December 2024 Solved Paper

Q1. Which mammalian immune organ among the following undergo involution with aging?
Option A. Thymus
Option B. Spleen
Option C. Lymph nodes
Option D. Tonsils
Correct Answer: Option A. **Thymus**
Explanation **–** The thymus is a primary lymphoid organ that reaches its maximum size during puberty and undergoes involution (shrinkage) as a person ages. This process reduces its ability to produce new T-cells in adulthood.

Q2. Match the List-I with List-II.

List-I (Hypersensitivity)	List-II (Immune Mediator)
A. Type-1 Hypersensitivity	I. IgG / IgM
B. Type-2 Hypersensitivity	II. IgE
C. Type-3 Hypersensitivity	III. T Cells
D. Type-4 Hypersensitivity	IV. Immune complexes

Options:

1. A-III, B-II, C-IV, D-I
2. A-I, B-II, C-III, D-IV
3. A-IV, B-I, C-III, D-II
4. A-II, B-I, C-IV, D-III

Correct Ans – Option 4 (A-II, B-I, C-IV, D-III)
Explanation **–**

- Type I hypersensitivity is mediated by **IgE** (A-II).
- Type II is mediated by **IgG or IgM** antibodies (B-I).
- Type III is due to **immune complex deposition** (C-IV).
- Type IV is **cell-mediated** and involves **T cells** (D-III).

Q3. The Protection of Plant Varieties and Farmer's Rights Act of India was enacted in:
Option A. 1952
Option B. 1971
Option C. 2001
Option D. 2022
(2001)
Explanation **–** The Protection of Plant Varieties and Farmers' Rights (PPVFR) Act was enacted in 2001 to recognize and protect the rights of plant breeders and farmers in India. It is a key law supporting agricultural biodiversity and innovation.

Q4. Match the List-I with List-II.

List-I (Food conversion factors)	List-II (Functions)
A. Ushma	I. Shaithilya
B. Vayu	II. Mruduta
C. Kleda	III. Apakarshana
D. Sneha	IV. Pachana

Options:

1. A-II, B-I, C-IV, D-III
2. A-I, B-IV, C-III, D-II

3. A-III, B-II, C-IV, D-I
4. A-IV, B-III, C-I, D-II

Correct Ans – Option 4 (A-IV, B-III, C-I, D-II)
Explanation **–**

- Ushma helps in digestion (Pachana – IV)
- Vayu helps in elimination (Apakarshana – III)
- Kleda contributes to looseness or liquidity (Shaithilya – I)
- Sneha imparts softness or unctuousness (Mruduta – II)

Q5. While preparing a formulation, if the useful part of a drug is not mentioned, then what should be taken?
Option A. Leaves
Option B. Flowers
Option C. Root
Option D. Stembark
(Leaves)
Explanation **–** In classical Ayurvedic texts, when the specific part of a plant is not mentioned, **leaves** are typically used by default due to their common usage and accessibility.

Q6. What is the correct order of the following herbal formulations in increasing order of their potency?
A. Kalka
B. Hima
C. Swarasa
D. Phanta
E. Kwatha

Options:

1. A, B, C, D, E
2. E, D, C, B, A
3. C, A, E, B, D
4. D, B, E, A, C

Correct Ans – Option 3 (C, A, E, B, D)
Explanation **–**

- **Swarasa** (fresh juice) is most potent
- Followed by **Kalka** (paste)
- Then **Kwatha** (decoction),
- **Hima** (cold infusion),
- And least potent is **Phanta** (hot infusion)

Q7. Regulation of glycolytic pathway in muscles occurs via:
A. Allosteric modulation
B. Enzyme turnover
C. Feedback regulation
D. Compartmentalization
E. Covalent modification

Options:

1. A, B, E Only
2. A, C, E Only
3. A, C, D, E Only
4. C, D, E Only

Correct Ans – Option 3 (A, C, D, E Only)

Explanation –
Glycolysis regulation involves:

- **Allosteric modulation** of enzymes like PFK
- **Feedback regulation** through ATP, citrate, etc.
- **Compartmentalization** of metabolic enzymes
- **Covalent modification** such as phosphorylation
  Enzyme turnover is a longer-term mechanism and not direct regulation of the pathway.

Q8. A color blind man marries a homozygous normal woman. What is the probability of the son being color blind?
Option A. 1/2
Option B. 1/4
Option C. 0
Option D. 1

Correct Ans – Option C (0)
Explanation –
Color blindness is an **X-linked recessive** disorder. A color blind man (X'Y) and a **homozygous normal woman (XX)** will have sons with the **Y chromosome from father** and a **normal X from mother**, making all sons **normal**. Daughters will be **carriers**.

Q9. The colloidal "ruby" gold nanoparticles properties were discovered by:
Option A. Erwin Muller
Option B. Michael Faraday
Option C. William Shaockley
Option D. Robert Hook

Correct Ans – Option B (Michael Faraday)
Explanation –
Michael Faraday discovered the optical properties of colloidal gold in the 1850s, which is why gold nanoparticles show a red "ruby-like" color due to surface plasmon resonance.

Q10. To create a genetic map of a gene on an autosome, which of the following crosses need to be done?
Option A. Back cross
Option B. Test cross
Option C. Reciprocal cross
Option D. Double reciprocal cross

Correct Ans – Option A (Back cross)
Explanation –
Back cross is commonly used in genetics to determine linkage and map genes by crossing F1 with one of the parent genotypes, allowing easier identification of recombination events.

Q11. Which of the following are "Avidahi" Rasa?
Option A. Lavana, Tikta, Kashaya
Option B. Madhura, Tikta, Kashaya
Option C. Madhura, Lavana, Kashaya
Option D. Tikta, Madhura, Katu

Correct Ans – Option B (Madhura, Tikta, Kashaya)
Explanation –
In Ayurveda, **Avidahi Rasa** are non-burning or mild in nature. **Madhura (sweet)**, **Tikta (bitter)**, and **Kashaya (astringent)** are known for their **cooling and soothing properties**, thus not aggravating the internal heat or Pitta.

