FIITJEE PET – IX (CHAMPIONS_2ND YEAR)
MAINS
DATE: 25.08.2018

Time: 3 hours **Maximum Marks: 360**

INSTRUCTIONS:

Instructions to the Candidates

1. This Test Booklet consists of **90 questions**.

   Use **Blue/Black ball Point Pen only** for writing particulars and bubbling of OMR.

2. For each correct answer **4 Marks** will awarded and for each wrong answer **1 Mark** will be deducted.

3. Attempt all questions.

4. In case you have not darkened any bubble you will be awarded 0 mark for that question.

5. Use of calculator/logarithmic table is not permitted.

Don't write / mark your answers in this question booklet.
If you mark the answers in question booklet, you will not be allowed to continue the exam.

NAME: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

ENROLLMENT NO.: ☐☐☐☐☐☐☐☐☐☐☐☐

1. Let $f(x) = \max\{x^2, (1-x)^2, 2x(1-x)\}$, where $0 \le x \le 1$. Determine the area of the region bounded by the curves $y = f(x)$, x-axis, $x = 0$ and $x = 1$.

   (A) $\frac{17}{27}$ (B) 1 (C) $\frac{19}{27}$ (D) $\frac{23}{27}$

2. Let $f(x) = \max\left\{\sin x, \cos x, \frac{1}{2}\right\}$, then determine the area of region bounded by the curves $y = f(x)$, x-axis, y-axis and $x = 2\pi$.

   (A) $\left(\frac{5\pi}{12} + \sqrt{2} - \sqrt{3}\right)$ sq. units (B) $\left(\frac{5\pi}{12} - \sqrt{2} + \sqrt{3}\right)$ sq. units

   (C) $\left(\frac{5\pi}{12} + \sqrt{2} + \sqrt{3}\right)$ sq. units (D) none of these

3. The area bounded by the curve $y = f(x)$, x-axis and the ordinates $x = 1$ and $x = b$ is $(b-1)\sin(3b+4)$, find $f(x)$,

   (A) $3(x-1)\cos(3x+4) + \sin(3x-4)$ (B) $3(x+1)\cos(3x+4) + \sin(3x-4)$

   (C) $3(x-1)\cos(3x-4) - \sin(3x+4)$ (D) $3(x-1)\cos(3x+4) + \sin(3x+4)$

4. Find the area of region enclosed by the curve $\frac{(x-y)^2}{a^2} + \frac{(x+y)^2}{b^2} = 2(a > b)$, the line $y = x$ and the positive x-axis.

   (A) $\frac{\pi ab}{4} - \frac{ab}{4}\sin^{-1}\left(\frac{a}{\sqrt{a^2+b^2}}\right)$ (B) $\frac{\pi ab}{4} - \frac{ab}{2}\sin^{-1}\left(\frac{b}{\sqrt{a^2+b^2}}\right)$

   (C) $\frac{\pi ab}{2} - \frac{ab}{2}\sin^{-1}\left(\frac{a}{\sqrt{a^2+b^2}}\right)$ (D) $\frac{\pi ab}{2} - \frac{ab}{4}\sin^{-1}\left(\frac{b}{\sqrt{a^2+b^2}}\right)$

5. Find the area of the region bounded by the curve $y = x^2$ and $y = \sec^{-1}[-\sin^2 x]$, (where [.] denotes greatest integer function)

   (A) $\frac{2\pi}{3}\sqrt{\pi}$ (B) $\frac{4\pi}{3}\sqrt{\pi}$ (C) $\frac{\pi}{3}\sqrt{\pi}$ (D) none of these

Space for rough work

6. The area of the region between the curves $y = \sqrt{\frac{1+\sin x}{\cos x}}$ and $y = \sqrt{\frac{1-\sin x}{\cos x}}$ and bounded by the lines $x = 0$ and $x = \frac{\pi}{4}$, is

(A) $\int_0^{\sqrt{2}-1} \frac{t}{(1+t^2)\sqrt{1-t^2}}\,dt$ (B) $\int_0^{\sqrt{2}-1} \frac{4t}{(1+t^2)\sqrt{1-t^2}}\,dt$

