MHT CET 2020 PCB Oct 8 Shift 1

Question Paper

Conducted by the State Common Entrance Test Cell, Maharashtra

Time Allowed: 180 Minutes **PCB Group** **Maximum Marks: 200**

General Instructions

(i) This is a **memory-based version** of the **MHT CET 2020 PCB Oct 8 Shift 1** (PCB group), conducted by the **State Common Entrance Test Cell, Maharashtra**. The questions were recalled by candidates who appeared in the exam.

(ii) This edition includes **190 of 200 questions**: **48 Physics**, **49 Chemistry**, **93 Biology**. Original subject question numbers are retained; Physics questions 7, 11; Chemistry Q32; Biology questions 1, 12, 22, 31, 35, 87, 98 are unavailable.

(iii) The full PCB exam has **200 questions** and **200 marks**: Section 1 - **Physics and Chemistry** (50 questions each, 100 marks), followed by Section 2 - **Biology** (100 questions, 100 marks). Each section lasts **90 minutes**.

(iv) Candidates cannot switch between sections. Section 1 closes automatically after its 90 minutes, and Section 2 follows.

(v) All questions in the exam are compulsory. Each multiple choice question offers **four options**, of which **exactly one is correct**.

(vi) Each correct answer earns **1 mark**. There is **no negative marking**; unanswered questions carry 0 marks.

(vii) Use rough sheets for calculations and rough work. Calculators, log tables and electronic gadgets are not allowed.

Section 1 · Physics · 48 available questions

1. A particle moves along a circular path of radius 'r' with uniform speed 'V'. The angle described by the particle in one second is

(A) Vr (B) r/V

(C) V^2r (D) V/r

2. The focal length of the objective used in compound microscope and telescope is respectively

(A) short and short (B) large and large

(C) large and short (D) short and large

3. The two waves are represented by $Y_1 = 10^{-2}\sin[50t + \frac{x}{25} + 0.3]$ m and $Y_2 = 10^{-2}\cos[50t + \frac{x}{25}]$ m where x is in metre and time in second. The phase difference between the two waves is nearly

(A) 1.05 rad (B) 1.15 rad

(C) 1.22 rad (D) 1.27 rad

4. A disc has mass 'M' and radius 'R'. How much tangential force should be applied to the rim of the disc so as to rotate with angular velocity 'ω' in time t?

(A) $\frac{MR^2\omega}{2t}$ (B) $\frac{MR^2\omega}{t}$

(C) $\frac{MR\omega}{2t}$ (D) $\frac{MR\omega}{t}$

5. A sphere of mass 'M' is attached to one end of a metal wire having length 'L' and diameter 'D'. It is whirled in a vertical circle of radius R with angular velocity 'ω'. When the sphere is at lowest point of its path, the elongation of the wire is (Y = Young's modulus, g = acceleration due to gravity)

(A) $\frac{6ML(R^2\omega^2+g)}{\pi D^2Y}$ (B) $\frac{2ML(R^2\omega^2+g)}{\pi D^2Y}$

(C) $\frac{4ML(R\omega^2+g)}{\pi D^2Y}$ (D) $\frac{ML(R\omega^2+g)}{2\pi D^2Y}$

6. Find the dimensions of the quantity 'x' in the equation $T = 2\pi\left[\frac{ML^3}{3YX}\right]^{1/2}$ where 'T' is the time period, M is mass, L is length and Y is the Young's modulus.

(A) $[L^3]$ (B) $[L^6]$

(C) $[L^2]$ (D) $[L^4]$

8. An ammeter is obtained by shunting 'n' Ω galvanometer with 'n' Ω resistance. The additional shunt required to be connected across it to double the range is

(A) $n/3$ (B) n

(C) $n/4$ (D) $n/2$

9. A uniform rod of length '2L' has constant mass per unit length 'm'. Moment of inertia of the rod about an axis passing through its centre and perpendicular to length is

(A) $mL^2/4$ (B) $mL^3/3$

(C) $2mL^3/3$ (D) $mL^2/12$

10. Capacity of a parallel plate air condenser is $2\mu F$ and voltage between the plates is changing at the rate of $3V/s$. The displacement current in the capacitor is

