



NEET – 2020

NEET (TARGET BATCH)

CODE- 0

Time : 3 Hours

Test Date : 21/03/2020

Maximum Marks : 720

Test Timing 09:00AM to 12:00PM

Read carefully the Instructions on the Back cover of this Test Booklet.

Important Instructions:

1. The answer Sheet is inside this Test Booklet. When you are directed to open the Test Booklet, take out the Answer Sheet and fill in the carefully with blue/black ball point pen only.
2. The test is of 3 hours duration and this Test Booklet contains 180 questions. Each question carries 4 marks. For each correct response, the candidate will get 4 marks. For each incorrect response, one mark will be deducted from the total scores. The maximum marks are 720.
3. Use Blue/Black Ball Point Pen only for writing particular on this page/markings responses.
4. Rough work is to be done on the space provided for this purpose in the Test Booklet only.
5. On completion of the test, the candidate must hand over the Answer Sheet to the Invigilator before leaving the Room/Hall. The candidates are allowed to take away this Test Booklet with them.
6. The CODE for this Booklet is 0. Make sure that the CODE printed on Side-of the Answer Sheet is the same as that on this Test Booklet. In case of discrepancy, the candidate should immediately report the matter to the Invigilator for replacement of both the Test Booklet and the Answer Sheet.
7. The candidates should ensure that the Answer Sheet is not folded. Do not make any stray marks on the Answer Sheet. Do not write your Roll No. anywhere else except in the specified space in the Test Booklet/Answer Sheet.
8. Use of white fluid for correction is not permissible on the Answer Sheet.

OPTICAL RESPONSE SHEET

9. The ORS will be collected by the invigilator at the end of the examination.
10. You will be allowed to take away the Candidate's Sheet at the end of the examination.
11. Do not tamper with or mutilate the ORS. Do not use the ORS for rough work.
12. Write your name, roll number and code of the examination center, and sign with pen in the space provided for this purpose on the ORS. Do not write any of these details anywhere else on the ORS. Darken the appropriate bubble under each digit of your roll number.

DARKENING THE BUBBLES ON THE ORS

13. Use a BLACK BALL POINT PEN to darken the bubbles on the ORS.
14. Darken the bubble COMPLETELY.
15. The Correct way of darkening a bubble is as:
16. The ORS is machine-gradable. Ensure that the bubbles are darkened in the correct way.
17. Darken the bubbles ONLY IF you are sure of the answer. There is NO WAY to erase or "un-darken" a darkened bubble.

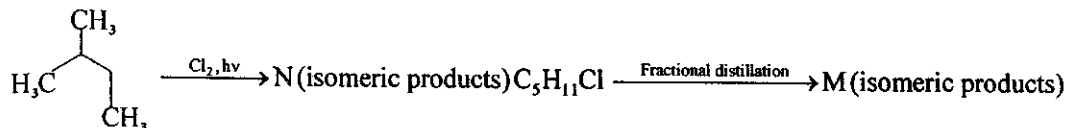
Please see the least page of this booklet for rest of the instruction.

DO NOT BREAK THE SEALS WITHOUT BEING INSTRUCTED TO DO SO BY THE INVIGILATOR

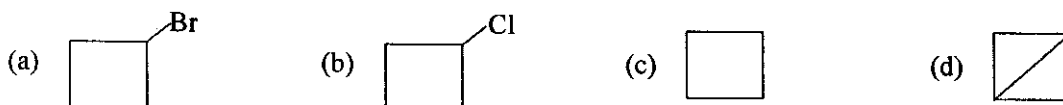
CHEMISTRY

This section contains 45 questions. Each question has four choices (A), (B), (C) and (D) out of which ONLY ONE Option is correct.

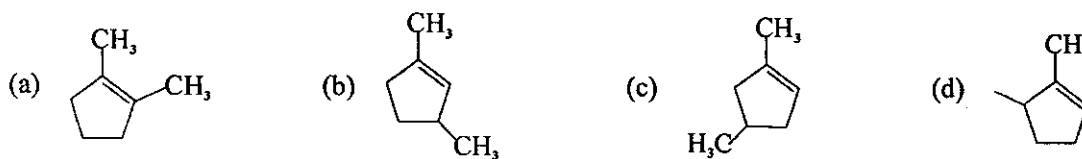
1. What are N and M



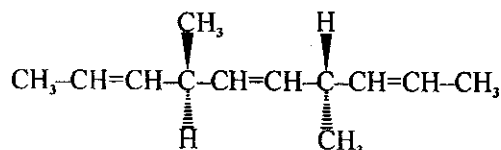
- (a) 6, 6 (b) 6, 4 (c) 4, 4 (d) 3, 3
2. 1-Bromo-3-chlorocyclobutane when treated with two equivalents of Na, in the presence of ether which of the following will be formed?



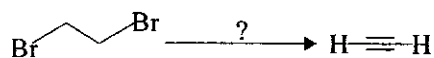
3. Which compound would give 5-keto-2-methyl hexanal upon ozonolysis?



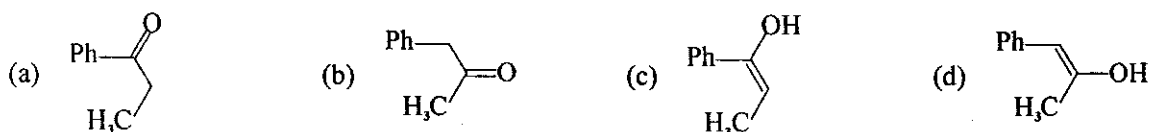
4. The number of optically products obtained from the complete ozonolysis of the given compound, is



- (a) 0 (b) 1 (c) 2 (d) 4
5. The reagent(s) for the following conversion, is/are



- (a) alcoholic KOH (b) alcoholic KOH followed by NaNH₂
 (c) aqueous KOH followed by NaNH₂ (d) Zn/CH₃OH
6. $\text{Ph}-\text{C}\equiv\text{C}-\text{CH}_3 \xrightarrow[\text{H}^+]{\text{Hg}^{2+}} \text{A}$; A is



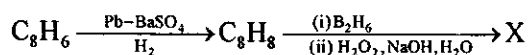
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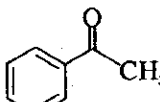
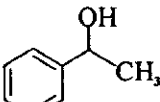
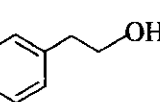
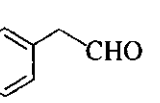
7. In the presence of peroxide, hydrogen chloride and hydrogen iodide do not give anti-Markovnikoff's addition to alkenes because.
- (a) both are highly ionic (b) one is oxidising and the other is reducing
(c) one of the steps is endothermic in both the cases (d) all the steps are exothermic in both cases