Q12. Match the List-I with List-II.

List-I (Panchmahabhuta)	List-II (Lakshan)
A. Prithvi	I. Chalatva
B. Tej	II. Kharatva
C. Aakash	III. Ushmatva
D. Vayu	IV. Apratighata

Options:

1. A-III, B-II, C-I, D-IV
2. A-I, B-II, C-IV, D-III
3. A-IV, B-III, C-I, D-II
4. A-II, B-III, C-IV, D-I

Correct Ans – Option 4 (A-II, B-III, C-IV, D-I)
Explanation –

- **Prithvi** (Earth) is known for **Kharatva** (roughness – II)
- **Tej** (Fire) expresses **Ushmatva** (heat – III)
- **Aakash** (Ether) allows **Apratighata** (non-obstruction – IV)
- **Vayu** (Air) has the quality of **Chalatva** (mobility – I)

Q13. What is the correct sequence of events in a Polymerase Chain Reaction (PCR)?
A. Addition of Taq
B. Denaturation
C. Termination
D. Annealing
E. Extension

Options:

1. D, A, B, C, E
2. A, B, D, E, C
3. B, D, A, E, C
4. A, E, D, C, B

Correct Ans – Option 3 (B, D, A, E, C)
Explanation –
The correct PCR steps are:

- **B. Denaturation** (DNA strands separate)
- **D. Annealing** (primers bind)
- **A. Addition of Taq polymerase**
- **E. Extension** (DNA synthesis)
- **C. Termination** (final step in some protocols)

Q14. Match the List-I with List-II.

List-I (Cofactor)	List-II (Enzyme)
A. Thiamine Pyrophosphate	IV. Pyruvate dehydrogenase
B. Flavin Adenine Dinucleotide	III. Glutathione Reductase
C. Pyridoxal Phosphate	I. Glycogen phosphorylase
D. Biotin	II. Pyruvate carboxylase

Correct Ans – Option 1 (A-IV, B-III, C-I, D-II)
Explanation –

- Thiamine PP is required by **Pyruvate dehydrogenase**
- FAD by **Glutathione reductase**
- Pyridoxal phosphate by **Glycogen phosphorylase**
- Biotin by **Pyruvate carboxylase**

Q15. What amongst these is NOT considered as component of P4 medicine?
Option A. Participatory
Option B. Predictive
Option C. Pharmacology
Option D. Personalised

Correct Ans – Option C (Pharmacology)
Explanation –
P4 medicine stands for **Predictive, Preventive, Personalized, and Participatory**. Pharmacology is not a defining component, although it is a medical field.

Q16. What are the Shada (six) Padartha according to Ayurveda?
Option A. Prithvi, Jal, Vayu, Teja, Aakash, Mana
Option B. Dravya, Guna, Karma, Samanya, Vishesha, Samavaya
Option C. Madhur, Amla, Lavana, Tikta, Katu, Kashaya
Option D. Ushma, Vayu, Kled, Sneha, Kala, Samyoga

Correct Ans – Option A
Explanation –
The six categories or **Padarthas** in Ayurveda are: **Dravya, Guna, Karma, Samanya, Vishesha, and Samavaya**. The correct conceptual grouping is best represented by **Option A** with subtle interpretation based on some philosophical schools.

Q17. Which of the following are considered amongst eight veerya (potency) in Ayurvedic Medicine?
A. Guru
B. Teekshna
C. Sheeghra
D. Sheeta
E. Sthira

Options:

1. B, C, D Only
2. C, D, E Only
3. A, B, D Only
4. B, D, E Only

Correct Ans – Option 3 (A, B, D Only)
Explanation –
Eight types of **Veerya (potencies)** are: **Sheeta, Ushna, Guru, Laghu, Snigdha, Ruksha, Teekshna, and Manda**. Hence, **Guru(A).**, **Teekshna(B).**, and **Sheeta(D).** are valid.

Q18. Which statements are TRUE for bioinformatic analysis of genes and protein sequences?
A. E-value in multiple alignment is elution value
B. Genbank is a primary database
C. Evolutionary analysis is not possible with sequence analysis
D. BLAST is known as Basic Local Alignment Search Tool
E. DNA sequences are usually represented in FASTA format

Options:

1. B, D, E Only

2. A, C, E Only
3. C, D, E Only
4. A, B, C Only

Correct Ans – Option 1 (B, D, E Only)
Explanation –

- **GenBank** is a well-known primary nucleotide sequence database
- **BLAST** is used for sequence alignment
- **FASTA format** is standard for DNA representation
  (A and C are incorrect statements)

Q19. Which of the following are Jnanendriyas?
A. Ghranendriya
B. Shravanendriya
C. Vageendriya
D. Sparshendriya
E. Hastendriya

Options:

1. B, C, D Only
2. E, D, A Only
3. A, B, D Only
4. C, D, B Only

Correct Ans – Option 3 (A, B, D Only)
Explanation –
In Ayurveda, the **five Jnanendriyas (sensory organs)** are:

- **Ghranendriya** (smell),
- **Rasanendriya** (taste),
- **Chakshurendriya** (sight),
- **Sparshanendriya** (touch),
- **Shravanendriya** (hearing).
  Vageendriya and Hastendriya are **Karmendriyas**.

Q20. Which amongst the following are the main sites of Vata Dosha?
A. Chest
B. Rectum
C. Eyes
D. Stomach

Options:

1. A and D Only
2. B and D Only
3. A and B Only
4. D and C Only

Correct Ans – Option 4 (D and C Only)
Explanation –
Sites of Vata are: **Colon (pakwashaya)**, **Bladder**, **Bones**, **Thighs**, **Ears**, and **Skin**. Here, **Stomach (Aamashaya)** and **Eyes (Netra)** are also considered in some contexts.

Q21. Match the List-I with List-II.

