) alpha MSH



41. The GnRH from hypothalamus stimulates pituitary to secrete:  
 (a) FSH only (b) LH only  
 (c) both FSH and LH (d) TRH only
42. Which of the following stage is actually called as the Graafian follicle?  
 (a) Primordial follicle (b) Primary follicle  
 (c) Secondary follicle (d) Mature follicle
43. Miracidium is the larval form of:  
 (a) Fasciola sp. (b) Ascaris sp.  
 (c) Filarial worm (d) Tape worm
44. Which of the following statement is wrong with respect to IgG molecule?  
 (a) 2 light chains and 2 heavy chains (b) can cross placenta  
 (c) most abundant in body secretions (d) it has half-life of 18-23 days
45. Which of the following cell is involved in allergic reaction?  
 (a) Eosinophils (b) Mast cells  
 (c) Basophils (d) Both Basophils and Mast cells
46. Which is the causative agent of Kala-azar?  
 (a) Leishmania tropica (b) Leishmania donovani  
 (c) Leishmania brasiliensis (d) Leptomonas sp.
47. The chromosomes having equal arms are known as:  
 (a) Telocentric (b) Acrocentric  
 (c) Metacentric (d) Submetacentric
48. The phytochrome pigment is involved in which process?  
 (a) Photoperiodism (b) Photorespiration  
 (c) Phototropism (d) Vernalization
49. Enzyme Nitrogenase has  
 (a) one active site (b) two active site  
 (c) three active site (d) five active site
50. A nucleotide is consisted of a pentose sugar plus  
 (a) pyrimidine base (b) purine base  
 (c) phosphoric acid (d) phosphoric acid and a nitrogen base
51. The blue and green wavelengths of sunlight are absorbed by  
 (a) Chlorophyll (b) Xanthophyll  
 (c) Phyocyanin (d) Phycoerythrin
52. A turgid cell will have zero value of  
 (a) water potential (b) osmotic potential  
 (c) wall pressure (d) turgor pressure

53. The lenticular transpiration is almost equal to stomatal transpiration in  
 (a) CAM plants (b) heliophytes  
 (c) sciophytes (d) mangroves
54. The ability of a community to return to its original state by quickly following displacement known as  
 (a) Resistance (b) Resilience  
 (c) Dominance (d) Stability
55. Largest terrestrial biome on earth is  
 (a) Taiga (b) Chaparral  
 (c) Tundra (d) Savanna
56. Martin classified fungi on the basis of  
 (a) Reproductive structures (b) spores and septation of mycelium  
 (c) absence or presence of cell wall (d) Nutrition
57. Koleroga disease of palm is caused by  
 (a) Phytophthora infestans (b) Phytophthora arecae  
 (c) Fusarium oxysporum (d) Alternaria solani
58. Under what conditions a plant behaves as resistant against a pathogen:  
 (a) Absence of elicitor and receptor (b) Absence of elicitor and presence of receptor  
 (c) Absence of receptor and presence of elicitor (d) Presence of elicitor and receptor
59. Riccia belongs to the order:  
 (a) Anthocerotales (b) Jungermanniales  
 (c) Takakiales (d) Marchantiales
60. In parasexuality, the genetic material is exchanged during:  
 (a) Prophase I (b) Prophase II  
 (c) Metaphase I (d) Mitotic division
61. The covalent linkage between glucose and fructose of sucrose is called:  
 (a) Hydrogen bond (b) Glycosidic bond  
 (c) Peptide bond (d) Phosphodiester bond
62. Khaira disease of rice is caused by the deficiency of:  
 (a) Zinc (b) Iron  
 (c) Boron (d) Magnesium
63. The viroids are composed of:  
 (a) Circular ss DNA (b) Circular ds DNA  
 (c) Circular ss RNA (d) Circular ds RNA
64. Which one of the following does not cause disease in animals or human beings?  
 (a) Viroids (b) Viruses  
 (c) Bacteria (d) Fung