8. The reaction of $\text{CH}_3\text{CH}=\text{CH}-\text{C}_6\text{H}_4-\text{OH}$ with HBr gives

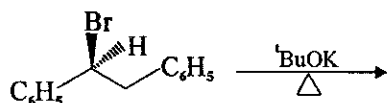
- (a) $\text{CH}_3\text{CHBrCH}_2-\text{C}_6\text{H}_4-\text{OH}$ (b) $\text{CH}_3\text{CHBrCH}_2-\text{C}_6\text{H}_3(\text{Br})-\text{OH}$
(c) $\text{CH}_3\text{CH}_2\text{CHBr}-\text{C}_6\text{H}_4-\text{OH}$ (d) $\text{CH}_3\text{CH}_2\text{CHBr}-\text{C}_6\text{H}_3(\text{Br})-\text{OH}$

9. In the given following reaction compound X is

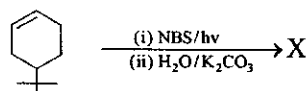


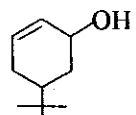
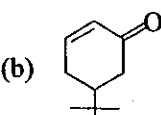
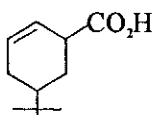
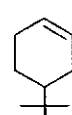
- (a)  (b)  (c)  (d) 

10. The number of primary, secondary, tertiary and quaternary carbon in *neo*-pentane are respectively,
(a) 4, 3, 2 and 1 (b) 5, 0, 0 and 1 (c) 4, 0, 0 and 1 (d) 4, 0, 1 and 1
11. The major product obtained in the following reaction is



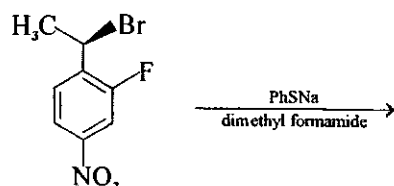
- (a) $(\pm)\text{C}_6\text{H}_5\text{CH}(\text{O}^t\text{Bu})\text{CH}_2\text{C}_6\text{H}_5$ (b) $\text{C}_6\text{H}_5\text{CH}=\text{CHC}_6\text{H}_5$
(c) $(+)\text{C}_6\text{H}_5\text{CH}(\text{O}^t\text{Bu})\text{CH}_2\text{C}_6\text{H}_5$ (d) $(-)\text{C}_6\text{H}_5\text{CH}(\text{O}^t\text{Bu})\text{CH}_2\text{C}_6\text{H}_5$
12. The synthesis of alkyl fluorides is best accomplished by
(a) Free radical fluorination (b) Sandmeyer's reaction
(c) Finkelstein reaction (d) Swarts reaction
13. The product of the reaction given below is



- (a)  (b)  (c)  (d) 

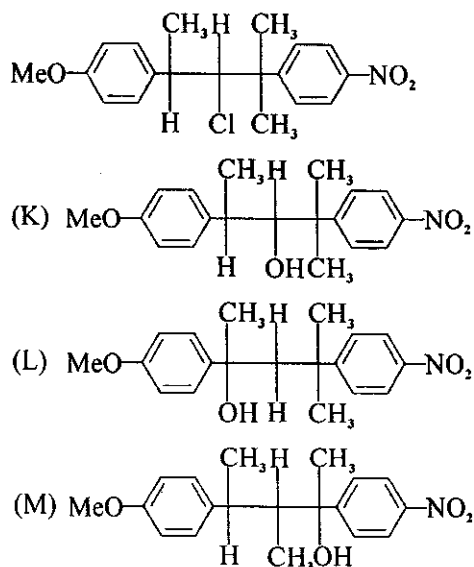
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14. The major product of the following reaction is



- (a)
- (b)
- (c)
- (d)

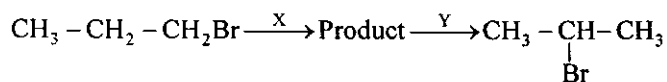
15. The following compound on hydrolysis in aqueous acetone will give



If mainly gives

- (a) K and L (b) only K (c) L and M (d) only M

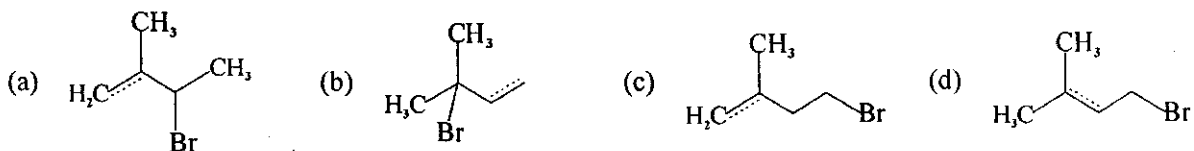
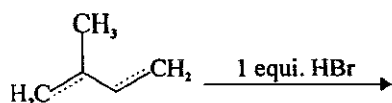
16. Identify the set of reagents/reaction conditions X and Y in the following set of transformation



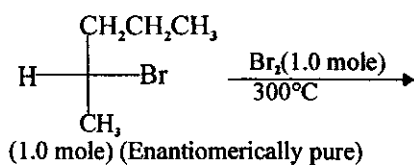
- (a) X = dilute aqueous NaOH, 20°C, Y = HBr/acetic acid, 20°C
 (b) X = concentrated alcoholic NaOH, 80°C, Y = HBr/acetic acid, 20°C
 (c) X = dilute aqueous NaOH, 20°C, Y = Br₂/CHCl₃, 0°C
 (d) X = concentrated aqueous NaOH, 80°C, Y = Br₂/CHCl₃, 0°C

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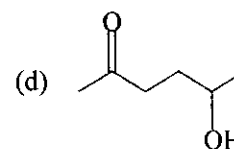
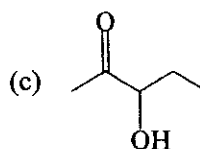
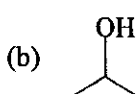
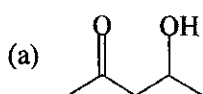
17. An S_N2 reaction at an asymmetric carbon of a compound always gives
- (a) an enantiomer of the substrate (b) a product with opposite optical rotation
(c) a mixture of diastereomers (d) a single stereoisomer
18. In the following reaction, the major product is



19. In the following monobromination reaction, the number of possible chiral product(s) is (are)



- (a) 5 (b) 10 (c) 4 (d) None of these
20. An unknown alcohol is treated with the "Lucas reagent" to determine whether the alcohol is primary, secondary or tertiary. Which alcohol reacts fastest and by what mechanism?
- (a) Secondary alcohol by S_N1 (b) Tertiary alcohol by S_N1
(c) Secondary alcohol by S_N2 (d) Tertiary alcohol by S_N2
21. 1-Propanol and 2-propanol can be best distinguished by
- (a) oxidation with alkaline $KMnO_4$ followed by reaction with Fehling solution.
(b) oxidation with acidic dichromate followed by reaction with Fehling solution
(c) oxidation by heating with copper followed by reaction with Fehling solution
(d) oxidation with concentrated H_2SO_4 followed by reaction with Fehling solution.
22. Which one of the following will most readily be dehydrated in acidic condition?