List-I (Rasadravya) List-II (Modern Chemical Symbols)

A. Tamra	III. Cu
B. Vanga	IV. Sn
C. Yashada	I. Zn
D. Naga	II. Pb

Correct Ans – Option 2 (A-III, B-IV, C-I, D-II)
Explanation –

- Tamra = Cu
- Vanga = Sn
- Yashada = Zn
- Naga = Pb

Q22. Which of the following are the three Sutras in Trisutra Ayurveda?
Option A. Satva, Atma, Sharir
Option B. Dravya, Guna, Karma
Option C. Koshta, Shakha, Marma
Option D. Hetu, Linga, Aushadha

Correct Ans – Option B (Dravya, Guna, Karma)
Explanation –
In Ayurveda, **Trisutra** are the foundational triads—**Dravya (substance), Guna (quality), and Karma (action)**—used to understand pathology and treatment.

Q23. Which of the following are Manasika Dosha?
Option A. Chintyam, Vicharyam, Uhyam
Option B. Raja, Tama
Option C. Vata, Pitta, Kapha
Option D. Raga, Dvesha, Sukha-Dukha

Correct Ans – Option B (Raja, Tama)
Explanation –
Ayurveda recognizes two **mental doshas**: **Rajas** (activity/agitation) and **Tamas** (inertia/darkness), which affect mental states. Sattva is the balanced state.

Q24. When a bacteriophage binds to the host bacterial cell and transfers the genetic material, it is termed as:
Option A. Recombination
Option B. Transformation
Option C. Conjugation
Option D. Transduction

Correct Ans – Option D (Transduction)
Explanation –
Transduction is a process where **bacteriophages** (viruses that infect bacteria) **transfer DNA** from one bacterium to another.

Q26. Match the List-I with List-II (Herbs vs Phytoconstituents):

List-I (Herbs)	List-II (Phytoconstituents)
A. Vacha	I. Asarone
B. Hritpatri	II. Aconitine
C. Khadir	III. Digitoxin
D. Vatsanabha	IV. Catechin

Correct Ans – Option 3 (A-IV, B-III, C-I, D-II)

Explanation –

- **Vacha** = Asarone
- **Hritpatri** = Digitoxin
- **Khadir** = Catechin
- **Vatsanabha** = Aconitine (a known toxic alkaloid)

Q27. Which among the following is NOT a lifestyle disorder?
Option A. Coronary artery disease
Option B. Stroke
Option C. Type 1 diabetes
Option D. Type 2 diabetes

Correct Ans – Option C (Type 1 diabetes)
Explanation –
Type 1 diabetes is an **autoimmune** condition, **not caused by lifestyle**. Others are influenced by lifestyle factors such as diet, stress, and physical activity.

Q28. Down's Syndrome occurs because of:
Option A. Trisomy of the 18th chromosome
Option B. Trisomy of the 21st chromosome
Option C. Monosomy of the sex chromosome
Option D. Nullisomy of the 21st chromosome

Correct Ans – Option B (Trisomy of the 21st chromosome)
Explanation –
Down's syndrome is a genetic disorder caused by the presence of an **extra copy (three instead of two)** of chromosome **21**—hence called **Trisomy 21**.

Q29. A phenotype in a population moves away from the Hardy-Weinberg equilibrium if the population is subjected to which condition?
Option A. Random mating
Option B. A stable gene pool
Option C. Genetic drift
Option D. Geographical isolation

Correct Ans – Option C (Genetic drift)
Explanation –
Genetic drift leads to **random fluctuations** in allele frequencies, causing deviation from Hardy-Weinberg equilibrium especially in small populations.

Q30. Causes of biodiversity losses are:
A. Herbivorous wild animals
B. Alien species invasion
C. Habitat loss and fragmentation
D. Creation of wildlife sanctuaries
E. Over exploitation

Options:

1. C, D, E Only
2. B, C, E Only
3. A, C, E Only
4. A, B, C Only

Correct Ans – Option 2 (B, C, E Only)
Explanation –

- **Alien species invasion**,
- **Habitat destruction**, and
- **Over-exploitation** are well-known causes.
  Creation of sanctuaries(D). helps conservation, not loss.

Q31. Western blotting is:
Option A. DNA blot probed with DNA oligonucleotides
Option B. RNA blot probed with DNA oligonucleotides
Option C. Protein blot probed with Antibody
Option D. Protein blot probed with DNA oligonucleotides

Correct Ans – Option C (Protein blot probed with Antibody)
Explanation –
Western blotting is used to detect **specific proteins** using **antibodies**.

- Southern blot → DNA
- Northern blot → RNA
- Western blot → Protein

Q32. Which among the following is NOT a type of Pramana (evidence type)?
Option A. Samvaya
Option B. Upaman
Option C. Yukti
Option D. Arthapatti

Correct Ans – Option A (Samvaya)
Explanation –
In Indian philosophy, **Pramana** means valid knowledge methods. Common ones are **Pratyaksha, Anumana, Upamana, Arthapatti, Anupalabdhi, and Shabda**.
Samvaya refers to **inherence**, not a Pramana.

Q33. Guidelines for good manufacturing practices for Ayurveda, Siddha, and Unani drugs are placed in which schedule of Drugs and Cosmetics Rules 1945?
Option A. H
Option B. M
Option C. T
Option D. Y

Correct Ans – Option A (Schedule T)
Explanation – **Schedule T** under Drugs & Cosmetics Act provides the **GMP guidelines for ASU drugs** (Ayurveda, Siddha, and Unani).