65. Prokaryotes without cell wall found in phloem cells of host plant and cannot be cultured on artificial media are known as:
- (a) Prions (b) Viroid  
(c) Phytoplasma (d) Bacteriophage
66. Foolish seedling / Bakanae disease of rice is caused by
- (a) *Gibberella fujikuroi* (b) *Fusarium geotropus*  
(c) *Fusarium gilvus* (d) *Gibberella sanbinelli*
67. Albugo is
- (a) obligate intercellular pathogen (b) Intracellular parasite  
(c) Intercellular saprophyte (d) Facultative intercellular parasite
68. What fraction of assimilated energy is used in respiration by the herbivores?
- (a) 20% (b) 30%  
(c) 40% (d) 50%
69. Which one of the following processes helps in nutrient conservation?
- (a) Mineralization (b) Immobilization  
(c) Leaching (d) Nitrification
70. A facultative parasite is one which
- (a) is normally parasite but can also become a saprophyte (b) always requires dead organic matter  
(c) always requires a living host (d) is normally a saprophyte but can also become a parasite
71. Global agreement in specific control strategies to reduce the release of ozone depleting substances was adopted by
- (a) The Vienna Convention (b) Rio de Janeiro Conference  
(c) The Montreal Protocol (d) The Kyoto Protocol
72. The virus discovered for the first time happened to be
- (a) an algal virus (b) an animal virus  
(c) a virus infecting higher plants (d) a bacterial virus
73. Keystone species in an ecosystem are those
- (a) present in maximum number (b) that are not frequent  
(c) attaining a large biomass (d) contributing to ecosystem properties
74. Which electronic transition is responsible for the photochemical mechanism of vision?
- (a)  $n \rightarrow \pi^*$  (b)  $\pi \rightarrow \pi^*$   
(c)  $n \rightarrow \sigma^*$  (d)  $\sigma \rightarrow \sigma^*$



75. For the parallel reaction  $A \xrightarrow{K_1} B$   $A \xrightarrow{K_2} C$  (both are first order), if  $E_1$  and  $E_2$  are activation energy of two reactions having rate constant  $K_1$  and  $K_2$  respectively, the activation energy ( $E_a$ ) will be

- (a)  $\frac{E_1 + E_2}{K_1 + K_2}$  (b)  $\frac{K_1 E_1 + K_2 E_2}{K_1 + K_2}$   
 (c)  $\frac{K_1 + K_2}{K_1 E_1 + K_2 E_2}$  (d)  $\frac{K_1 + K_2}{E_1 + E_2}$

76. Miller indices of a plane that intercepts the a axis at  $\frac{a}{2}$ , b axis at  $\frac{b}{2}$  and is parallel to the c axis are

- (a) 2, 2, 1 (b)  $\frac{1}{2}, \frac{1}{2}, 0$   
 (c) 1, 1, 2 (d) 2, 2, 0

77. The diffraction of barium with X-radiation of wavelength 2.29 Å gives a 1 order reflection at. The distance between the diffracted planes is

- (a) 1.145 Å (b) 4.58 Å  
 (c) 2.29 Å (d) 0.765 Å

78. Among the singlet (S), doublet (D) and triplet (T) electronic states, phosphorescence invol transition between

- (a) S → S (b) D → D  
 (c) T → S (d) S → T

79. The rate constant,  $k = 1.2 \times 10^3 \text{ mol}^{-1} \text{ L s}^{-1}$ ,  $E_a = 2.0 \times 10^2 \text{ KJ mol}^{-1}$  when  $T \rightarrow \infty$

- (a)  $A = 2.0 \times 10^2 \text{ KJ mol}^{-1}$  (b)  $A = 1.2 \times 10^3 \text{ mol}^{-1} \text{ L s}^{-1}$   
 (c)  $A = 1.2 \times 10^3 \text{ mol L}^{-1} \text{ s}^{-1}$  (d)  $A = 2.4 \times 10^3 \text{ KJ mol}^{-1} \text{ s}^{-1}$

80. Ammonia is decomposed by radiation of wave length 2100 Å. The radiation of intensity  $7.37 \times 10^{17}$  photons  $\text{cm}^{-2} \text{ s}^{-1}$  is needed for 40 mins. to decompose 1 gm of ammonia. The quantum yield is