(A) $8\mu A$ (B) $2\mu A$

(C) $6\mu A$ (D) $4\mu A$

12. In photoelectric emission, the intensity of incident light is reduced then stopping potential

(A) may increase or decrease (B) remains same

(C) increases (D) decreases

13. Two wires of same length and material are used to form a square loop and a circular loop respectively. If same current is passed through both loops then the ratio of magnetic moment of square loop to that of circular loop is

(A) $\pi/2$ (B) π

(C) $\pi/4$ (D) 2π

14. A block of mass 'M' is pushed momentarily on horizontal surface with initial velocity 'V'. If 'μ' is the coefficient of sliding friction, block will come to rest after time (g = gravity)

(A) $\frac{\mu g}{V}$ (B) μgV

(C) $\frac{V^2}{\mu g}$ (D) $\frac{V}{\mu g}$

15. A transistor is used as a common emitter amplifier with a load resistance $2k\Omega$. The input resistance is 150Ω. Base current is changed by $20\mu A$ which results in a change in collector current by 1.5 mA. The amplified voltage gain of the amplifier is

(A) 500 (B) 1000
(C) 750 (D) 1250

16. Two unknown resistances in a meter bridge have a null point at 40 cm from the left. A 30Ω resistance is connected in series with the smaller resistance, shifting the null point by 20 cm to the right. The smaller resistance is

(A) 8Ω (B) 24Ω
(C) 32Ω (D) 16Ω

17. A satellite is revolving in a circular orbit around the earth has total energy 'E'. Its potential energy in that orbit is

(A) $E/2$ (B) $2E$
(C) E (D) $4E$

18. A U tube with limbs of diameters 5 mm and 2 mm contains water ($S.T = 7 \times 10^{-2}$ N/m, contact angle zero, density 10^3 kg/m^3). The level difference in limbs ($g = 10$ m/s^2) is

(A) 7.7 mm (B) 6.8 mm
(C) 9.5 mm (D) 8.4 mm

19. Find the intensity of magnetization of a magnet of moment $4Am^2$ which weighs 50 gram (Density = 5000 kg/m^3).

(A) 10^5 A/m (B) 3×10^5 A/m
(C) 2×10^5 A/m (D) 4×10^5 A/m

20. In hydrogen atom, the product of the angular momentum and the linear momentum of the electron is proportional to (n = principal quantum number)

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

21. In a parallelogram with sides a, b and diagonals d_1, d_2, then $a^2 + b^2$ is

(A) $\frac{d_1^2 - d_2^2}{4}$ (B) $\frac{d_1^2 - d_2^2}{2}$
(C) $\frac{d_1^2 + d_2^2}{2}$ (D) $\frac{d_1^2 + d_2^2}{4}$

22. For a prism of refractive index μ, the refractivity of the material is

(A) μ (B) $(\mu + 1)$
(C) $(\mu - 1)$ (D) $(1 - \mu)$

23. A wire of length L, mass M, density ϱ, radius R is stretched. If 'r' and 'ℓ' are changes in radius and length, Poisson's ratio is

(A) $\frac{Mr}{\pi R^3 \varrho \ell}$ (B) $\frac{Mr}{\pi R^2 \varrho \ell}$
(C) $\frac{Mr^2}{\pi R^3 \varrho \ell}$ (D) $\frac{2Mr^2}{\pi R^2 \varrho \ell}$

24. Capacitors $C_1 = 4\mu F$ and $C_2 = 1\mu F$ are in series across 200 V. The ratio of potential across C_2 to C_1 is

(A) 8 : 1 (B) 16 : 1
(C) 2 : 1 (D) 4 : 1

25. In potentiometer, if current through the wire is decreased, the balancing length will

(A) be increased (B) not be changed
(C) become half (D) be decreased

26. Ratio of $\gamma = C_p/C_v$ for monoatomic gas to γ for (rigid) diatomic gas is

(A) 25/21 (B) 35/15
(C) 21/25 (D) 15/35

27. In non-uniform circular motion, the ratio of tangential acceleration to radial acceleration is

(A) $\frac{r\alpha}{V}$ (B) $(\frac{r}{V})^2\alpha$
(C) $(\frac{V}{r})^2 \frac{1}{\alpha}$ (D) $(\frac{V}{r})^2\alpha$

28. Wavelength λ gives stopping potential V. Wavelength 3λ gives $V/6$. Threshold wavelength is

(A) 5λ (B) 9λ
(C) 3λ (D) 6λ

29. Stationary wave $Y = 3\sin(200\pi t)\cos(0.4x)$ is in 4th harmonic. The length of the string is

(A) 10π (B) 4π
(C) 6π (D) 8π

30. If a resonance tube is filled with a liquid denser than water, resonating frequency

(A) may increase or decrease (B) will decrease
(C) will not change (D) will increase