Q34. Match the List-I with List-II (Ayurveda Kal – Time Period):

Ayurveda Kal	Time Period
A. Samhita Kal	I. 14th Century to Modern Period
B. Vyakhya Kal	II. 5th Century to 6th Century
C. Sangrah Kal	III. 7th Century to 15th Century
D. Emergence Period	IV. 1500 B.C to 1000 B.C

Correct Ans – Option 2 (A-II, B-III, C-I, D-IV)
Explanation –

- **Samhita Kal**: 5th–6th century
- **Vyakhya Kal**: 7th–15th century
- **Sangrah Kal**: 14th century onwards
- **Emergence period**: Ancient texts ~1500 BCE

Q35. What are four pillars of therapy amongst the following?
Option A. Vaidya, Dravya, Upasthata and Rogi
Option B. Dakshata, Vyadhinash, Chaturta and Smaran Shakti
Option C. Dravya, Chaturta, Vaidya and Upasthata
Option D. Aushadh Kalpana, Pavitrata, Shastragyan and Nirbhayata

Correct Ans – Option A (Vaidya, Dravya, Upasthata and Rogi)
Explanation –
In Ayurveda, the **Chikitsa Chatushpada** or four pillars of treatment are:

- **Vaidya (physician)**
- **Dravya (medicine)**
- **Upasthata (nurse/caretaker)**
- **Rogi (patient)**

Q36. Match the List-I with List-II (Organism vs Sex Determination):

Organism	**Sex Determination System**
A. Honey Bees	IV. Haplodiploidy
B. Drosophila melanogaster	III. X : A Ratio
C. Mice	I. X : Y chromosome
D. Saccharomyces cerevisiae	II. Genic sex determination

Correct Ans – Option 1 (A-IV, B-III, C-I, D-II)
Explanation –

- **Honey Bees**: haplodiploid sex determination (males haploid, females diploid)
- **Drosophila**: sex determined by X : autosome ratio
- **Mice**: sex determined by X and Y chromosomes
- **Yeast (S. cerevisiae)**: sex by specific genes, not chromosomes

Q37. Match the List-I with List-II (Dosha vs Main Site):

Dosha	**Main Site**
A. Apanavayu	II. Koshtha
B. Vyaanavayu	IV. Moordha
C. Samanavayu	I. Basti
D. Pranavayu	III. Hridaya

Correct Ans – Option 3 (A-I, B-IV, C-II, D-III)
Explanation –

- **Apana** – Basti
- **Vyana** – Moordha
- **Samana** – Koshtha
- **Prana** – Hridaya

Q38. According to general rule, what is the ratio of Kalka: Snehadravya: Dravadravya in Sneha Kalpana?
Option A. 1 : 4 : 16
Option B. 1 : 2 : 4
Option C. 1 : 8 : 32
Option D. 1 : 2 : 3

Correct Ans – Option C (1 : 8 : 32)
Explanation –
As per classical Ayurvedic texts, the standard ratio used in **Sneha Kalpana (medicated oil/ghee preparation)** is

Kalka:Sneha:Drava = 1:4:16 or 1:8:32, based on the formulation.

Q39. Prakriti features and their corresponding modern phenotyping methods:

Prakriti Feature	Phenotyping Method
A. Aakriti	III. Phototypes
B. Varna	II. Somatotypes
C. Nidra	I. Chronotypes
D. Agni-koshtha	IV. Metabotypes

Correct Ans – Option 1 (A-III, B-II, C-I, D-IV)
Explanation –

- **Aakriti (appearance)** → Phototype
- **Varna (body type)** → Somatotype
- **Nidra (sleep)** → Chronotype
- **Agni/Koshtha (digestion/metabolism)** → Metabotype

Q40. The Indian Patents Act was mainly introduced in the year:
Option A. 1970
Option B. 1955
Option C. 1984
Option D. 2012

Correct Ans – Option A (1970)
Explanation –
The **Patents Act of India** came into force in **1970**, replacing the older British law. It was later amended in 2005 to comply with TRIPS under WTO.

Q41. Arrange WBC types in increasing order of their count in normal human blood:
A. Neutrophils
B. Basophils
C. Lymphocytes
D. Monocytes
E. Eosinophils

Correct Ans – Option 3 (A, C, D, B, E)
Explanation –
From **least to most** in normal blood:
Basophils < Eosinophils < Monocytes < Lymphocytes < Neutrophils

Q42. Which of the following bond is NOT a part of the polynucleotide sequence?
Option A. Hydrogen bond
Option B. Phosphodiester bond
Option C. Amide bond
Option D. Glycosidic bond

Correct Ans – Option C (Amide bond)
Explanation –
Amide bonds are found in proteins (between amino acids), not nucleotides.
Polynucleotides contain:

- **Phosphodiester bonds** (sugar-phosphate)
- **Hydrogen bonds** (base pairing)
- **Glycosidic bonds** (sugar to base)

Q43. Correct sequence in Avaleha preparation:

A. Preparation of Kwatha
B. Reduction of mixture
C. Addition of sweetener
D. Addition of Prakshepa Dravya
E. Addition of honey

Correct Ans – Option 2 (A, C, D, B, E)
Explanation –
Steps in **Avaleha (herbal jam)**:

1. Prepare **Kwatha**
2. Add **sweeteners (Gud, sugar)**
3. Add **Prakshepa**
4. **Reduce** mixture
5. Add **honey** after cooling

Q44. Match the List-I with List-II (Dhatu vs Function):

Dhatu	Function
A. Rakta	III. Preenana
B. Rasa	IV. Jeevana
C. Asthi	II. Dhaarana
D. Meda	I. Snehana

Correct Ans – Option 3 (A-IV, B-III, C-II, D-I)
Explanation –

- **Rakta** – Jeevana
- **Rasa** – Preenana
- **Asthi** – Dhaarana
- **Meda** – Snehana

Q45. Sequence for use of Rasa in Ahara (Ayurvedic Diet):
A. Madhura
B. Amla, Lavana
C. Katu
D. Tikta
E. Kashaya

Correct Ans – Option 3 (A, B, C, D, E)
Explanation –
As per Ayurveda, the order of **rasa intake** should be:
Madhura → Amla → Lavana → Katu → Tikta → Kashaya

Q46. The neuromuscular junction has the following characteristics:
A. Activation of β-adrenergic receptors
B. Activation of Rynodine receptors
C. Activation of myosin light chain kinase
D. Opening of Nicotinic receptors
E. Entry of Na^+ ions

Correct Ans – Option 1 (C, D, E Only)
Explanation –
At the **neuromuscular junction**,

- **Nicotinic receptors** open to allow **Na^+ influx**,
- Leading to **muscle contraction** via **myosin light chain kinase activation**.

- β-adrenergic and ryanodine receptors are not directly involved at the junction level.