- (a) 2 (b) 0.2  
 (c) 0.8 (d) 8

81. The efficiency of a heat engine working between heat reservoirs at temperature 327°C and 27°C respectively is

- (a) 25% (b) 75%  
 (c) 100% (d) 50%

82. For a first order reaction at 27°C the ratio of time required for 75% completion to 25% completion of reaction is

- (a) 3.0 (b) 2.303  
 (c) 4.8 (d) 0.477

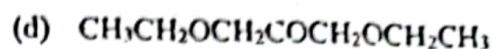
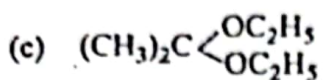
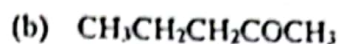
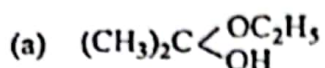
83. The orbital with highest energy in crystal field splitting of  $[\text{Ni}(\text{CN})_4]^{2-}$  is

- (a)  $dz^2$  (b)  $dx^2 - y^2$   
 (c)  $dxz$  (d)  $dyz$



84. Neel temperature ( $T_N$ ) is a characteristic feature of which of the following magnetic substances?
- (a) Paramagnetic (b) Ferromagnetic  
(c) Antiferromagnetic (d) Diamagnetic
85. The chain stopping unit in preparation of Silicones is
- (a)  $\text{Me}_2\text{SiCl}_2$  (b)  $\text{MeSiCl}_3$   
(c)  $\text{Me}_3\text{SiCl}$  (d)  $\text{Me}_4\text{Si}$
86. The cross linking unit in preparation of Silicones is
- (a)  $\text{Me}_2\text{SiCl}_2$  (b)  $\text{MeSiCl}_3$   
(c)  $\text{Me}_3\text{SiCl}$  (d)  $\text{Me}_4\text{Si}$
87. Which of the following is not a soft acid?
- (a)  $\text{Pt}^{2+}$  (b)  $\text{Hg}^{2+}$   
(c)  $\text{Cu}^+$  (d)  $\text{H}^+$
88. Which of the following statement is incorrect about Borazine?
- (a) It is isoelectronic with benzene (b) B-N bond distance in borazine and C-C bond distance in benzene are equal  
(c) Borazine and benzene have nearly the same molar mass (d) Borazine is solid while benzene is a liquid
89. Cytochrome C works as
- (a) Electron Transfer (b) Iron storage  
(c) Non-heme protein (d) Carrier protein
90. Ferredoxins are protein with molecular mass
- (a) 6000 – 12000 (b) 8000 – 12000  
(c) 8000 – 18000 (d) 8000 – 64000
91. The magnetic moment of an octahedral complex is 4.91 B.M. then number of unpaired electron present in complex are
- (a) 3 (b) 4  
(c) 2 (d) 5
92. The least acidic compound is
- (a) Phenol (b) o-Cresol  
(c) p-Nitrophenol (d) o-Chlorophenol
93. Carbohydrate is present as prosthetic group in
- (a) Chromoprotein (b) Lipoprotein  
(c) Glycoprotein (d) Nucleoprotein
94. Which one of the following B-alkyl bonds cannot be made by hydroboration reaction?
- (a) B-Methyl (b) B-Ethyl  
(c) B-Butyl-s (d) B-Hexyl-t

95. The product formed when acetone is treated with excess of ethanol in the presence of hydrochloric acid is



96. In nucleic acids, the individual nucleotides are linked together through:

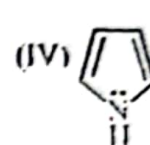
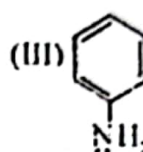
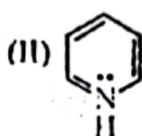
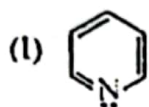
(a) Peptide linkage

(b) Phosphodiester linkage

(c) Glycosidic linkage

(d) Hydrogen bonds

97. The correct decreasing order of relative basic strengths of the following compounds is



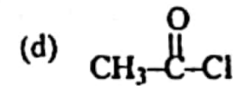
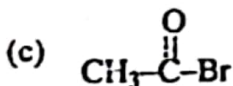
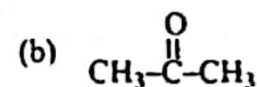
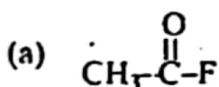
(a)  $\text{IV} > \text{I} > \text{II} > \text{III}$