(C) $\int_0^{\sqrt{2}+1} \frac{4t}{(1+t^2)\sqrt{1-t^2}}\,dt$ (D) $\int_0^{\sqrt{2}+1} \frac{t}{(1+t^2)\sqrt{1-t^2}}\,dt$

7. Find the area bounded by the hyperbola $x^2 - y^2 = a^2$ between the straight lines $x = a$ and $x = 2a$.

(A) $2a^2\sqrt{3} - a^2\log\left(2+\sqrt{3}\right)$ sq. units (B) $2a^2\sqrt{3} + a^2\log\left(2+\sqrt{3}\right)$ sq. units

(C) $2a^2 - \sqrt{3}a^2\log\left(2-\sqrt{3}\right)$ sq. units (D) $2a^2 - \sqrt{3}a^2\log\left(2+\sqrt{3}\right)$ sq. units

8. The area enclosed by the curve $|y| = \sin 2x$, when $x \in [0, 2\pi]$ is

(A) $4\sqrt{2}$ (B) $2\sqrt{2}$ (C) 16 (D) 4

9. The area common to the region determined by $y \geq \sqrt{x}$ and $x^2 + y^2 < 2$ has the value

(A) π (B) $(2\pi - 1)$ (C) $\frac{\pi}{4} - \frac{1}{6}$ (D) none of these

10. The area defined by $1 \leq |x - 2| + |y + 1| \leq 2$ is

(A) 2 (B) 4 (C) 6 (D) none of these

11. Find the area enclosed by $|x| + |y| = 1$

(A) 8 (B) 6 (C) 4 (D) 2

12. Find the area included between the parabolas $y^2 = 4a(x + a)$, $y^2 = 4b(b - x)$

(A) $\frac{8}{3}\sqrt{ab}(a-b)$ sq. units (B) $\frac{8}{3}\sqrt{ab}(a+b)$ sq. units

(C) $\frac{3}{8}\sqrt{ab}(a-b)$ sq. units (D) $\frac{3}{8}\sqrt{ab}(a+b)$ sq. units

Space for rough work

13. The area of the smaller part of the circle $x^2 = y^2 = a^2$, cut off by the line $x = \frac{a}{\sqrt{2}}$, is given by

(A) $\frac{a^2}{2}\left(\frac{\pi}{2}+1\right)$ (B) $\frac{a^2}{2}\left(\frac{\pi}{2}-1\right)$ (C) $a^2\left(\frac{\pi}{2}-1\right)$ (D) none of these

14. The area bounded by the curve $y = 2\cos x$ and the x-axis from $x = 0$ to $x = 2\pi$ is
(A) 2 (B) 4 (C) 8 (D) none of these

15. The area bounded by the curve $y = x(3 - x)^2$, the x-axis and the ordinates of the maximum and minimum points of the curves is given by
(A) 1 (B) 2 (C) 4 (D) none of these

16. The area bounded by the curve $y = (x - 1)(x - 2)(x - 3)$ lying between the ordinates $x = 0$ and $x = 3$ is
(A) $\frac{11}{4}$ (B) $\frac{9}{4}$ (C) $\frac{7}{4}$ (D) none of these

17. The area bounded by $y = \log_e x$, x-axis and the ordinate $x = e$ is given by
(A) 4 (B) $\frac{1}{2}$ (C) 1 (D) none of these

18. The area bounded by the curve $|x| + y = 1$ and axis of x is given by
(A) 2 (B) 1 (C) 4 (D) none of these

19. The area of the bounded by $y = \cos x$, $y = 0$, $|x| = 1$ is given by
(A) sin 1 (B) 2 sin 1 (C) 4 sin 1 (D) none of these

20. If the ordinate $x = a$ divides the area bounded by x-axis, part of the curve $y = 1 + \frac{8}{x^2}$ and the ordinates $x = 2$, $x = 4$, into two equal parts, then 'a' is equal to
(A) $\sqrt{2}$ (B) $2\sqrt{2}$ (C) $3\sqrt{2}$ (D) none of these

21. The area of the region bounded by the curves $y = \sqrt{5 - x^2}$ and $y = |x - 1|$ is given by
(A) $\frac{5\pi}{4} - \frac{1}{2}$ (B) $\frac{3\pi}{4} + \frac{1}{2}$ (C) $\frac{5\pi}{4} + \frac{1}{2}$ (D) $\frac{3\pi}{4} - \frac{1}{2}$