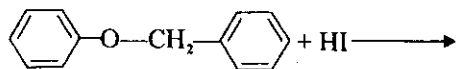


23. Hydrogen bonding is maximum in
- (a) Ethanol (b) Diethyl ether (c) Ethyl chloride (d) Triethyl amine

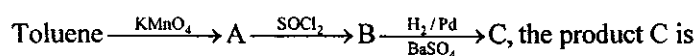
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24. An industrial method of preparation of methanol is
- Catalytic reduction of carbon monoxide in presence of $\text{ZnO} - \text{Cr}_2\text{O}_3$.
 - By reacting methan with steam at 900°C with nickel catalyst
 - By reducing formaldehyde with LiAlH_4
 - By reacting formaldehyde with aqueous sodium hydroxide solution.

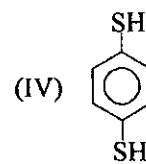
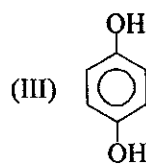
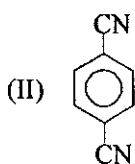
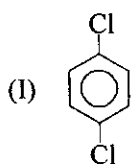
25. The following ether, when treated with HI produces



- c1ccc(CI)cc1
 - c1ccc(CO)cc1
 - c1ccc(I)cc1
 - None of these
26. The products of reaction of alcoholic silver nitrate with ethyl bromide are
- Ethane
 - Ethene
 - Nitroethane
 - Ethyl alcohol
27. In the following sequence of reactions

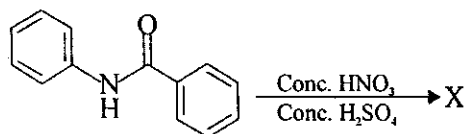


- $\text{C}_6\text{H}_5\text{COOH}$
 - $\text{C}_6\text{H}_5\text{CH}_3$
 - $\text{C}_6\text{H}_5\text{CH}_2\text{OH}$
 - $\text{C}_6\text{H}_5\text{CHO}$
28. For which of the following molecule significant $\mu \neq 0$?

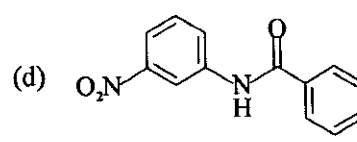
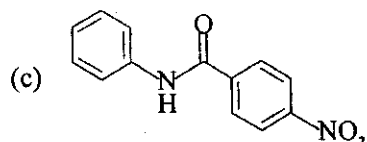
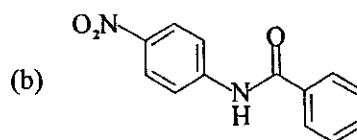
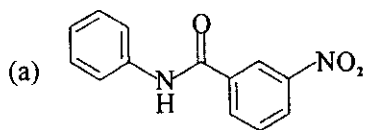


- Only I
- I and II
- Only III
- III and IV

29. In the following reaction,

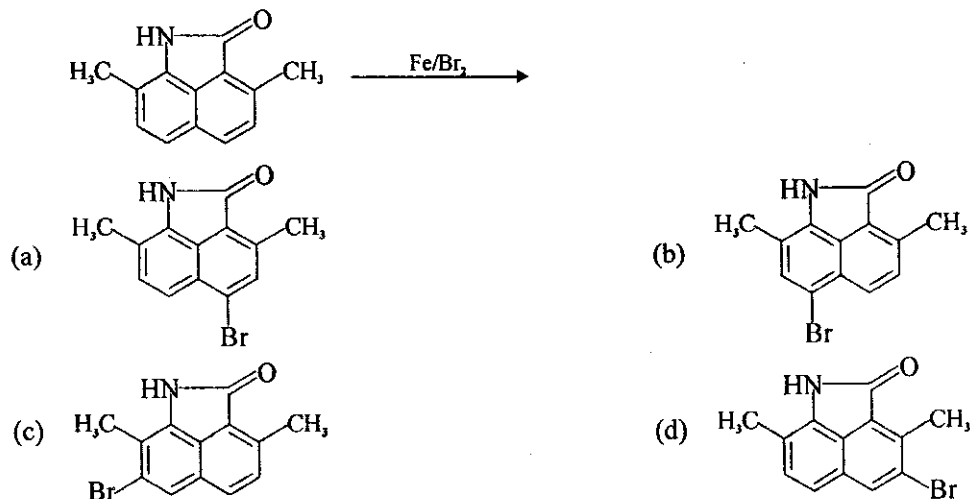


The product X is

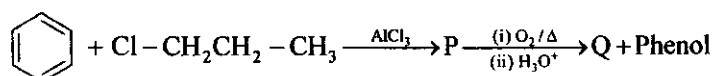


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30. Product on monobromination of the following compound is



31. In the following reaction P and Q are respectively



32. Identify the correct order of reactivity in electrophilic substitution reactions of the following compounds Benzene (1), Toluene (2), Chlorobenzene (3) and Nitrobenzene (4)

- (a) $1 > 2 > 3 > 4$ (b) $4 > 3 > 2 > 1$ (c) $2 > 1 > 3 > 4$ (d) $2 > 3 > 1 > 4$

33. Which of the following molecules, in pure form, is/are unstable at room temperature?



34. Which of the following can be used for the preparation of propane?

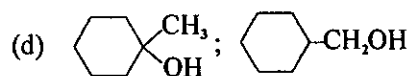
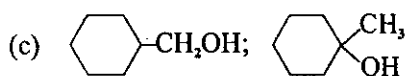
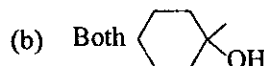
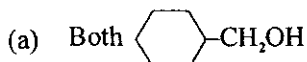
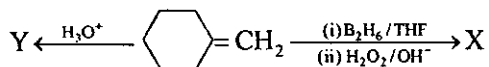


35. Household gaseous fuel (LPG) mainly contains

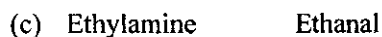
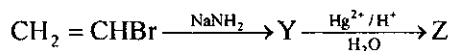
- (a) CH_4 (b) C_2H_2 (c) C_2H_4 (d) C_4H_8

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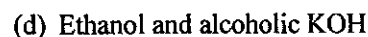
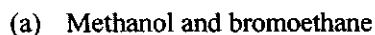
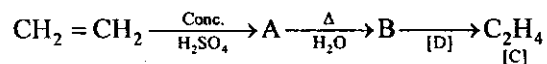
36. In the following reaction X and Y respectively are



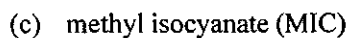
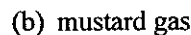
37. What are Y and Z in the following reaction sequence?



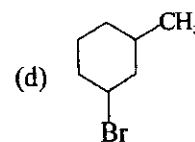
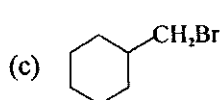
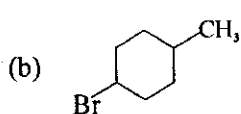
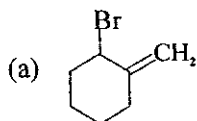
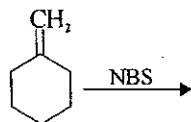
38. Identify B and D in the following sequence of reactions.