31. In YDSE liquid, 8th bright band lies where 5th dark band lies in air. Refractive index is

(A) 1.9 (B) 1.77

(C) 1.5 (D) 1.33

32. Upward force of 105 dyne balances water column weight. Inner circumference ($S.T = 7 \times 10^{-2}$ N/m) is

(A) 1.5 cm (B) 2.5 cm

(C) 2 cm (D) 1 cm

33. Voltmeter range is V with 50Ω series, and 2V with 500Ω series. Resistance of voltmeter is

(A) 200Ω (B) 400Ω

(C) 600Ω (D) 800Ω

34. In Boolean algebra, the logic gate for $C = \overline{A \cdot B}$ is

(A) NOT (B) AND

(C) OR (D) NAND

35. Bomb at rest explodes to 3 equal parts. Two parts have momentum $-3P\hat{i}$ and $2P\hat{j}$. Third part magnitude:

(A) $\sqrt{11}P$ (B) $\sqrt{13}P$

(C) $\sqrt{15}P$ (D) $\sqrt{7}P$

36. Gas at (P, V) expands isothermally to 9V, then adiabatic compressed to V. Final pressure ($\gamma = 1.5$):

(A) 6 P (B) 27 P

(C) 3 P (D) 9 P

37. 'n' waves produced in 0.5s. If tension is doubled, number of waves for same harmonic in 0.5s:

(A) $n/\sqrt{2}$ (B) n

(C) $\sqrt{2}/n$ (D) $\sqrt{2}n$

38. Monochromatic light intensities 4 I and 9 I superposed. Max and min intensities:

(A) 4 I and 9 I (B) 16 I and 21 I

(C) 2 I and 3 I (D) 25 I and I

39. Electron jumps from 4th level to ground state. Velocity photon acquired (h, R, m):

(A) $\frac{15hR}{16m}$ (B) $\frac{12hR}{13m}$

(C) $\frac{9hR}{11m}$ (D) $\frac{7hR}{9m}$

40. Two wires distance 'd' force 'F'. If distance doubled and current is 1/3, force is

(A) $F/6$ (B) $F/3$

(C) $F/18$ (D) $F/9$

41. Spring L, K cut into L_1, L_2 where $L_1 = NL_2$. Force constant of L_1 is

(A) $\frac{K(N+1)}{N}$ (B) $\frac{K(N+1)}{2N}$

(C) $\frac{K(N-1)}{N}$ (D) $\frac{K(N-1)}{2N}$

42. Pendulum L, M, amplitude A. Potential energy at extreme position is

(A) $\frac{MgA}{2L}$ (B) $\frac{2MgA}{L}$

(C) $\frac{MgA^2}{L}$ (D) $\frac{MgA^2}{2L}$

43. Light takes 't' for distance 'd' (vaccum) and 'T' for '5d' (medium). Critical angle is

(A) $\sin^{-1}(\frac{3t}{T})$ (B) $\sin^{-1}(\frac{5t}{T})$

(C) $\sin^{-1}(\frac{t}{T})$ (D) $\sin^{-1}(\frac{2t}{T})$

44. Charge q, mass m enters plates (potential V, distance d). Acceleration is

(A) $\frac{md}{Vq}$ (B) $\frac{qm}{Vd}$

(C) $\frac{qV}{dm}$ (D) $\frac{qd}{Vm}$

45. Circular coil area A produces field B at centre. Magnetic moment is

(A) $\frac{BA^3}{2\pi\mu_0}$ (B) $\frac{2B\sqrt{A^3}}{\mu_0\sqrt{\pi}}$

(C) $\frac{2BA}{\mu_0}$ (D) $\frac{B\sqrt{A^3}}{4\pi\mu_0}$

46. Ball height h, initial velocity V. Collides, loses 3/4 energy, returns to same h. Initial V:

(A) $\sqrt{gh}$ (B) $\sqrt{6gh}$

(C) $\sqrt{3gh}$ (D) $\sqrt{2gh}$

47. Linear S.H.M amplitude A, total energy E. Displacement where K.E is 3E/4?

(A) $A/3$ (B) A

(C) $A/4$ (D) $A/2$

48. In phase modulation, the carrier wave parameter varied is

(A) phaseshift (B) phaseshift and amplitude

(C) amplitude (D) amplitude and frequency

49. Four spheres M, R at corners of square L. M.I of system about any side is

(A) $\frac{4}{3}MR^2 + ML^2$ (B) $\frac{3}{5}MR^2 + 2ML^2$

(C) $\frac{8}{5}MR^2 + 2ML^2$ (D) $\frac{6}{5}MR^2 + ML^2$

50. Resultant of F_1, F_2 is P. If F_2 reversed, resultant is Q. Value of $P^2 + Q^2$:

(A) $\frac{F_1^2+F_2^2}{4}$ (B) $\frac{F_1^2-F_2^2}{2}$

(C) $\frac{F_1^2+F_2^2}{2}$ (D) $2(F_1^2 + F_2^2)$

Section 1 · Chemistry · 49 available questions

1. Vitamin to included in diet to avoid haemorrhage?

(A) Vitamin E
(B) Vitamin C
(C) Vitamin P
(D) Vitamin K

2. Polymer prepared using Ziegler - Natta catalyst?

(A) HDPE
(B) LDPE
(C) Orlon
(D) Dacron

3. Decreasing order of relative tendency of metals to undergo oxidation:

(A) Cr > Al > Mg > Fe
(B) Mg > Al > Cr > Fe
(C) Al > Fe > Cr > Mg
(D) Fe > Cr > Al > Mg

4. Metal that does NOT displace zinc from solution?

(A) Fe
(B) K
(C) Na
(D) Al

5. One amu is equal to

(A) 6.022×10^{-23} g
(B) 8.302×10^{-23} g
(C) 1.6605×10^{-24} g
(D) 4.661×10^{-25} g

6. Oxidation state of Cl in oxyacid depends upon

(A) number of O atoms
(B) number of Cl atoms
(C) oxidation state of O
(D) lone pairs on O

7. Which is NOT a role of histamine?

(A) Neutralize stomach acid
(B) Contract smooth muscles
(C) Stimulate pepsin
(D) Stimulate HCl

8. Product of alkaline hydrolysis of 1,1-dichlorocyclohexane?

(A) Cyclohexanol
(B) Cyclohexanone
(C) Benzaldehyde
(D) Cyclohexane carbaldehyde

9. HBr addition to but-2-ene and but-1-ene forms

(A) 1-bromobutane and 2-bromobutane
(B) 1-bromobutane only
(C) 2-bromobutane and 1-bromobutane
(D) 2-bromobutane only

10. Mixture of starch, $NaHCO_3$, potassium hydrogen tartarate?

(A) Baking soda
(B) Caustic Soda
(C) Washing Soda
(D) Baking Powder

11. Nitration products of aniline in strongly acidic medium?

(A) o, m, and p-nitroaniline
(B) p and o-nitroaniline
(C) m and p-nitroaniline
(D) o and m-nitroaniline

12. Acetic acid molar mass in benzene is greater due to

(A) ionization
(B) association
(C) hydrolysis
(D) dissociation

13. Product of heating primary amine with $CHCl_3$ and alcoholic KOH?

(A) Alkene
(B) Alkyl cyanide
(C) Alkyl isocyanide
(D) Amide

14. Pair with same value of effective magnetic moment?

(A) Zn^{2+}, Cr^{3+}
(B) Ni^{2+}, Ti^{3+}
(C) Cr^{3+}, Co^{2+}
(D) Sc^{3+}, Ti^{3+}

15. Process that does NOT lead to coagulation?

(A) Heating egg
(B) Adding electrolyte
(C) Electrophoresis
(D) Adding water to gold sol

16. Polymer used for wrapping food?

(A) Dacron
(B) Nylon-6
(C) Lexan
(D) Saran

17. Name of reaction (Phenol to Salicylic acid)?

(A) Kolbe's reaction
(B) Sandmeyers reaction
(C) Reimer - Tiemann
(D) Stephen reaction