22. The area bounded by $y = |x - 1|$, $y = 0$ and $|x| = 2$ is
(A) 4 (B) 5 (C) 3 (D) none of these

Space for rough work

23. The area bounded by y = |sin x|, x-axis and the lines |x| = π is
(A) 2 (B) 1 (C) 4 (D) none of these

24. The smaller area enclosed by the circle $x^2 + y^2 = a^2$ and the line x + y = a is
(A) $\frac{a^2}{4}(\pi - 2)$ (B) $\frac{a^2}{4}(\pi + 2)$ (C) $\frac{a^2}{4}(2 - \pi)$ (D) none of these

25. The area of the region bounded by x = $\frac{1}{2}$, x = 2, y = $\log_e x$ and $y = 2^x$ is
(A) $\frac{4-\sqrt{2}}{\log 2} + \frac{5}{2}\log 2 + \frac{3}{2}$ (B) $\frac{4-\sqrt{2}}{\log 2} - \frac{5}{2}\log 2 - \frac{3}{2}$ (C) $\frac{4-\sqrt{2}}{\log 2} - \frac{5}{2}\log 2 + \frac{3}{2}$ (D) none of these

26. The total area enclosed by the lines y = |x|, y = 0 and |x| = 1 is
(A) 2 (B) 4 (C) 1 (D) none of these

27. The area bounded by $y = x^3 - 4x$ and x-axis is
(A) 4 (B) 8 (C) 16 (D) none of these

28. The area bounded by the parabola $y = 6 + 4x - x^2$ and the chord joining the points (–2, –6) and (4, 6) is
(A) 9 (B) 18 (C) 36 (D) 54

29. The area bounded by y = [x], x-axis and the two ordinates x = 1 and x = 1.7 is
(A) $\frac{17}{10}$ (B) 1 (C) $\frac{17}{5}$ (D) $\frac{7}{10}$

30. The area bounded by the curve $xy^2 = 1$ and the lines x = 1, x = 2 is
(A) $4\left(\sqrt{2} - 1\right)$ (B) $4\left(\sqrt{2} + 1\right)$ (C) $2\left(\sqrt{2} - 1\right)$ (D) $2\left(\sqrt{2} + 1\right)$

31. A resistance of 300 Ω is connected in series with a pure inductor having inductance $\left(\frac{1}{\pi}\right)$H. If an a.c source having frequency 200 Hz is applied across the combination, then the phase angle between the voltage and the current is
(A) $> \frac{\pi}{4}$ (B) $< \frac{\pi}{4}$ (C) $= \frac{\pi}{4}$ (D) Between $\frac{\pi}{6}$ and $\frac{\pi}{4}$

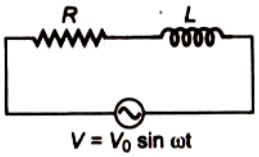
Space for rough work

32. When an alternating e.m.f $E = E_0 \sin(100t)$ is connected across an inductor (L), the peak current is i_0. On replacing the inductor by a capacitor (C), the r.m.s current becomes 4 times. The possible values of L and C are

(A) 50 H and 2 μF (B) 100 H and 4 μF

(C) 50 H and 4 μF (D) 100 H and 8 μF

33. If the current in the series R–L circuit is given as $i = i_0 \sin\omega t$, the applied voltage can be given as



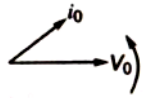
(A) $V = V_0 \sin\left(\omega t - \frac{\pi}{2}\right)$

(B) $V = V_0 \sin(\omega t + \phi); \phi < 90^0$

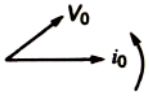
(C) $V = V_0 \sin(\omega t - \phi); \phi < 90^0$

(D) $V = V_0 \sin(\phi - \omega t); \phi < 90^0$

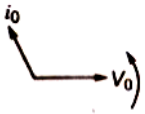
34. In previous Question which of the following $V_0 - i_0$ phasors is correct ?