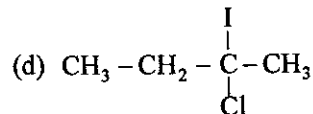
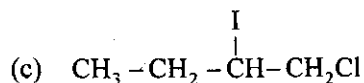
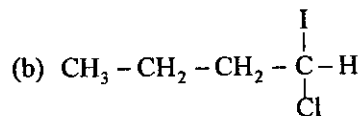
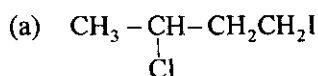
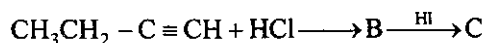
39. Ethylene combine with sulphur monochloride to form



40. What will be the product in the following reaction?

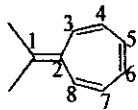


41. Predict the product C obtained in the following reaction of butyne-1.

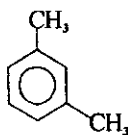


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42. The most likely protonation site in the following molecule is

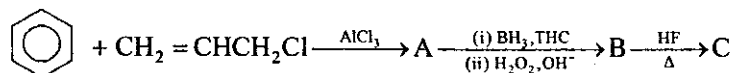


- (a) C-1 (b) C-2 (c) C-3 (d) C-6
43. What products are formed when the following compounds is treated with Br_2 in the presence of FeBr_3 .



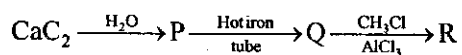
- (a) &
- (b) &
- (c) &
- (d) &

44. Identify 'C' in the following reaction,



- (a) (b)
- (c)
- (d)

45. In the following reaction, the product 'R' is



- (a) Benzene (b) Ethylbenzene
- (c) Toluene (d) N-propylbenzene

Space for rough

PHYSICS

This section contains 45 Multiple Choice Questions. Each question has four choices (A), (B), (C) and (D) out of which ONLY ONE Option is correct.

46. What is the path difference in case of destructive interference?
(A) $n\lambda$ (B) $n(\lambda+1)$ (C) $\frac{(n+1)\lambda}{2}$ (D) $\frac{(2n+1)\lambda}{2}$
47. If the amplitude ratio of two sources producing interference is 3 : 5, then the ratio of intensities at maxima and minima is
(A) 25 : 16 (B) 5 : 3 (C) 16 : 1 (D) 25 : 9
48. Two sources of light of the same frequency produce intensities I and $4I$ at a point P when used individually. If they are used together such that the light from them reach P with a phase difference of $2\pi/3$, then the intensity at P will be
(A) $2I$ (B) $3I$ (C) $4I$ (D) $5I$
49. Two incoherent sources of intensities I and $4I$ superpose, then the resultant intensity is
(A) $5I$ (B) $9I$ (C) $3I$ (D) I
50. In Young's double slit experiment, an interference pattern is obtained for $\lambda = 6000 \text{ \AA}$, coming from two coherent sources S_1 and S_2 . At certain point P on the screen third dark fringe is formed. Then, the path difference $S_1P - S_2P$ in microns is
(A) 0.9 (B) 1.5 (C) 3.0 (D) 4.5
51. In Young's double slit experiment, when two light waves form third minimum intensity, they have
(A) phase difference of 3π (B) phase difference of $\frac{5\pi}{2}$
(C) path difference of 3λ (D) path difference of $\frac{5\lambda}{2}$
52. Two slits separated by a distance of 0.5 mm and illuminated with light of $\lambda = 6000 \text{ \AA}$. If the screen is placed 2.5 m from the slits. The distance of the third bright image from the center will be
(A) 1.5 mm (B) 3 mm (C) 6 mm (D) 9 mm

Space for rough

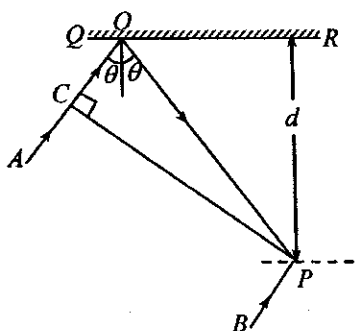
53. In Young's double slit experiment, green light ($\lambda = 5461 \text{ \AA}$) is used and 60 fringes were seen in the field view. Now, sodium light is used ($\lambda = 5890 \text{ \AA}$), then number of fringes observed are
(A) 40 (B) 60 (C) 50 (D) 55
54. Intensity at centre in YDSE is I_0 . If one slit is covered, then intensity at centre will be
(A) I_0 (B) $2I_0$ (C) $I_0/4$ (D) $I_0/2$
55. What is the minimum thickness of a thin film ($\mu = 1.2$) that results in constructive interference in the reflected light? If the film is illuminated with light whose wavelength in free space is $\lambda = 500 \text{ nm}$?
(A) 104 nm (B) 200 nm (C) 300 nm (D) 400 nm
56. Direction of the first secondary maximum in the Fraunhofer diffraction pattern at a single slit is given by (a is the width of the slit)
(A) $a \sin \theta = \frac{\lambda}{2}$ (B) $a \cos \theta = \frac{3\lambda}{2}$ (C) $a \sin \theta = \lambda$ (D) $a \sin \theta = \frac{3\lambda}{2}$
57. A light wave is incident normally over a single slit of width $24 \times 10^{-5} \text{ cm}$. The angular position of second dark fringe from the central maxima is 30° . What is the wavelength of light?
(A) 6000 \AA (B) 5000 \AA (C) 3000 \AA (D) 1500 \AA
58. The light of wavelength 6328 \AA is incident on a slit of width 0.2 mm perpendicularly, the angular fringe width will be
(A) 0.36° (B) 0.18° (C) 0.72° (D) 0.09°
59. The angle of polarisation for any medium is 60° , what will be critical angle for this
(A) $\sin^{-1} \sqrt{3}$ (B) $\tan^{-1} \sqrt{3}$ (C) $\cos^{-1} \sqrt{3}$ (D) $\sin^{-1} \frac{1}{\sqrt{3}}$
60. When the angle of incidence on a material is 60° , then the reflected light is completely polarised. The velocity of the refracted ray inside the material is (in ms^{-1})
(A) 3×10^8 (B) $\left(\frac{3}{\sqrt{2}}\right) \times 10^8$ (C) $\sqrt{3} \times 10^8$ (D) 0.5×10^8
61. A light has amplitude A and angle between analyser and polariser is 60° . Light is reflected by analyser has amplitude
(A) $A/\sqrt{2}$ (B) $A/\sqrt{2}$ (C) $\sqrt{3}A/2$ (D) $A/2$