18. Parameters for spontaneity at all temperatures?

(A) $\Delta H = +, \Delta S = -, \Delta G = +$

(B) $\Delta H = +, \Delta S = +, \Delta G = -$

(C) $\Delta H = -, \Delta S = -, \Delta G = +$

(D) $\Delta H = -, \Delta S = +, \Delta G = -$

19. Product on roasting zinc blende at 1200 K?

(A) Zinc Sulphate (B) Zinc Oxide

(C) Zinc Spelter (D) Zinc Carbonate

20. Precipitate quantity (1 mole Tetramminedichloroplatinum(IV)bromide + excess $AgNO_3$) ?

(A) Two moles AgCl (B) Two AgCl and one AgBr

(C) One mole AgBr (D) Two moles AgBr

21. Complex that is NOT heteroleptic?

(A) $[Pt(NH_3)_4Br_2]Br_2$ (B) $[Co(NH_3)_6]Cl_3$

(C) $[Co(en)_2Cl_2]^+$ (D) $[Co(en)_2Cl_2]Cl$

22. Equation NOT correct for van't Hoff factor?

(A) $i = n_{obs}/n_{theo}$ (B) $i = M_{theo}/M_{obs}$

(C) $i = M_{obs}/M_{theo}$ (D) $i = \pi_{obs}/\pi_{theo}$

23. Constituents of Natalite?

(A) Dimethyl ether, methanol (B) Dimethyl ether, ethanol

(C) Diethyl ether, ethanol (D) Diethyl ether, methanol

24. Antibiotic containing As=As linkage?

(A) Sulphapyridine (B) Prontosil

(C) Salvarsan (D) Sulphanilamide

25. Product X in oxidation of Phenol by $Na_2Cr_2O_7/H_2SO_4$?

(A) Benzaldehyde (B) Salicylic acid

(C) Benzoquinone (D) Benzoic acid

26. Which is a complex lipid?

(A) Testosterone (B) Lecithin

(C) Cholesterol (D) α - phellandrene

27. Element with configuration $[Xe]4f^0$ in +4 state?

(A) Neodymium (B) Praseodymium

(C) Cerium (D) Dysprosium

28. Product of ozonolysis of tetramethyl ethylene followed by reduction?

(A) Butanal (B) Propanal

(C) Propanone (D) Butanone

29. Compound giving 2,5-dimethyl hexane with Na/dry ether?

(A) tert-butyl bromide (B) sec-butyl bromide

(C) n-butyl bromide (D) isobutyl bromide

30. P oxidation number +3 in?

(A) $H_4P_2O_7$ (B) H_3PO_3

(C) H_3PO_2 (D) H_3PO_4

31. Reaction explaining acidic property of carboxylic acid?

(A) Reaction with Na (B) P_2O_5 dehydration

(C) Esterification (D) Reaction with $SOCl_2$

33. Torsion angle in staggered ethane?

(A) 45° (B) 180°

(C) 60° (D) 0°

34. Thermodynamics deals with

(A) path (B) microscopic properties

(C) rates (D) macroscopic properties

35. Molecule with 25% 'S' character in hybrid orbitals?

(A) Ethylene (B) BF_3

(C) Acetylene (D) Methane

36. Unit cell mass of gold in fcc (At. wt. 197)?

(A) 98.14×10^{-23} g (B) 32.71×10^{-23} g

(C) 65.42×10^{-23} g (D) 130.85×10^{-23} g

37. Sodium radius in bcc ($a = 4.29 \times 10^{-8}$ cm)?

(A) 2.30×10^{-8} cm (B) 6.19×10^{-9} cm

(C) 1.85×10^{-8} cm (D) 1.61×10^{-8} cm

38. Lone pairs on each O atom in Cl oxyacids?

(A) 0 (B) 3

(C) 1 (D) 2

39. Cl oxidation state in perchloric acid?

(A) -5 (B) +7

(C) +5 (D) +3

40. Bond order of Be_2 molecule?

(A) Two (B) Three
(C) Zero (D) One

41. Which is a polynuclear hydride?

(A) B_2H_6 (B) LiH
(C) NH_3 (D) NaH

42. If $[A]$ doubled and $[B]$ halved, ratio r_2/r_1 for $rate = k[A]^a[B]^b$ is

(A) $a - b$ (B) $1/2^{(a+b)}$
(C) $a + b$ (D) $2^{(a-b)}$

43. Chlorination yields only one mono-chloroderivative for?

(A) Isopentane (B) Neopentane
(C) n-pentane (D) 2,3-Dimethylpentane

44. Which compound does NOT exhibit resonance?

(A) Cyclohexane (B) Phenol
(C) Aniline (D) Nitro ethane

45. Max work from Daniell cell ($EMF = 1.10$ V, F = 96500 C)?