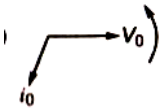
(A)



(B)



(C)



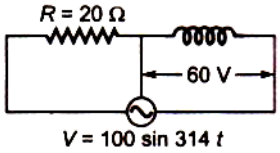
(D)

35. An AC source of frequency f is fed across a resistor R and a capacitor C in series. The current flowing in the circuit is I. If now the frequency of source is changed to $\frac{f}{3}$, without any change in magnitude of voltage, the current in the circuit is found to be halved. The ratio of reactance to resistance at the original frequency f will be

(A) $\frac{3}{\sqrt{5}}$ (B) $\frac{\sqrt{3}}{5}$ (C) $\sqrt{\frac{5}{3}}$ (D) $\sqrt{\frac{3}{5}}$

Space for rough work

36. If the maximum voltage across the inductor is 60 V, the current in the circuit is

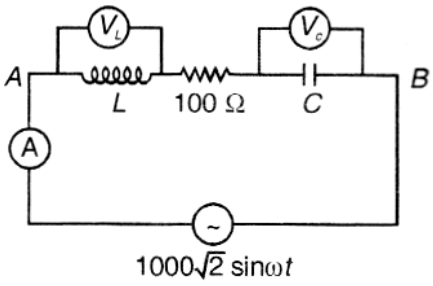


(A) 4 A (B) 2 A
(C) $2\sqrt{2}$A (D) None of these

37. In previous question, the inductance of the inductor is
(A) 0.48 mH (B) 0.47 H (C) 0.005 H (D) 0.05 H

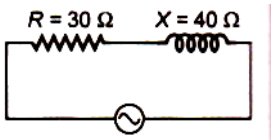
38. What should be the value of inductance that must be connected in series with a capacitor of 5 μF and a resistor of 10 Ω across an alternating voltage of 50 Hz, so that the power factor of the circuit becomes unity ?
(A) $\left(\frac{200}{\pi^2}\right)$H (B) $\left(\frac{20}{\pi^2}\right)$H (C) $\left(200\pi^2\right)$H (D) $\left(20\pi^2\right)$H

39. In the circuit shown, the reading of ammeter is 10 A and that of $V_c = 200\,V$. The reading of V_L is



(A) 200 V (B) $200\sqrt{2}$V
(C) $\left(-1200+1000\sqrt{2}\right)$V (D) zero

40. At a particular frequency, the current in the circuit is i_1. When the frequency is doubled, the current in the circuit is i_2. Then i_1/i_2 =



(A) 1.75 (B) 1.7
(C) 1.57 (D) None of these

Space for rough work

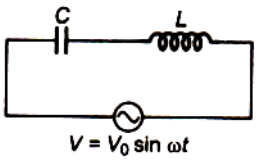
41. A choke coil of resistance R and inductance L is connected to an A.C. source of frequency f and maximum voltage V_0. Then, the average power dissipated in the choke is proportional to

(A) f^2 (B) f^{-2} (C) f^1 (D) f^0

42. A capacitor of capacitance C and an inductor of inductance L are independently connected with an A.C. Supply. If they carry equal rms current, the frequency of the supply is

(A) $> \frac{1}{2\pi\sqrt{LC}}$ (B) $< \frac{1}{2\pi\sqrt{LC}}$ (C) $\frac{1}{2\pi\sqrt{LC}}$ (D) $\geq \frac{1}{2\pi\sqrt{LC}}$

43. At a very high frequency, in the L–C circuit, the maximum current i_0 is approximately equal to



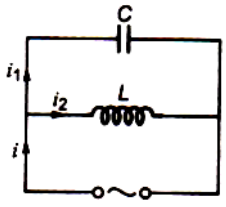
(A) $\frac{V_0}{\omega L}$ (B) $V_0\omega C$

(C) zero (D) infinite

44. At a very low frequency , i_0 in the previous question, is approximated to

(A) $\frac{V_0}{\omega L}$ (B) $V_0\omega C$ (C) zero (D) infinite

45. In the parallel L–c circuit, the total current i is (i_1 and i_2 are the magnitude of the currents in the capacitor and inductor respectively)



(A) $i_1 + i_2$ (B) $\frac{i_1 + i_2}{2}$

(C) $\sqrt{i_1 i_2}$ (D) $|i_1 - i_2|$

Space for rough work

46. When two A.C generators of emfs V_1 and V_2 and same frequency connected in series, the emf across A and B is ($\phi =$ phase angle different between the generators)