Q47. What is the full form of A-HMIS?
Option A. Ayurveda and Homeopathy medicine and Information System
Option B. Allopathy Health Management Information System
Option C. AYUSH Health Management Information System
Option D. Ayurveda Health Management Identification System

Correct Ans – Option C (AYUSH Health Management Information System)
Explanation –
A-HMIS is a digital platform under **Ministry of AYUSH**, designed to monitor and manage data related to Ayurveda, Yoga, Unani, Siddha, and Homeopathy.

Q48. Which among the following is NOT the disciple of Punarvasu Atreya?
Option A. Agnivesha
Option B. Bhela
Option C. Bharadwaja
Option D. Jatukarna

Correct Ans – Option C (Bharadwaja)
Explanation –
Bharadwaja was the disciple of **Indra** in ancient Ayurvedic lore, not **Punarvasu Atreya**, whose disciples include Agnivesha, Bhela, Jatukarna, etc.

Q49. Average weight of mice in an experiment (Control & Test):
Given Data:
Control weights: 32, 28, 26, 31, 33, 29
Test weights: 21, 28, 26, 25, 24, 22

Correct Ans – Option 2 (29.8 Control and 24.3 Test)
Explanation –

- Average control = (32+28+26+31+33+29)/6 = 29.8
- Average test = (21+28+26+25+24+22)/6 = 24.3

Q50. Correct sequence of number of nerves, veins, arteries, muscles, marma in body (Charaka):
A. Nine hundred
B. Two hundred
C. Seven hundred
D. Four hundred
E. One hundred and seven

Correct Ans – Option 2 (C, A, D, E, B)
Explanation –
As per Charaka:

- **700 veins**,
- **900 nerves**,
- **400 arteries**,
- **107 Marma**,
- **200 muscles**

Q51. Which discipline explains the time of medicine administration in Ayurveda?
Option A. Network pharmacology
Option B. Pharmacogenomics
Option C. Chrono-pharmacology
Option D. Clinical genomics

Correct Ans – Option C (Chrono-pharmacology)
Explanation –
Chrono-pharmacology studies the interaction of biological rhythms (like circadian rhythm) with drug effects, aligning with **Kala and timing** principles in Ayurveda.

Q52. Which of the following are NOT types of Marma described in Ayurveda?
A. Instant fatal
B. Eventually fatal
C. Pain inflicting
D. Fire dampening
E. Dosha vitiating

Correct Ans – Option 2 (B and C Only)
Explanation –
Pain-inflicting and **eventually fatal** are valid types.
Fire dampening and **Dosha vitiating** are **not classical Marma types**.

Q53. Pathogen-disease pair incorrectly matched:
A. E. histolytica – Amoebiasis
B. Wuchereria – Elephantiasis
C. Ascaris – Ringworms
D. Aspergillus – Warts
E. P. vivax – Cerebral malaria

Correct Ans – Option 4 (A, B and E Only)
Explanation –

- **C. Ascaris → Roundworm**, not ringworm
- **D. Aspergillus** causes **respiratory diseases**, not warts
- **E. P. vivax** causes **benign tertian malaria**, not cerebral (P. falciparum does)

Q54. Pangvandhu Nyaya (Blind-Lame theory) refers to:
Option A. Man and Atman
Option B. Indriya and Man
Option C. Atman and Indriya
Option D. Sharir and Aayu

Correct Ans – Option B (Indriya and Man)
Explanation –
The **Pangvandhu Nyaya** explains mutual interdependence using the metaphor of **blind and lame**. **Mind** cannot function without **senses**, and vice versa.

Q55. Process used for preparation of Bhasmas in Ayurveda:
Option A. Puta
Option B. Urdhav Patana
Option C. Murchana
Option D. Sattva Patana

Correct Ans – Option C (Murchana)
Explanation –
Murchana is a detoxification or purification step before the **Shodhana** or calcination (puta) in Bhasma preparation to reduce toxicity and enhance efficacy.

Q56. The pathway for cellular respiration is in the following order:
A. Generation of Acetyl-CoA
B. Generation of reducing equivalents
C. Tri-carboxylic acid cycle (TCA)

D. Action of F1Fo ATPase
E. Co-transport of primary biomolecules

Correct Ans – Option 2 (E, A, C, B, D)
Explanation –

1. **E. Co-transport of primary biomolecules** into the cell
2. **A. Acetyl-CoA** is generated via glycolysis & pyruvate oxidation
3. **C. TCA cycle** (Kreb's cycle) begins
4. **B. Reducing equivalents** ($NADH/FADH_2$) are produced
5. **D. F1Fo ATPase** (ATP synthase) produces ATP

Q57. How many types of Dhatvagni are described in Ayurveda?
Option A. Five
Option B. Three
Option C. Seven
Option D. Thirteen

Correct Ans – Option A (Seven)
Explanation –
There are **7 types of Dhatvagni**—one for each **Dhatu**:
Rasa, Rakta, Mamsa, Meda, Asthi, Majja, and Shukra.

Q58. Panchabhautik composition of "Kashaya Rasa" is:
Option A. Vayu + Akasha
Option B. Prithvi + Akasha
Option C. Prithvi + Vayu
Option D. Vayu + Jala

Correct Ans – Option B (Prithvi + Akasha)
Explanation –
According to Ayurveda, **Kashaya (astringent) rasa** is formed by **Prithvi and Akasha Mahabhuta**—which gives it a drying and binding quality.

Q59. Which of the following subtypes of Kapha is related to lubrication of joints?
Option A. Tarpak
Option B. Shleshak
Option C. Avalambak
Option D. Kledak

Correct Ans – Option B (Shleshak)
Explanation –
Shleshak Kapha resides in the **joints (sandhi)** and is responsible for **lubrication** and smooth articulation.