Space for rough

62. Two waves of same frequency and same amplitude from two monochromatic sources are allowed to superpose at a certain point. If in one case, the phase difference is 0 and in other case it is $\pi/2$, then the ratio of the intensities in the two cases will be
(A) 1 : 1 (B) 2 : 1 (C) 4 : 1 (D) None of the above
63. In Young's double slit experiment, the fringe width is β . If entire arrangement is placed in a liquid of refractive index n , then the fringe width becomes
(A) $\frac{\beta}{n+1}$ (B) $n\beta$ (C) $\frac{\beta}{n}$ (D) $\frac{\beta}{n-1}$
64. It is found that when waves of same intensity from two coherent sources superpose at a certain point, then the resultant intensity is equal to the intensity of one wave only. This means that the phase difference between the two waves at the point is
(A) zero (B) $\frac{\pi}{3}$ (C) $\frac{2\pi}{3}$ (D) π
65. The two slits are 1 mm apart from each other and illuminated with a light of wavelength 5×10^{-7} m. If the distance of the screen is 1m from slits, then the distance between third dark fringe and fifth bright fringe is
(A) 1.5 mm (B) 0.75 (C) 1.25 mm (D) 0.625 mm
66. A thin mica sheet of thickness 4×10^{-6} m and refractive index ($\mu = 1.5$) is introduced in the path of the light from upper slit. The wavelength of the wave used is 5000 Å. The central bright maximum will shift
(A) 4 fringes upward (B) 2 fringes downward (C) 10 fringes upward (D) None of these
67. In the ideal double slit experiment, when a glass-plate (refractive index 1.5) of thickness t is introduced in the path of one of the interfering beams (wavelength λ), the intensity at the position where the central maximum occurred previously remains unchanged. The minimum thickness of the glass-plate is
(A) 2λ (B) $\frac{2\lambda}{3}$ (C) $\frac{\lambda}{3}$ (D) λ

Space for rough

68. In the below diagram, CP represents a wavefront and AO and BP , the corresponding two rays. Find the condition of θ for constructive interference at P between the rays BP and reflected ray AOP



- (A) $\cos\theta = 3\lambda/2d$ (B) $\cos\theta = \lambda/4d$ (C) $\sec\theta - \cos\theta = \lambda/d$ (D) $\sec\theta - \cos\theta = 4\lambda/d$
69. The conduction band in a solid is partially filled at 0 K. The solid sample is a
 (A) conductor (B) semiconductor (C) insulator (D) None of these
70. To obtain p -type Si semiconductor we need to dope pure Si with
 (A) aluminium (B) phosphorous (C) oxygen (D) germanium
71. Which statement is correct?
 (A) n -type germanium is negatively charged and p -type germanium is positively charged
 (B) Both n -type and p -type germanium are neutral.
 (C) n -type germanium is positively charged and p -type germanium is negatively charged.
 (D) Both n -type and p -type germanium are negatively charged.
72. The reverse biasing in a p - n junction diode
 (A) decreases the width of potential barrier
 (B) increases the width of potential barrier
 (C) increases the number of minority charge carriers
 (D) increases the number of majority charge carriers
73. The heavily and lightly doped region of a bipolar junction transistor are respectively.
 (A) base and emitter (B) base and collector (C) collector and base (D) emitter and base
74. An n - p - n transistor conducts when
 (A) both collector and emitter are positive with respect to the base
 (B) collector is positive and emitter is negative with respect to the base

Space for rough

(C) collector is positive and emitter is at same potential as the base

(D) both collector and emitter are negative with respect to the base

75. For a transistor, in a common emitter arrangement, the alternating current gain β is given by

(A) $\beta = \left(\frac{\Delta I_C}{\Delta I_B} \right)_{V_C}$ (B) $\beta = \left(\frac{\Delta I_B}{\Delta I_C} \right)_{V_C}$ (C) $\beta = \left(\frac{\Delta I_C}{\Delta I_E} \right)_{V_C}$ (D) $\beta = \left(\frac{\Delta I_E}{\Delta I_C} \right)_{V_C}$

76. While a collector to emitter voltage is constant in a transistor, the collector current changes by 8.2 mA when the emitter current changes by 8.3 mA. The value of forward current ratio B is

(A) 82 (B) 83 (C) 8.2 (D) 8.3

77. Consider an $n-p-n$ transistor amplifier in common-emitter configuration. The current gain of the transistor is 100. If the collector current changes by 1 mA. What will be the change in emitter current.

(A) 1.1 mA (B) 1.01 mA (C) 0.01 mA (D) 10 mA

78. The output of a NAND gate is 0

(A) if both inputs are 0

(B) if one input is 0 and the other input is 1

(C) if both inputs are 1

(D) either if both inputs are 1 or if one of the inputs is 1 and the other 0

79. The truth table given below is for

A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

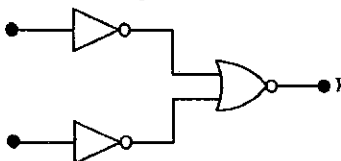
(A and B are the inputs, Y is the output)

(A) NOR (B) AND (C) XOR (D) NAND

80. The boolean equation of NOR gate is

(A) $C = A + B$ (B) $C = \overline{A + B}$ (C) $C = A \cdot B$ (D) $C = \overline{A \cdot B}$

81. Which logic gate is represented by the following combination of logic gates



(A) OR

(B) NAND

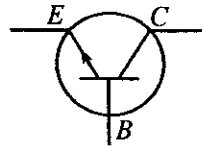
(C) AND

(D) NOR

Space for rough

82. In an insulator, the forbidden energy gap between the valence band and conduction band is of the order of
 (A) 1 MeV (B) 0.1 MeV (C) 1 eV (D) 5 eV

83. The symbol given in figure represents



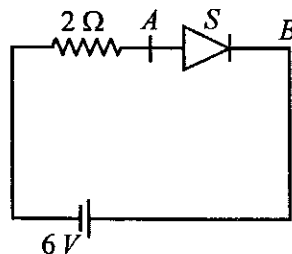
- (A) $n-p-n$ transistor (B) $p-n-p$ transistor
 (C) forward biased $p-n$ junction diode (D) reverse biased $n-p$ junction diode

84. The given symbol represents



- (A) NAND gate (B) OR gate (C) AND gate (D) NOR gate

85. The diode shown in the circuit is a silicon diode. The potential difference between the points A and B will be



- (A) 6 V (B) 0.6 V (C) 0.7 V (D) zero

86. Input signal to a common emitter amplifier having a voltage gain of 1000 is given by

$V_i = (0.004 V) \sin(\omega t + \pi/2)$. The corresponding output signal is

- (A) $(40 V) \sin(\omega t + \pi/2)$ (B) $(0.004 V) \cos(\omega t + \pi/2)$
 (C) $(4 V) \cos(\omega t - \pi/2)$ (D) $(4 V) \sin(\omega t - \pi/2)$

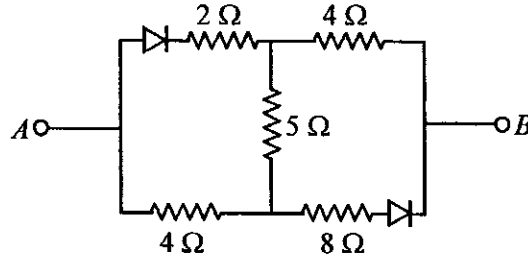
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87. The Boolean expression for the circuit given in the figure is