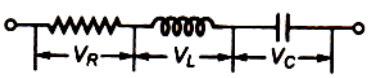
(A) $\frac{V_1 + V_2}{2}$

(B) $\sqrt{V_1 V_2}$

(C) $\sqrt{V_1^2 + V_2^2 + 2V_1V_2 \cos\phi}$

(D) none

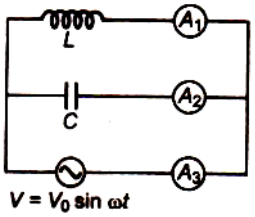
47. At resonance in seris R–L– C circuit



(A) $V_R + V_L + V_C = 0$ (B) $V_R + V_L = 0$

(C) $V_L + V_C = 0$ (D) $V_R + V_C = 0$

48. When $\omega = \frac{1}{\sqrt{LC}}$, the ammeter



(A) A_1 has zero reading

(B) A_2 has very large reading

(C) A_3 has zero reading

(D) A_2 has maximum reading

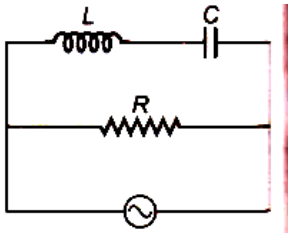
49. In a circuit the capacitor,

(A) allows AC but blocks DC. (B) allows DC but blocks AC

(C) allows both AC and DC (D) blocks both AC and DC

Space for rough work

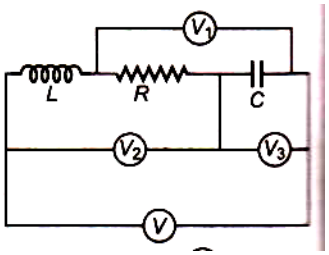
50. In the given circuit, at resonance
(A) the power factor is zero
(B) current through the resistor is minimum
(C) current through the source is maximum
(D) current through L and R are equal



51. The impedance of a circuit is 20Ω. If the reactance of the circuit is 12Ω, the power factor of the circuit is
(A) $\frac{3}{5}$ (B) $\frac{4}{5}$ (C) $\frac{2}{5}$ (D) None of these

52. A coil of inductance 20 mH and resistance 2Ω is connected to a source of voltage 2 V. The current reaches half of its steady state value in
(A) 0.15 s (B) 0.05 s (C) 0.3 s (D) 0.1 s

53. The voltmeter readings between R–C, R–L, C and R–L–C are V_1, V_2, V_3 and V respectively. Then $V^2 =$
(A) $\sqrt{V_1^2 + V_2^2 - V_3^2}$
(B) $V_2 + V_3$
(C) $\sqrt{(V_2 - V_1)^2 (V_3 - V_1)^2}$
(D) None of these

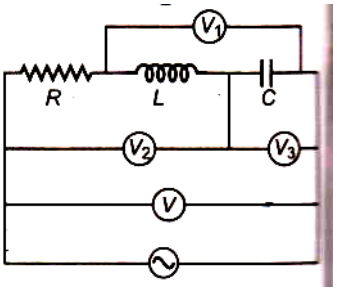


Space for rough work

54. At resonance of the given series R–L–C circuit

(A) $V^3 = |V_1 - V_2|^2 + V_3^2$ (B) $V_3 = 0$

(C) $V_1 = 0$ (D) $V_2 = 0$



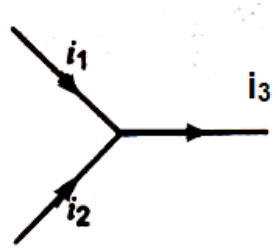
55. If $i_1 = i_{0_1} \sin(\omega t + \phi_1), i_2 = i_{0_2} \sin(\omega t + \phi_2)$, then $i_3 =$

(A) $\sqrt{i_{0_1}^2 + i_{0_2}^2} \sin\{(\phi_1 - \phi_2) + \omega t\}$

(B) $(i_{0_1} + i_{02}) \sin\left(\frac{\phi_1 + \phi_2}{2} + \omega t\right)$

(C) $\sqrt{i_{0_1}^2 + i_{0_2}^2 + 2i_{0_1} i_{0_2} \cos(\phi_1 - \phi_2)} \sin\{(\phi_1 - \phi_2) + \omega t\}$