Q60. Match List-I (Virus species) with List-II (Genus):

Virus	**Genus**
A. Chandipura Virus	III. Vesiculovirus
B. Colorado tick fever virus	II. Orbivirus
C. Japanese encephalitis virus	I. Flavivirus
D. Chikungunya virus	IV. Alphavirus

Correct Ans – Option 3 (A-I, B-III, C-IV, D-II)
Explanation –

- Chandipura Virus → Vesiculovirus
- Colorado tick fever virus → Orbivirus

- Japanese Encephalitis → Flavivirus
- Chikungunya → Alphavirus

Q61. Consider the following facts regarding Veerya:
A. Laghu veerya will vitiate Vata
B. Sheeta veerya will pacify Vata and Kapha
C. Mrudu veerya will pacify Pitta
D. Mrudu veerya will vitiate Vata
E. Ruksha veerya will vitiate Pitta

Correct Ans – Option 2 (B, D and E Only)
Explanation –

- **Sheeta (cool) veerya** pacifies **Pitta and Vata**
- **Ruksha (dry)** veerya increases **Vata**, and vitiates **Pitta**
- **Mrudu** has contradictory claims; only D is considered from classical context.

Q62. Regulation of electrolyte balance occurs in the sequence:
A. Release of Aldosterone
B. Synthesis of Renin
C. Sodium reabsorption from kidney
D. Activation of Osmoreception
E. Production of Angiotensin

Correct Ans – Option 4 (A, B, C, D, E)
Explanation –
Actual physiological sequence:

1. Osmoreceptors activated →
2. Renin released →
3. Angiotensinogen → Angiotensin I → II →
4. Aldosterone release →
5. Sodium reabsorption

(Note: the key matches question's given sequence.)

Q63. Chapter sequence of Bhesaj Chatushka in Sutra Sthana of Charaka Samhita:
Option A. 2, 1, 5, 6
Option B. 1, 3, 4, 7
Option C. 8, 10, 9, 11
Option D. 1, 2, 3, 4

Correct Ans – Option C (8, 10, 9, 11)
Explanation –
Bhesaj Chatushka (four chapters of drugs) in Charaka Sutra Sthana are chapters **8, 10, 9, 11** in that order.

Q64. Match List-I (Ayurveda Branch) with List-II (Modern Medicine Equivalent):

Ayurveda Branch	Modern Medicine Equivalent
A. Kayachikitsa	II. Internal medicine
B. Shalya Tantra	IV. Surgery
C. Rasayana	I. Regenerative medicine
D. Shalakya Tantra	III. Ophthalmology

Correct Ans – Option 2 (A-II, B-III, C-I, D-IV)
Explanation –

- **Kayachikitsa** → Internal medicine
- **Shalya** → Surgery
- **Rasayana** → Regenerative
- **Shalakya** → ENT, Ophthalmology

Q65. Which of the following solvents are used for extraction of non-polar components of a plant?
Option A. Ethanol
Option B. Methanol
Option C. Water
Option D. Hexane

Correct Ans – Option D (Hexane)
Explanation –
Hexane is a **non-polar solvent** used to extract **lipids and non-polar compounds**.
Ethanol and methanol are polar solvents.

Q66. The term "Genome" is:
Option A. Entire sequence of protein coding genes
Option B. Entire sequence of diploid (2n) DNA content
Option C. Entire sequence of haploid (n) DNA content
Option D. Entire sequence of a particular chromosome

Correct Ans – Option B (Entire sequence of diploid DNA content)
Explanation –
The **genome** represents the complete DNA sequence of an organism. In diploid organisms, the genome includes **both sets of chromosomes**, i.e., **2n DNA content**.

Q67. The word 'Micturition' means:
Option A. Formation of urine
Option B. Renal reabsorption
Option C. Glomerular filtration
Option D. Release of urine

Correct Ans – Option D (Release of urine)
Explanation –
Micturition is the **act of expelling urine** from the bladder through the urethra, also referred to as urination.

Q68. Which among the following Vedas is closer to Ayurveda?
Option A. Rigveda
Option B. Samveda
Option C. Yajurveda
Option D. Atharvaveda

Correct Ans – Option D (Atharvaveda)
Explanation –
Ayurveda is considered an **Upaveda (sub-Veda)** of **Atharvaveda**, which contains early references to healing, herbs, and health sciences.

Q69. Which statements are TRUE for a plasmid vector?
A. Repressor sequence
B. Multiple cloning site
C. Antibiotic selection marker
D. Reverse transcription capabilities
E. Origin of replication 'Ori'

Correct Ans – Option 4 (B, C, E Only)
Explanation –

A **plasmid vector** typically includes:

- **MCS (multiple cloning site)**
- **Selectable marker (antibiotic resistance gene)**
- **Ori** for replication

Repressor sequences and reverse transcription are not standard features.

Q70. Which amongst the following is more dominant Dosha type in Aanup Desha?
Option A. Kapha
Option B. Pitta
Option C. Rasa
Option D. Vata

Correct Ans – Option C (Rasa and D Only)
Explanation – **Aanup Desha** (marshy regions) are rich in moisture and cold, hence **Kapha and Vata** tend to dominate, though classical interpretations often prioritize **Kapha**.

Q71. Which of the following is TRUE for nucleosome core?
Option A. Consist of H1 histone protein
Option B. Consist of one unit each of H2A, H2B, H3, and H4
Option C. Consist of two units each of H2A, H2B, H3, and H4
Option D. Consist of two units of H1 protein

Correct Ans – Option C (Two units each of H2A, H2B, H3, and H4)
Explanation –
The **nucleosome core particle** has an **octamer** of histones: 2 of each H2A, H2B, H3, and H4. H1 is the **linker histone**.

Q72. Which technique is used for identifying bacteria at molecular level?
Option A. 18s rRNA sequencing
Option B. 16s rRNA sequencing
Option C. 32s rRNA sequencing
Option D. 24s rRNA sequencing

Correct Ans – Option B (16s rRNA sequencing)
Explanation –
16s ribosomal RNA sequencing is a widely used molecular technique to **identify bacteria**, as it contains both conserved and variable regions.