(b)  $\text{I} > \text{II} > \text{III} > \text{IV}$

(c)  $\text{II} > \text{I} > \text{IV} > \text{III}$

(d)  $\text{II} > \text{I} > \text{III} > \text{IV}$

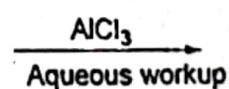
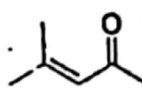
98. Which among the following will show maximum value for  $\text{>C=O}$  absorption?



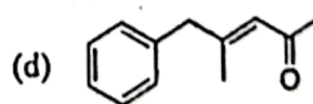
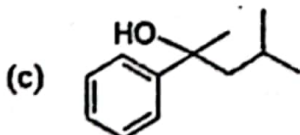
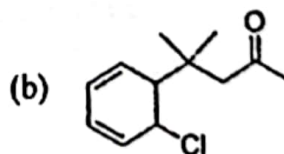
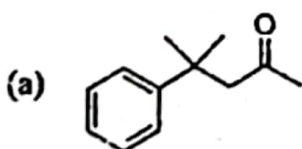
99. Major product (A) of the following reaction is:



+



(A)



100. Which one of the following naturally occurring  $\alpha$ -amino acids has S configuration?

(a) Arginine

(b) Cysteine

(c) Tyrosine

(d) Valine



2. FOR CANDIDATE ONLY

M. Sc. Bioloch 299

Signature with date

3. ROLL NUMBER

1	2	3	4	5	6	7	8	9	0
1	2	3	4	5	6	7	8	9	0
1	2	3	4	5	6	7	8	9	0
1	2	3	4	5	6	7	8	9	0
1	2	3	4	5	6	7	8	9	0
1	2	3	4	5	6	7	8	9	0
1	2	3	4	5	6	7	8	9	0
1	2	3	4	5	6	7	8	9	0
1	2	3	4	5	6	7	8	9	0
1	2	3	4	5	6	7	8	9	0

4. APPLICATION NO.

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1	2	3	4	5	6	7	8	9	0
1	2	3	4	5	6	7	8	9	0
1	2	3	4	5	6	7	8	9	0
1	2	3	4	5	6	7	8	9	0
1	2	3	4	5	6	7	8	9	0

FOR INVIGILATOR ONLY

CANDIDATE'S ROLL NUMBER

1	2	3	4	5	6	7	8	9	0
---	---	---	---	---	---	---	---	---	---

Series B

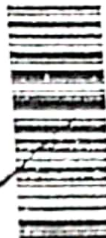
PGM NO

Certified that the entries and bubble have been filled / shaded correctly.

Signature with date  
(Do not Sign out of this box)

BAR CODE

2004924



6. QUESTION BOOKLET NUMBER

1	2	3	4	5	6	7	8	9	0
---	---	---	---	---	---	---	---	---	---

7. CENTRE CODE

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1	2	3	4	5	6	7	8	9	0
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1	2	3	4	5	6	7	8	9	0
1	2	3	4	5	6	7	8	9	0

8. QUESTION PAPER SERIES

A	B	C	D
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9. Status (Internal / External)

Internal	External
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## ANSWER SECTION

11	A	B	C	D	11	A	B	C	D	11	A	B	C	D	11	A	B	C	D
12	A	B	C	D	12	A	B	C	D	12	A	B	C	D	12	A	B	C	D
13	A	B	C	D	13	A	B	C	D	13	A	B	C	D	13	A	B	C	D
14	A	B	C	D	14	A	B	C	D	14	A	B	C	D	14	A	B	C	D
15	A	B	C	D	15	A	B	C	D	15	A	B	C	D	15	A	B	C	D
16	A	B	C	D	16	A	B	C	D	16	A	B	C	D	16	A	B	C	D
17	A	B	C	D	17	A	B	C	D	17	A	B	C	D	17	A	B	C	D
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19	A	B	C	D	19	A	B	C	D	19	A	B	C	D	19	A	B	C	D
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