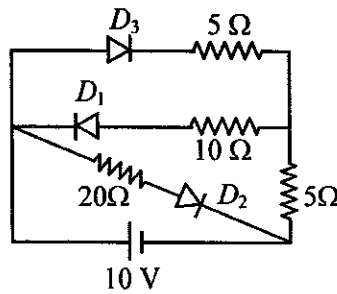
- (A) $Y = A + \bar{B}$ (B) $Y = \overline{A+B}$ (C) $Y = \bar{A} + B$ (D) $Y = A + B$

88. The equivalent resistance of the circuit across AB is given by



- (A) 4Ω (B) 13Ω (C) 4Ω or 13Ω (D) 4Ω or zero

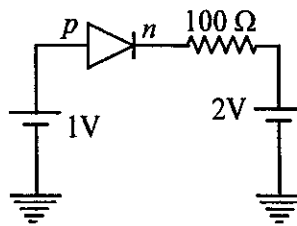
89. In the given circuit



The current through the battery is

- (A) $0.5A$ (B) $1A$ (C) $1.5A$ (D) $2A$

90. The current through an ideal $p - n$ junction shown in the circuit diagram will be



- (A) zero (B) 1 mA (C) 10 mA (D) 30 mA

Space for rough

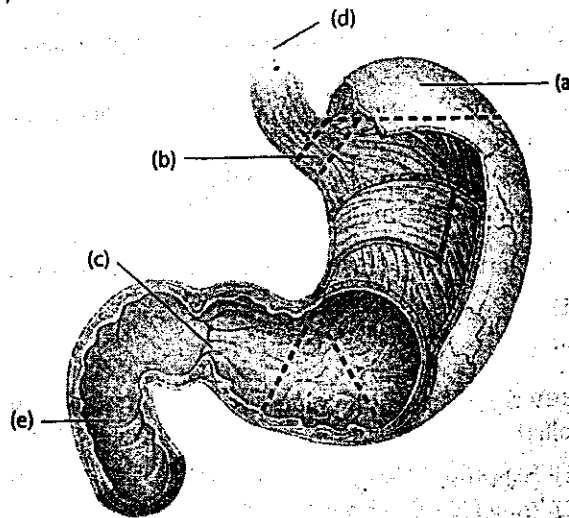
BIOLOGY

This section contains 90 multiple choice question. Each question has four choices (A), (B), (C) and (D) out of which **ONLY ONE** Option is correct.

91. The enzyme that is not present in succus entericus is
(A) nucleosidase (B) lipase (C) maltase (D) nuclease
92. Anxiety and eating spicy food together in an otherwise normal human, may lead to
(A) indigestion (B) jaundice (C) diarrhoea (D) vomiting
93. Two friends are eating together on a dining table. One of them suddenly starts coughing while swallowing some food. This catching would have been due to improper movement of
(A) epiglottis (B) diaphragm (C) neck (D) tongue
94. Carrier ions like Na^+ facilitated the absorption of substance like
(A) amino acids and glucose (B) glucose and fatty acids
(C) fatty acids and glycerol (D) fructose and some amino acids
95. When breast feeding is replaced by less nutritive food low in proteins and calories; the infants below the age of one year are likely to suffer from
(A) rickets (B) kwashiorkor (C) pellagra (D) marasmus
96. What will happen if the secretion of parietal cells of gastric glands is blocked with an inhibitor?
(A) in the absence of HCl secretion, inactive pepsinogen is not converted into the active enzyme pepsin
(B) enterokinase will not be released from the duodenal mucosa and so trypsinogen is not converted to trypsin
(C) gastric juice will be deficient in chymosin
(D) gastric juice will be deficient in pepsinogen
97. Duodenum has characteristic Brunner's gland which secrete two hormones called
(A) kinase, estrogen (B) secretin, cholecystokinin
(C) prolactin, parathormone (D) estradiol, progesterone
98. Which of the following carries glucose from digestive tract to liver?
(A) pulmonary vein (B) hepatic artery (C) hepatic portal vein (D) All of these
99. Kupffer's cells occurs in
(A) spleen (B) kidney (C) brain (D) liver
100. Dental formula of human being is
(A) $\text{I}_2\text{C}_2\text{P}_1\text{M}_3$ (B) $\text{I}_2\text{C}_1\text{P}_2\text{M}_3$ (C) $\text{I}_3\text{C}_1\text{P}_2\text{M}_2$ (D) $\text{I}_2\text{C}_2\text{P}_3\text{M}_1$

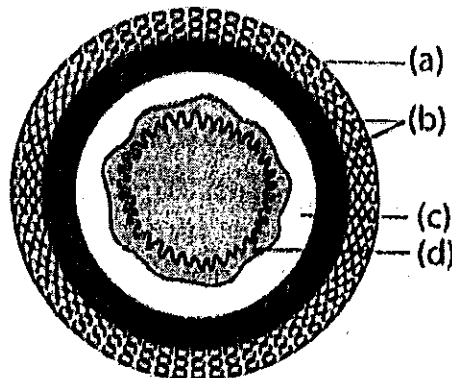
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101. What is the correct labelling of diagram given below?



- (A) a – Fundic portion; b – Cardiac region; c – Pyloric region; d – Food pipe; e – Wind pipe
- (B) a – Fundus; b – Pyloric region; c – Cardiac region; d – Oesophagus; e – Duodenum
- (C) a – Fundic region; b – Cardiac region; c – Pyloric region; d – Oesophagus; e – Duodenum
- (D) a – Cardiac region; b – Pyloric region; c – fundic region; d – Oesophagus; e – Duodenum

102. Given below is the diagram of the transverse section of alimentary canal. Label it and choose the correct option accordingly.



- (A) a – Muscularis; b – Serosa; c – Submucosa; d – Mucosa
- (B) a – Muscularis; b – Serosa; c – Mucosa; d – Submucosa
- (C) a – Serosa; b – Muscularis; c – Mucosa; d – Submucosa
- (D) a – Serosa; b – Muscularis; c – Submucosa; d – Mucosa

Space for rough

103. Oxyntic cells are located in
 (A) islets of Langerhans and secrete insulin (B) Kidneys and secrete rennin
 (C) gastric epithelium and secrete pepsin (D) gastric epithelium and secrete HCl
104. Succus entericus is the name given to
 (A) a junction between ileum and large intestine (B) intestinal juice
 (C) swelling in gut (D) appendix
105. Match the cells of gastric glands in Column-I with their respective secretory products in Column-II and select the correct option.