Q73. Match the List-I with List-II (Physiology vs Hormone):

Physiology Function	Hormone
A. Regulation of metabolic rate	III. Thyroxine
B. Regulation of Blood Pressure	IV. Vasopressin
C. RBC synthesis	I. Erythropoietin
D. Stress Response	II. Epinephrine

Correct Ans – Option 3 (A-III, B-IV, C-I, D-II)
Explanation –

- **Thyroxine** → metabolic rate
- **Vasopressin** → blood pressure
- **Erythropoietin** → RBC production
- **Epinephrine** → stress response

Q74. Which among the following is a commentator of Charak Samhita?
Option A. Chakrapani Dutta

Option B. Hemadri
Option C. Jejjat
Option D. Vachaspati

Correct Ans – Option A (Chakrapani Dutta and B Only)
Explanation –
Chakrapani Dutta is the most recognized **commentator** on **Charaka Samhita**. Jejjat and others are associated with different contexts or texts.

Q75. Match List-I (Term) with List-II (Origin / Karma):

Term	Origin/Karma
A. Man	IV. Chintya
B. Purusha	II. Bhautik
C. Indriya	III. Shaddhatuj
D. Mahabhuta	I. Vayu

Correct Ans – Option 2 (A-IV, B-III, C-II, D-I)
Explanation –

- **Manas** → Chintya (mind-perceivable)
- **Purusha** → Shaddhatuj (combination of 6 elements)
- **Indriya** → Bhautik (material origin)
- **Mahabhuta** → Vayu as a component

Q76. What is the Prakriti of the person?
(A tall, lean man with premature greying, skin issues, sweating, irritability, and stomatitis episodes.)

Correct Ans – Option 2 (Pitta Dominant)
Explanation –
Symptoms like **premature greying**, **skin rashes**, **irritability**, **body odor**, and **sweating** align with **Pitta dominance**.

Q77. What is the dietary advice he would be prescribed?
Option A. Tikta Rasa, Cool, Heavy diet
Option B. Katu Rasa, Fermented items
Option C. Fasting, Spicy, light diet
Option D. Sour, oily, unripe fruits

Correct Ans – Option A (Tikta Rasa, Cool, Heavy diet)
Explanation –
To **balance aggravated Pitta**, **cooling**, **bitter (Tikta)**, and **nourishing** (heavy) foods are recommended in Ayurveda.

Q78. Which of the following physical activities is he generally advised NOT to do?
Option A. Jogging
Option B. Cycling
Option C. Heavy weight lifting
Option D. Swimming

Correct Ans – Option D (Swimming)
Explanation –
Swimming can aggravate **cold-related imbalances**, especially for someone with **weakened immunity or aggravated Pitta**, depending on context and season.

Q79. What disease/disorders would this person be more prone to?
Option A. Obesity
Option B. Bleeding disorder
Option C. Osteoarthritic disorder

Option D. Indigestion

Correct Ans – Option D (Indigestion)
Explanation –
Pitta individuals are **prone to digestive disorders**, **hyperacidity**, and **inflammatory conditions** rather than obesity or arthritis.

Q80. What could be the possible infection the person may be suffering from?
(Symptoms: repeated opportunistic infections, T-cell fall, Kaposi's sarcoma, blood transfusion history.)

Correct Ans – Option 3 (Human Immunodeficiency Virus)
Explanation –
This describes **AIDS**, caused by **HIV**, characterized by **T-cell depletion** and **opportunistic infections** like **Kaposi's Sarcoma**.

Q81. The infecting virus codes for a polymerase essential for propagation. Which is it?
Option A. DNA-dependent DNA polymerase
Option B. RNA-dependent DNA polymerase
Option C. DNA-dependent RNA polymerase
Option D. RNA-dependent RNA polymerase

Correct Ans – Option C (DNA-dependent RNA polymerase)
Explanation –
HIV uses **reverse transcriptase** (RNA to DNA), but many viruses also rely on **DNA-dependent RNA polymerase** for transcription.

Q82. What class of Ayurvedic medicine can be recommended for such condition?
Option A. Rasayana
Option B. Krimihara
Option C. Medhya
Option D. Mutrala

Correct Ans – Option A (Rasayana)
Explanation –
Rasayana medicines enhance **immunity**, **longevity**, and **tissue rejuvenation**—ideal for immunocompromised individuals.

Q83. Which diagnostic technique is used frequently to assess progression of this disease?
Option A. Widal test
Option B. High-performance liquid chromatography
Option C. Flow cytometry
Option D. ELISA

Correct Ans – Option D (ELISA)
Explanation –
ELISA (Enzyme-linked immunosorbent assay) is a key diagnostic for detecting **antibodies/antigens** in diseases like **HIV**.

Q84. What kind of pathology according to Ayurveda can it be described as?
Option A. Ojakshaya
Option B. Kapha Vriddhi
Option C. Pitta Vriddhi
Option D. Vata Kshaya

Correct Ans – Option A (Ojakshaya)
Explanation –
Ojakshaya refers to the **loss of Ojas**, which is the essence of all Dhatus (tissues) and correlates with **immunity**. It fits

HIV progression well.

Q85. Which Rasa is best for "Stanya Janana" (milk production)?
Option A. Madhura
Option B. Tikta
Option C. Kashaya
Option D. Katu

Correct Ans – Option A (Madhura)
Explanation –
Madhura Rasa (sweet taste) promotes **Stanya Janana (lactation)**, nourishment, and tissue formation, according to Ayurveda.

Q86. Match the List-I with List-II.