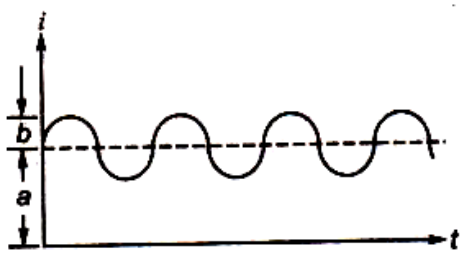
(D) None of the above



56. The rms value of the current is as shown in the graph is

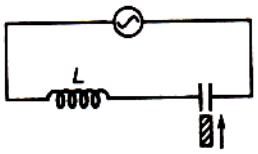
(A) $\sqrt{\frac{a^2 + b^2}{2}}$ (B) $\frac{\sqrt{2a^2 + b^2}}{2}$

(C) $\sqrt{\frac{a^2 + 2b^2}{2}}$ (D) None of these



Space for rough work

57. The resonant frequency of the L–C circuit is f_0 before insertion of the dielectric of $\varepsilon_r = 4$. After inserting the dielectric, The resonant frequency will be



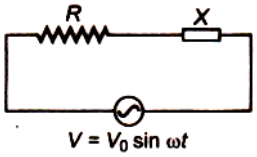
(A) $\frac{f_0}{2}$ (B) $2f_0$

(C) $\frac{f_0}{4}$ (D) None of these

58. The rms value of the current wave $i = a\sin\omega t + b\cos\omega t$ is

(A) $\frac{a+b}{\sqrt{2}}$ (B) $\sqrt{\frac{a^2+b^2}{2}}$ (C) $\frac{ab}{(a+b)}$ (D) None of these

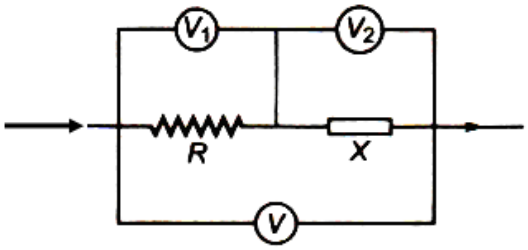
59. If $R = 10\Omega$ and the reactance X = 10 Ω, assuming $V_0 = 100$ volt, the rms current in the circuit is



(A) 5A (B) $5\sqrt{2}$A (C) 10 (D) $10\sqrt{2}$

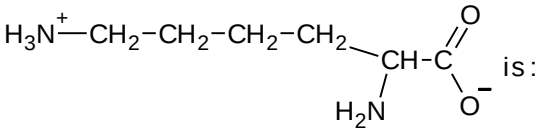
60. If the reading of the voltmeter vary with time as $V_1 = 20\sin\omega t$ and $V_2 = -20\cos(\omega t + \pi/6)$, then the unknown circuit element x is a

(A) pure (or ideal) inductor
(B) practical inductor
(C) pure (or ideal) capacitor
(D) practical capacitor



Space for rough work

61. The total number of basic groups in the following form of lysine



is :

(A) 0 (B) 1 (C) 2 (D) 3

62. Which of the following is not a fat soluble vitamin ?
(A) Vitamin A (B) Vitamin K (C) Vitamin E (D) Vitamin B

63. In an alkaline medium, glycine predominantly exist as/in a/an :
(A) cation (B) anion (C) zwitter ion (D) covalent form

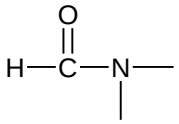
64. RNA differ from DNA in respect of a base :
(A) uracil (B) adenine (C) cytosine (D) guanine

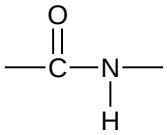
65. A mixture of amylose and amylopectin is called :
(A) lactose (B) starch (C) cellulose (D) sucrose

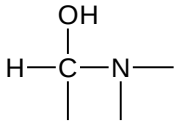
66. Which of the following hexoses will form the same osazone when treated with excess of phenyl hydrazine ?
(A) D–glucose, D–fructose and D–galactose (B) D–glucose, D–fructose and D–mannose
(C) D–glucose, D–mannose and D–galactose (D) D–fructose, D–mannose and D–galactose

67. The secondary structure of a protein refers to :
(A) fixed configuration of the polypeptide backbone
(B) α–helical backbone
(C) hydrophobic interactions (D) sequence of α–amino acids