	Column-I		Column-II
a.	Neck cells	i.	HCl, Intrinsic factor
b.	Peptic/Chief cells	ii.	Mucus
c.	Parietal/Oxyntic cells	iii.	Pepsinogen

- (A) a – ii; b – iii; c – i (B) a – iii; b – ii; c – i (C) a – i; b – ii; c – iii (D) a – ii; b – i; c – iii
106. Duct of the gall bladder is called
 (A) hepatic duct (B) common bile duct (C) cystic duct (D) Stenson's duct
107. Mark the **incorrect** statement.
 (A) Major components of our food are carbohydrates, proteins and fats
 (B) Vitamins and minerals are required in small quantities
 (C) Bio-macromolecules in food can be utilised by our body in their original form
 (D) Water plays an important role in metabolic processes and also prevents dehydration of the body
108. The lactase hydrolyses lactose into
 (A) glucose (B) fructose and galactose (C) glucose and fructose (D) glucose and galactose
109. Emulsification of fats is brought about by
 (A) bile pigments (B) bile salts (C) HCl (D) pancreatic juice
110. Select the incorrect statement from the following
 (A) Succus entericus acts on end products produced by pancreatic enzyme
 (B) Final steps of digestion occur far away from the mucosal epithelial cells of the intestine
 (C) The breakdown of biomacromolecules generally occurs in the duodenum region of small intestine
 (D) Simple substances formed after digestion are absorbed mainly by jejunum and ileum

Space for rough

111. Enterokinase/enteropeptidase converts
 (A) pepsinogen to pepsin (B) trypsinogen to trypsin (C) protein into polypeptides
 (D) caseinogens into casein
112. Which part of the brain regulates respiration?
 (A) Hypothalamus (B) Cerebral cortex (C) Medulla (D) Satiety centre
113. On an average, a healthy human breathes _____ times/minute.
 (A) 18-20 (B) 12-16 (C) 70-72 (D) 6-12
114. Mark the **correct** statement.
 (1) Alveoli are thin, irregular walled and vascularised bag like structures.
 (2) Inner pleural membrane is in contact with thoracic lining.
 (3) Larynx is a cartilaginous box.
 (A) 1 and 2 (B) 1 and 3 (C) 1, 2 and 3 (D) Only 1
115. An _____ (A) _____ in the pulmonary volume, _____ (B) _____ the intrapulmonary pressure to less than the atmospheric pressure which forces the air from _____ (C) _____ to move into the lungs, that is, _____ (D) _____.
 (A) (A) – increase; (B) – decrease; (C) – outside; (D) – expiration
 (B) (A) – decrease; (B) – increase; (C) – outside; (D) – expiration
 (C) (A) – decrease; (B) – increase; (C) – inside; (D) – inspiration
 (D) (A) – increase; (B) – decrease; (C) – outside; (D) – inspiration
116. Match Column-I with Column-II and choose the **correct** option.

Column-I	Column-II
A. Larynx	(i) Lid of larynx
B. Trachea	(ii) Air sacs
C. Alveoli	(iii) Voice box
D. Epiglottis	(iv) Wind pipe
	(v) Common passage

(A) A – (iii); B – (iv); C – (ii); D – (i)

(B) A – (v); B – (iv); C – (i); D – (ii)

(C) A – (iii); B – (iv); C – (ii); D – (v)

(D) A – (iii); B – (v); C – (ii); D – (i)

Space for rough

117. Expiration involves
(A) relaxation of diaphragm and contraction of internal intercostals muscles
(B) contraction of diaphragm and external intercostals muscles
(C) contraction of diaphragm muscles
(D) contraction of intercostals muscles
118. Epiglottis is made up of
(A) fibrous cartilage (B) hyaline cartilage (C) elastic cartilage (D) calcified cartilage
119. Arrange the following steps in order of their happening:
A. Breathing or pulmonary ventilation by which atmospheric air is drawn in and CO_2 rich alveolar air is released out.
B. Diffusion of gases (O_2 and CO_2) across alveolar membrane
C. Transport of gases by blood
D. Diffusion of O_2 and CO_2 between blood and tissues
(A) B, A, C, D (B) D, B, C, A (C) B, C, A, D (D) A, B, C, D
120. What will be the $p\text{O}_2$ and $p\text{CO}_2$ in the atmospheric air compared to those in the alveolar air?
(A) $p\text{O}_2$ lesser, $p\text{CO}_2$ higher (B) $p\text{O}_2$ higher, $p\text{CO}_2$ lesser
(C) $p\text{O}_2$ higher, $p\text{CO}_2$ higher (D) $p\text{O}_2$ lesser, $p\text{CO}_2$ lesser
121. EC (expiratory capacity) is equal to
(A) ERV + TV (B) IRV + TV (C) VC + RV (D) ERV + TV + IRV
122. The disease asthma is caused by
(A) infection in trachea (B) infection in lungs
(C) spasm in bronchial muscles (D) infection in diaphragm
123. Emphysema is characterized by
(A) permanent enlargement and destruction of alveolar wall leading to reduction in respiratory surface
(B) inhibition of respiratory centre
(C) accumulation of fluid in lungs
(D) spasm of muscles of trachea
124. Why do human beings have difficulty in breathing at high elevations?
(A) O_2 makes up lower percentage of air there (B) The temperature is lower there
(C) The barometric pressure is higher there (D) $p\text{O}_2$ is lower there

Space for rough

125. Which of the following is not an occupational disease?
 (A) Silicosis (B) Asbestosis (C) SARS (D) Pneumoconiosis
126. The blue baby syndrome results from
 (A) excess of total dissolved solids (B) excess of chloride
 (C) methaemoglobin (D) excess of dissolved oxygen
127. The ventilation movements of the lungs in mammals are governed by
 (A) muscular wall of lung (B) diaphragm
 (C) coastal muscles (D) Both (B) and (C)
128. The haemoglobin of a human foetus
 (A) has higher affinity for oxygen than that of an adult
 (B) has lower affinity for oxygen than that of an adult
 (C) has same affinity for oxygen as that of an adult
 (D) has two protein sub-units instead of four
129. Which instrument helps in clinical assessment of pulmonary functions?
 (A) Sphygmomanometer (B) Stethoscope (C) Spirometer (D) Electrocardiograph
130. Exchange of bicarbonates and chloride ions between RBC and plasma is called
 (A) chloride shift (B) Bohr's effect (C) Haldane's effect (D) intracellular respiration
131. Match the items given in Column-I with those in Column-II and select the **correct** option given below.