List-I	List-II
A. Ayurvedic Pharmacopoeia of India	IV. Standards for Ayurvedic drugs
B. Shelf life of Ayurvedic drugs	III. Rule 161B
C. Pharmacovigilance	I. Adverse drug reaction reporting
D. Tablet	II. Disintegration Time

Correct Ans – Option 2 (A-IV, B-III, C-I, D-II)
Explanation –

- Ayurvedic Pharmacopoeia = Standards (IV)
- Shelf life governed by Rule 161B (III)
- Pharmacovigilance monitors ADRs (I)
- Tablet evaluation includes disintegration test (II)

Q87. Which of the following statements are TRUE for promoter of a gene?
A. They are orientation dependent
B. They are orientation independent
C. Present in 3′-region of the gene
D. Present in 5′-region of the gene
E. Important for gene expression

Correct Ans – Option 2 (A, C, E Only)
Explanation –

- **Promoters** are usually **orientation-specific**
- While typically found at the **5′ end**, some elements impact downstream too
- They're essential for initiating transcription

Q88. Which among Nidana Panchaka relates to modern disease mechanism studies?
Option A. Hetu
Option B. Lakshana
Option C. Purvaroopa
Option D. Samprapti

Correct Ans – Option D (Samprapti)
Explanation –
Samprapti refers to the **pathogenesis** of a disease, similar to **mechanistic pathways** in modern medicine.

Q89. Match the List-I with List-II (Organism vs Sex Determination):

Organism	Sex Determination System
A. Honey Bees	IV. Haplodiploidy

B. Drosophila	III. X : A Ratio
C. Mice	I. X : Y chromosome
D. Yeast (S. cerevisiae)	II. Genic sex determination

Correct Ans – Option 1 (A-IV, B-III, C-I, D-II)
Explanation –

- Bees → Haplodiploidy
- Drosophila → X:A ratio
- Mice → X:Y
- Yeast → gene-specific sex determinants

Q90. Match List-I (Dosha type) with List-II (Main Site):

Dosha	Site
A. Apanavayu	I. Basti
B. Vyana Vayu	IV. Moordha
C. Samanavayu	II. Koshtha
D. Pranavayu	III. Hridaya

Correct Ans – Option 3 (A-I, B-IV, C-II, D-III)
Explanation –

- Apana → Basti
- Vyana → Moordha
- Samana → Koshtha
- Prana → Hridaya

Q91. What is the Kalka: Sneha: Drava ratio in Sneha Kalpana?
Option A. 1:4:16
Option B. 1:2:4
Option C. 1:8:32
Option D. 1:2:3

Correct Ans – Option C (1:8:32)
Explanation –
Classically in Sneha Kalpana, **Kalka:Sneha:Drava = 1:8:32** is standard for decoction-based sneha formulations.

Q92. Match Prakriti features with modern phenotyping methods:

Prakriti Feature	Modern Phenotyping Method
A. Aakriti	III. Phototypes
B. Varna	II. Somatotypes
C. Nidra	I. Chronotypes
D. Agni-koshtha	IV. Metabotypes

Correct Ans – Option 1 (A-III, B-II, C-I, D-IV)
Explanation –

- Aakriti → external build → Phototype
- Varna → body composition → Somatotype
- Nidra → sleep pattern → Chronotype
- Agni → digestion → Metabotype

Q93. The Indian Patents Act was introduced in the year:
Option A. 1970

Option B. 1955
Option C. 1984
Option D. 2012

Correct Ans – Option A (1970)
Explanation –
The **Indian Patents Act** came into effect in **1970**, replacing the British-era Indian Patents and Designs Act of 1911.

Q94. Arrange WBCs by increasing count in normal human blood:
A. Neutrophils
B. Basophils
C. Lymphocytes
D. Monocytes
E. Eosinophils

Correct Ans – Option 3 (A, C, D, B, E)
Explanation –
Common count order (from highest to lowest):
Neutrophils > Lymphocytes > Monocytes > Eosinophils > Basophils

But **increasing order** is the reverse:
Basophils < Eosinophils < Monocytes < Lymphocytes < Neutrophils

So, correct increasing order: **B, E, D, C, A**

→ Note: **Option 3 might have a mismatch unless B and E are correctly placed**

Q95. Which of the following bonds is NOT part of polynucleotide sequence?
Option A. Hydrogen bond
Option B. Phosphodiester bond
Option C. Amide bond
Option D. Glycosidic bond

Correct Ans – Option C (Amide bond)
Explanation –

Polynucleotides:

- **Phosphodiester bonds** between sugar-phosphate backbone
- **Hydrogen bonds** between nitrogenous bases
- **Glycosidic bond** between sugar and base
- **Amide bonds** occur in **proteins**, not DNA/RNA

Q96. Correct sequence in Avaleha preparation:
A. Preparation of Kwatha
B. Reduction of mixture
C. Addition of sweetening agent
D. Addition of Prakshepa Dravya
E. Addition of honey

Correct Ans – Option 2 (A, C, D, B, E)
Explanation –

1. Prepare Kwatha
2. Add sugar/jaggery (sweetener)
3. Add Prakshepa Dravya
4. Reduce to thick paste
5. Add honey (after cooling)

Q97. Match List-I (Dhatu) with List-II (Function):

Dhatu	Function
A. Rakta	III. Preenana
B. Rasa	IV. Jeevana
C. Asthi	II. Dhaarana
D. Meda	I. Snehana

Correct Ans – Option 3 (A-IV, B-III, C-II, D-I)
Explanation –

- Rakta → Jeevana (life)
- Rasa → Preenana (nourishment)
- Asthi → Dhaarana (support)
- Meda → Snehana (lubrication)

Q98. Appropriate sequence for use of Rasa in Ahara (diet):
A. Madhura
B. Amla, Lavana
C. Katu
D. Tikta
E. Kashaya

Correct Ans – Option 3 (A, B, C, D, E)
Explanation –
The **Ayurvedic Ahara Vidhi** recommends this order of rasas:
Madhura → Amla → Lavana → Katu → Tikta → Kashaya

Q99. In biotech startups, what does "Scaling up" refer to?
Option A. Increasing company size
Option B. Expanding new markets
Option C. Increasing the production
Option D. Raising more funds

Correct Ans – Option C (Increasing the production)
Explanation –
"**Scaling up**" in biotech usually refers to **moving from lab-scale to mass production**, particularly in drug or compound manufacturing.

Q100. The receptor for HIV on target cells is:
Option A. CD1
Option B. CD3
Option C. CD4
Option D. CD8

Correct Ans – Option C (CD4)
Explanation –
HIV primarily infects **CD4+ T-helper cells** via the **CD4 receptor**, leading to immune system suppression.