68. Which one is the correct representation of peptide bond ?

(A) 

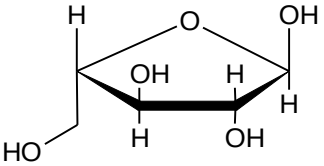
(B) 

(C) 

(D) None of these

Space for rough work

69. Which set of terms correctly identifies the carbohydrate shown ?



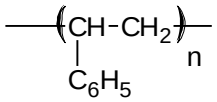
1. Pentose 2. Hexose 3. Aldose 4. Ketose
5. Pyranose 6. Furanose
(A) 1, 3 and 6 (B) 1, 3 and 5 (C) 2, 3 and 5 (D) 2, 3 and 6

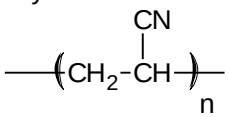
70. A tripeptide is written as Glycine–Alanine–Glycine. The number of π– bonds present in the tripeptide are :
(A) 2 (B) 3 (C) 4 (D) 5

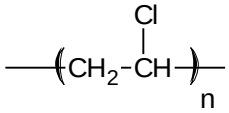
71. Which of the following sets consists only of essential amino acids ?
(A) Alanine, tyrosine, cystine (B) Leucine, lysine, tryptophan
(C) Alanine, glutamine, lysine (D) Leucine, proline, glycine

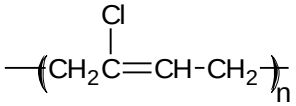
72. Which of the following sets contains only addition polymers ?
(A) Polyethylene, polypropylene, terylene (B) Polyethylene, PVC, orlon
(C) Buna–S, nylon, polybutadiene (D) Bakelite, PVC, polyethylene

73. Which of the following structures represents neoprene polymer ?

(A) 

(B) 

(C) 

(D) 

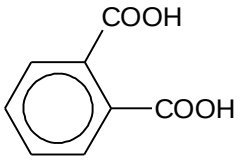
74. A polyamide synthetic polymer prepared by prolonged heating of caprolactum, is :
(A) nylon–6, 6 (B) nylon–6 (C) nylon–6,10 (D) glyptal

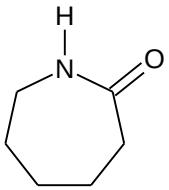
75. Identify the correct statements among the following
(A) Cellulose has alpha 1, 4 – glycosidic linkage while amylose has beta 1, 4 – glycosidic linkage
(B) Cellulose has alpha 1, 6 – glycosidic linkage and amylose has alpha 1, 4 – linkage
(C) Cellulose has beta 1, 6 – glycosidic linkage and amylose has alpha 1, 6 – linkage
(D) Cellulose has beta 1, 4 – glycosidic linkage and amylose has alpha 1, 4 – glycosidic linkage

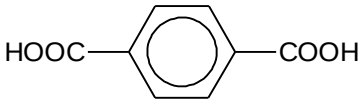
Space for rough work

76. The beta and alpha glucose have different specific rotations. When either is dissolved in water, their rotation changes until the some fixed value results. This is called.
(A) epimerization (B) racemisation (C) anomerisation (D) mutarotation

77. The monomer of dacron is/are :

(A) $HOCH_2-CH_2OH$ and 

(B) 

(C) $HOCH_2-CH_2OH$ and 

(D) $F_2C=CF_2$

78. Which of the following is a biodegradable polymer ?
(A) Polythene (B) PVC (C) Bakelite (D) PHBV

79. Which one of the following is not an aldose ?
(A) Glucose (B) Ribose (C) Fructose (D) Mannose

80. Given the polymers,
A = Nylon–6,6 ; B = Buna–S; C = Polythene
Arrange these in decreasing order of their intermolecular forces :
(A) C < B < A (B) B > C > A (C) B < C < A (D) C < A < B

81. The catalyst used for olefin polymerization is :
(A) Ziegler–Natta catalyst (B) Wilkinson catalyst
(C) Raney nickel catalyst (D) Merrifield resin