(A) 212.3 kJ (B) 175.4 kJ
(C) 106.15 kJ (D) 57.07 kJ

46. Water mass from 1 mole CH_4 and 2 mole O_2 ?

(A) 27 g (B) 18 g
(C) 36 g (D) 54 g

47. IUPAC name of $H_2N - CH_2 - CH = CH_2$?

(A) 1-propenamine (B) 3-Aminopropene
(C) Prop-1-en-3-amine (D) Prop-2-en-1-amine

48. Which gas is difficult to liquefy?

(A) Ammonia (B) CO_2
(C) Oxygen (D) Chlorine

49. Gold radius in fcc (a = 396 pm)?

(A) 198 pm (B) 714 pm
(C) 140 pm (D) 162 pm

50. Same i value as $K_4[Fe(CN)_6]$?

(A) Na_2SO_4 (B) $MgSO_4$
(C) $Al_2(SO_4)_3$ (D) $Al(NO_3)_3$

2. Correct match for excretion:

(A) Ornithine cycle - urea
(B) Camel - uricotelic
(C) Low threshold - glucose
(D) High threshold - amino acids

3. Rice plant grows tall, thin and pale?

(A) Rust
(B) Hill bunt
(C) Bakane
(D) Black-rot

4. Elimination of harmful recessive genes in breeding?

(A) hybridization
(B) outcrossing
(C) in-breeding
(D) cross-breeding

5. Sponge gemmule chitinous layer secreted by?

(A) choanocytes
(B) interstitial cells
(C) amoebocytes
(D) archaeocytes

6. Virus infected plant disease-free explant?

(A) floral buds
(B) shoot apical meristem
(C) medullary rays
(D) pith parenchyma

7. Epidermal cell root prolongations seen in region of?

(A) Cell division
(B) Absorption
(C) Maturation
(D) Cell elongation

8. Graafian follicle cells secrete?

(A) hCG
(B) relaxin
(C) testosterone
(D) estrogen

9. Counter-current flow in fishes maximizes?

(A) permeability
(B) thin membranes
(C) number of gills
(D) oxygen transfer

10. 70S ribosomes occur in?

(A) Bacteria, ER, mesosome
(B) Bacteria, mitochondria, chloroplasts
(C) Nucleus, mesosome, mitochondria
(D) Chloroplasts, Golgi, mitochondria

11. Liquor from fruit juice fermentation?

(A) Beer
(B) Whisky
(C) Wine
(D) Rum

13. Alcohol abuse causes cirrhosis of?

(A) liver
(B) lung
(C) stomach
(D) heart

14. INCORRECT statement regarding biotech applications?

(A) DNase for emphysema
(B) Transgenic for PKU
(C) Transgenic for arthritis
(D) Vaccine antigenicity

15. Iron containing red protein?

(A) ferredoxin
(B) cytochrome - f
(C) cytochrome b6
(D) plastocyanin

16. Lysosomes origin and nature?

(A) single, Golgi
(B) double, Golgi
(C) double, ER
(D) single, nucleus

17. First stable compound of C4 pathway?

(A) PGA
(B) 1, 3 DPGA
(C) oxalosuccinic acid
(D) oxaloacetic acid

18. Glossopharyngeal nerve impairment NOT affect?

(A) rotation of eyeball
(B) swallowing
(C) saliva
(D) sense of taste

19. PCR heating breaks which bonds?

(A) hydrogen
(B) phosphodiester
(C) glycosidic
(D) sugar-phosphate

20. Female gametes for angiosperm double fertilization?

(A) 6
(B) 2
(C) 1
(D) 4

21. Building deterioration pollutant?

(A) Sulphur dioxide
(B) CFC
(C) Carbon dioxide
(D) Carbon monoxide

23. NOT true about cohesion-tension theory?

(A) Transpiration pull downward
(B) Living cells active role
(C) Lignified wall attraction
(D) Water mutual attraction

24. Water soluble vitamins?

(A) Vitamin A and B (B) Vitamin B and C
(C) Vitamin E and K (D) Vitamin C and D

25. Tachycardia heart rate beats over?

(A) 60 (B) 95
(C) 100 (D) 75

26. Corona radiata cells?

(A) granulosa (B) cortical
(C) theca externa (D) theca interna

27. Richmond - Lang effect related with?

(A) cell division (B) apical dominance
(C) abscission layer (D) delaying senescence