	Column-I		Column-II
A.	Fibrinogen	i.	Osmotic balance
B.	Globulin	ii.	Blood clotting
C.	Albumin	iii.	Defence mechanism

- (A) A-iii B-ii C-i
 (B) A-i B-ii C-iii
 (C) A-i B-iii C-ii
 (D) A-ii B-iii C-i

Space for rough

132. Adult human RBCs are enucleate. Which of the following statement(s) is/are most appropriate explanation for this feature?
1. They do not need to produce
 2. They are somatic cells
 3. They do not metabolise
 4. All their internal space is available for oxygen transport
- (A) Only 4 (B) Only 1 (C) 1, 3 and 4 (D) 2 and 3
133. In the heart, as the action potential reaches the AV node from the SA node, there is a delay of the action potential. This delay is important because:
- (A) It allows right atria to receive the blood from vena cava
 - (B) It allows atria to rest
 - (C) It allows a stronger right atrial contraction
 - (D) It allows ventricles to receive all the blood from the atria
134. Name the blood cells, whose reduction in number can cause excessive loss of blood from the body.
- (A) Neutrophils (B) Thrombocytes (C) Erythrocytes (D) Leukocytes
135. If you suspect major deficiency of antibodies in a person, to which of the following would you look for confirmatory evidences?
- (A) Serum albumins (B) Haemocytes (C) Serum globulins (D) Fibrinogen in plasma
136. Person with blood group AB is considered as universal recipient because he has:
- (A) Both A and B antigens in the plasma but no antibodies
 - (B) Both A and B antigens on RBC but no antibodies in the plasma
 - (C) Both A and B antibodies in the plasma
 - (D) No antigen on RBC and no antibody in the plasma
137. What would be the heart rate of a person if the cardiac output is 6 L, blood volume in the ventricles at the end of diastole is 120 mL and at the end of ventricular systole is 60 mL?
- (A) 50 beats per minute (B) 75 beats per minute (C) 100 beats per minute (D) 125 beats per minute
138. Which one of the following statements is correct regarding blood pressure?
- (A) 190/110 mmHg may harm vital organs like brain and kidney
 - (B) 130/90 mmHg is considered high and requires treatment
 - (C) 100/55 mmHg is considered an ideal blood pressure
 - (D) 105/50 mmHg makes one very active

Space for rough

139. Match the items in Column I with those in Column II and select the correct option given below.

Column I**Column II**

- | | |
|-----------------------|--|
| A. Superior Vena Cava | i. Carries deoxygenated blood to lungs |
| B. Inferior Vena Cava | ii. Carries oxygenated blood from lungs |
| C. Pulmonary Artery | iii. Brings deoxygenated blood from lower parts of the body to right atrium |
| D. Pulmonary Vein | iv. Brings deoxygenated blood from upper parts of the body into right atrium |

(A) A-ii B-iv C-iii D-i

(B) A-iv B-i C-ii D-iii

(C) A-iv B-iii C-i D-ii

(D) A-iv B-i C-iii D-ii

140. During ventricular systole, oxygenated blood is pumped into the

- (A) aorta and deoxygenated blood is pumped into the pulmonary artery.
(B) pulmonary artery and deoxygenated blood is pumped into the artery.
(C) aorta and deoxygenated blood is pumped into pulmonary vein.
(D) pulmonary vein and deoxygenated blood is pumped into pulmonary artery.

141. Which of the following statements is incorrect?

- (A) Cardiac output of an athlete is much higher than that of an ordinary man.
(B) In each minute a single cardiac cycle is performed
(C) During each cardiac cycle two prominent sounds are produced
(D) Cardiac cycle includes atrial systole, ventricular systole and joint diastole.

142. In humans, the volume of blood pumped out by each ventricle per minute is approx

- (A) 1040 mL (B) 5 L (C) 2.5 L (D) 1290 mL

143. The strength of ventricular contraction increases when SA node is stimulated by

- (A) vagus nerve (B) parasympathetic nerve (C) sympathetic nerve (D) All of these

144. If parasympathetic nerve of the man is cut, then heart-beats

- (A) remain unaffected (B) decreases (C) increases (D) stop

145. Which of the following waves in ECG represents depolarization of the atria?

- (A) P wave (B) Q wave (C) QRS wave (D) T wave

146. Angina pectoris is a major indication of

- (A) cyanosis (B) low blood pressure (C) hypertension (D) myocardial infarction

Space for rough

147. Which of the following diseases is also known as atherosclerosis?

- (A) Hypertension (B) Angina pectoris
(C) Heart attack (D) Coronary artery disease (CAD)

148. Match column-I with Column-II and choose the correct option.

	Column-I		Column-II
A.	Fishes	i.	Single circulation
B.	Amphibians	ii.	Double circulation
C.	Reptiles	iii.	Mixed circulation
D.	Birds	iv.	

- (A) A – ii; B – ii; C – iii; D – i (B) A – iii; B – ii; C – iii; D – ii
(C) A – i; B – i; C – ii; D – ii (D) A – i; B – iii; C – iii; D – ii

149. Which of the following is mismatched?

- (A) LUBB – First heart sound associated with closure of tricuspid and bicuspid valves
(B) Cardiac output – Stroke volume multiplied by heart rate
(C) DUBB – Second heart sound, due to opening of semilunar valves
(D) Duration of cardiac cycle – 0.8 sec

150. The enlargement of heart is termed as

- (A) cardiomegaly (B) acromegaly (C) angina pectoria (D) stroke

151. Which of the following joints would allow no movements?

- (A) Synovial joint (B) Ball and Socket joint
(C) Sinarthrose joint (D) Cartilaginous joint

152. Select the correct matching of the type of the joint with the example in human skeletal system.

- | Type of Joint | Example |
|-------------------------|---|
| (A) Cartilaginous joint | – Between frontal and parietal |
| (B) Pivot joint | – Between third and fourth cervical vertebrae |
| (C) Hinge joint | – Between humerus and pectoral girdle |
| (D) Gliding joint | – Between carpals |

Space for rough

153. Which one of the following is the correct description of certain part of a normal human skeleton?
(A) parietal bone and temporal bone of the skull are joined by fibrous joint
(B) first vertebra is axis which articulates with the occipital condyles
(C) the 9th and 10th pairs of ribs are called the floating ribs
(D) glenoid cavity is a depression to which the thigh bone articulates
154. Which one of the following is the correct matching of three items and their grouping category?
- | Items | Group |
|--------------------------------|------------------------------|
| (A) ilium, ischium, pubis | coxal bones of pelvic girdle |
| (B) actin, myosin, rhodopsin | Muscle proteins |
| (C) cytosine, uracil, thiamine | Pyrimidines |
| (D) malleus, incus, cochlea | ear ossicles |
155. Knee joint is an example of
(A) hinge joint (B) gliding joint
(C) ball and socket joint (D) pivot joint
156. In human body, which one of the following is anatomically correct?
(A) Collar bones – 3 pairs
(B) Salivary glands – 1 pair
(C) Acetabulum – Pectoral girdle
(D) Acromion process – Scapula
157. Which of the following pair is correctly matched?
(A) hinge joint – between vertebrae
(B) pivot joint – Atlas and axis
(C) cartilaginous joint – Skull bones
(D) Fibrous joint – Between phalanges
158. What will happen if ligaments are torn?
(A) bones will move freely at joint and no pain (B) bones will be less movable at joints followed by pain
(C) bones will become unfixed (D) bones will become fixed
159. What is sarcomere?
(A) part between two H-lines (B) part between two A-lines
(C) part between two I-band (D) part between two Z-lines

Space for rough