82. Which of the following is a reducing sugar?
(A) Glucose (B) Fructose (C) Maltose (D) All

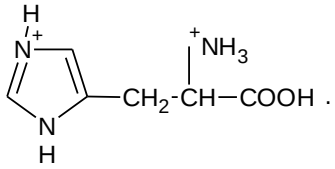
Space for rough work

83. Which statement is incorrect about peptide bond?
(A) $C-N$ bond length in proteins is longer than usual bond length of $C-N$ bond
(B) Spectroscopic analysis shows planar structure of $-C(=O)-NH-$ bond.
(C) $C-N$ bond length in proteins is smaller than usual bond length of $C-N$ bond.
(D) None of these

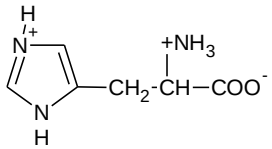
84. Oxidation of glucose with Br_2/H_2O gives
(A) D-Gluconic acid (B) L-Glucaric acid (C) L-Gluconic acid (D) All

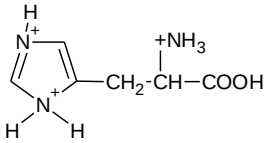
85. When an aqueous solution of D-glucose is treated with a base, it is converted into D-fructose and D-mannose, this conversion (isomerisation) involves
(A) enolization (B) tautomerization (C) both (a) and (b) (D) none of the two

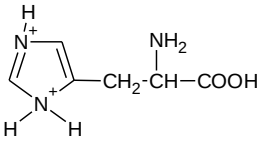
86. Histidine, a heterocyclic amino acid has following structure at pH < 1.82

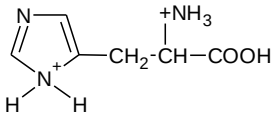


. At pH>1.82, it should have which structure ?

(A) 

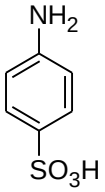
(B) 

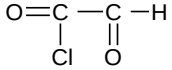
(C) 

(D) 

Space for rough work

87. Which of the following will not give test for N in sodium extract?

(A) $C_6H_5NHNH_2$ (B) NH_2CONH_2 (C) NH_2-NH_2 (D) 

88. A monomer unit on ozonolysis produced two molecules of formaldehyde and one molecule of  . The monomer unit will form the polymer

(A) nylon (B) neoprene (C) buna – S (D) polyvinyl chloride

89. A polymer containing nitrogen is :
(A) Bakelite (B) Dacron (C) rubber (D) nylon – 6, 6

90. Which one is a chain growth polymer ?
(A) Teflon (B) Nylon–6 (C) Nylon–6 , 6 (D) Bakelite

Space for rough work

FIITJEE PET – IX (CHAMPIONS_2ND YEAR)

MAINS_ANSWERS

DATE: 25.08.2018

MATHEMATICS

1.	**A**	2.	**C**	3.	**D**	4.	**B**
5.	**B**	6.	**B**	7.	**A**	8.	**D**
9.	**C**	10.	**C**	11.	**D**	12.	**B**
13.	**B**	14.	**C**	15.	**C**	16.	**A**
17.	**C**	18.	**B**	19.	**B**	20.	**B**
21.	**A**	22.	**B**	23.	**C**	24.	**A**
25.	**C**	26.	**C**	27.	**B**	28.	**C**
29.	**D**	30.	**A**				

PHYSICS

31.	**A**	32.	**B**	33.	**B**	34.	**B**
35.	**D**	36.	**A or C**	37.	**D**	38.	**B**
39.	**A**	40.	**B**	41.	**B**	42.	**C**
43.	**A or C**	44.	**B or C**	45.	**D**	46.	**C**
47.	**C**	48.	**C**	49.	**A**	50.	**A or B or C**
51.	**B**	52.	**Bonus**	53.	**D**	54.	**C**
55.	**D**	56.	**D**	57.	**A**	58.	**B**
59.	**A**	60.	**D**				

CHEMISTRY

61.	**C**	62.	**D**	63.	**B**	64.	**A**
65.	**B**	66.	**B**	67.	**B**	68.	**B**
69.	**A**	70.	**B**	71.	**B**	72.	**B**
73.	**D**	74.	**B**	75.	**D**	76.	**D**
77.	**C**	78.	**D**	79.	**C**	80.	**C**
81.	**A**	82.	**D**	83.	**A**	84.	**A or C**
85.	**C**	86.	**A**	87.	**C**	88.	**B**
89.	**D**	90.	**A**				