28. Salvia and Cestrum pollination?

(A) insects (B) wind
(C) bats (D) birds

29. Correct urine path?

(A) major →minor →duct →pelvis (B) pelvis →minor →major →duct
(C) duct →major →minor →pelvis (D) duct →minor →major →pelvis

30. Decomposition sequence:

(A) Frag, leaching, catabolism, hum, min (B) Frag, catabolism, leaching, hum, min
(C) (D)

32. Phospho-glycero mutase glycolytic reaction?

(A) ATP-I (B) ATP-II
(C) Dehydration (D) Isomerization

33. Photophosphorylation pathways suggested by?

(A) Robert Hill (B) Dr. Calvin
(C) Dr. Arnon (D) C. Van Neil

34. Aspergillosis poultry disease?

(A) fungal (B) bacterial
(C) protozoan (D) viral

36. ANF functions EXCEPT?

(A) vasodilation (B) renin-angiotensin inhibition
(C) vasoconstriction (D) sodium excretion

37. Substrate level phosphorylation ATP in glycolysis?

(A) 8 ATP (B) 4 ATP
(C) 36 ATP (D) 2 ATP

38. Nuclear size does NOT depend on?

(A) volume (B) shape
(C) proteins (D) DNA

39. INCORRECT statement cardiac?

(A) Autonomic SA node (B) Gel ECG
(C) QRS spreading (D) Malnutrition heart muscle

40. DNA ligase use in engineering?

(A) PCR (B) fragmentation
(C) joining desired gene (D) reverse transcription

41. Third kingdom Protista suggested by?

(A) Whittaker (B) Linnaeus
(C) Haeckel (D) Woese

42. Mendel crosses performed?

(A) Mono and Di (B) Mono, Di, Tri
(C) Mono only (D) Di only

43. Correct regarding spinal nerves?

(A) foramen magnum (B) neural canal
(C) 21 pairs (D) mixed types

44. Applicable for t-RNA?

(A) Folded on itself (B) Self replicating
(C) Largest (D) Two strands

45. Goblet cell secretion?

(A) oil (B) mucous
(C) enzymes (D) hormones

46. Population density increase?

(A) mortality (B) natality
(C) low emigration (D) high emigration

47. Hybrid seeds apomictic prevents?

(A) apomictic (B) dicot hybrid
(C) monocot hybrid (D) polyembryonic

48. Pure water potential at normal T and P?

(A) zero (B) more than one
(C) one (D) less than one

49. carries message for polypeptide chain?

(A) r-RNA (B) r-DNA
(C) m-RNA (D) t-RNA

50. Pulses protein RQ?

(A) infinity (B) more than one
(C) one (D) less than one

51. Testis layers sequence (inner to outer)?

(A) vag, alb, vasc (B) vasc, vag, alb
(C) vag, vasc, alb (D) alb, vasc, vag

52. Insoluble carbohydrate?

(A) Cellulose (B) Glucose
(C) Lactose (D) Fructose

53. Sample DNA + Probe DNA form double strand?

(A) electrophoresis (B) restriction digestion
(C) hybridization (D) amplification

54. Tall axial x Dwarf terminal F2 ratio cross?

(A) Test (B) Trihybrid
(C) Dihybrid (D) Monohybrid

55. Bacterial herbicide?

(A) Alternaria (B) Xanthomonas
(C) Fusarium (D) Bacillus

56. Co-dominance of alleles?

(A) one recessive (B) both dominant
(C) one dominant (D) both recessive

57. First decarboxylation Krebs cycle?

(A) Isocitrate (B) Succinate
(C) Oxalosuccinate (D) α-ketoglutarate

58. Childhood dwarfism due to?

(A) somatotropin hyposecretion (B) thyrotropin hyposecretion
(C) thymosin hypersecretion (D) secretin hypersecretion

59. Lichen rhizines used in?

(A) Crustose (B) Foliose
(C) Shruby (D) Fruticose

60. NOT a tool in recombinant technology?

(A) Endonuclease (B) Prokaryotic nucleoid
(C) Vector (D) Reverse transcription

61. Largest cell in oogenesis?

(A) secondary oocyte (B) polar body
(C) primordial cell (D) oogonium

62. Sum total of all populations?

(A) community (B) biome
(C) biomass (D) ecosystem

63. Max number in normal total blood count?

(A) erythrocytes (B) eosinophils
(C) lymphocytes (D) thrombocytes

64. INCORRECT statement Haemophilia?

(A) clotting factor (B) normal clotting
(C) RBC sickle (D) carrier female

65. Photorespiration oxidation RUBP?

(A) High T, High I, Low CO2 (B) Low T, Low I, Low CO2
(C) Low T, High I, Low CO2 (D) High T, High I, High CO2

66. Somatic reflex effectors?

(A) skin (B) glands
(C) smooth muscles (D) skeletal muscles

67. Human fertilization specific reaction?

(A) gametogenesis (B) same size
(C) fertilizin-antifertilizin (D) ovum/sperm size

68. Coenocytic hyphae characteristic?

(A) Ascomycetes (B) Phycomycetes
(C) Deuteromycetes (D) Basidiomycetes

69. Major reservoir of carbon?

(A) Ocean (B) Detritus
(C) Plants (D) Atmosphere

70. Oldest fossil record ape/man?

(A) Ramapithecus (B) Propliopithecus
(C) Kenyapithecus (D) Dryopithecus

71. NOT a nutrient in blood plasma?

(A) Glycine (B) Creatinine
(C) Fatty acid (D) Glucose

72. Both alleles expressed in heterozygous?

(A) diabetes (B) AB blood group
(C) color blindness (D) haemophilia

73. Restriction endonuclease nomenclature refers to?

(A) place (B) bacterium
(C) author (D) naming procedure

74. Medulla oblongata injury sudden death?

(A) reflex stop (B) vital activities stop
(C) CSF stop (D) plexuses damaged

75. Rice variety with 5x more?

(A) tryptophan (B) vitamin B12
(C) iron (D) protein

76. Mulattoes in F2 64 offspring?

(A) One (B) Six
(C) Twenty (D) Fifteen

77. Sex chromosomes male bird?

(A) XY (B) ZW
(C) XX (D) ZZ

78. Site for glycolysis in cell?

(A) Golgi body (B) mitochondria
(C) chloroplast (D) cytoplasm

79. Anemophily flower characteristic?

(A) ornithophily (B) entomophily
(C) anemophily (D) chiropterophily

80. Example of predation?

(A) Remora-shark (B) Whale-barnacle
(C) Orchid-tree (D) Tiger-deer

81. Pollen mother cell microsporangium?

(A) 128 (B) 64
(C) 32 (D) 16

82. NOT during expiration?

(A) dome diaphragm (B) compression
(C) thoracic volume increase (D) ribs inwards

83. Correct statement fossils?

(A) upper layers (B) understand habit
(C) formed on land (D) most common

84. Stunted growth, oedema child?

(A) Jaundice (B) Kwashiorkor
(C) Marasmus (D) Constipation

85. Menstrual cycle found in?

(A) monkeys, apes, humans (B) monkeys/apes
(C) apes/humans (D) humans only

86. Reptiles dominant period?

(A) Triassic (B) Jurassic
(C) Cretaceous (D) Tertiary

88. LSD source?

(A) Cannabis (B) Poppy
(C) Datura (D) ergot fungus

89. Bad taste Monarch butterfly?

(A) pupating (B) adult
(C) egg laying (D) larval stage

90. Correct for DNA?

(A) A+T = G+C (B) A-T = G-C
(C) A+C = G+T (D) A+G = T+C

91. NOT significance of vegetative propagation?

(A) Variations caused (B) increased yield
(C) production clones (D) easy method

92. Basophil selection?

(A) heparin (B) fibrin
(C) globulin (D) anti-histamine

93. Membrane surrounding axon?

(A) neurilemma (B) sarcolemma
(C) chromonema (D) nucleolonema

94. Factors R1, R2, S synthesis?

(A) t-RNA complex (B) release chain
(C) transcription (D) linking codon

95. Length DNA 44 base pairs?

(A) 149.2 A◦ (B) 149.3 A◦
(C) 149.4 A◦ (D) 149.6 A◦

96. Boll worms attack?

(A) maize (B) rice

(C) okra (D) cotton

97. NOT related entry pollen tube?

(A) Chalazogamy (B) Siphonogamy

(C) Mesogamy (D) Porogamy

99. Liver location?

(A) left stomach (B) right spleen

(C) left kidney (D) right diaphragm

100. Pregnancy hormone?

(A) FSH (B) ACTH

(C) Estrogen (D) Progesterone

- End of Question Paper -