18CS505

Hall Ticket Number:

III/IV B.Tech (Regular) DEGREE EXAMINATION

February, 2021 — **Computer Science and Engineering**

Fifth Semester — **Indian Traditional Knowledge**

Time: Three Hours — **Maximum:** 50 Marks

Answer Question No.1 compulsorily. (1X10 = 10 Marks)

Answer any one questions from each unit. (4X10=40 Marks)

1. Answer all questions (1X10=10 Marks)
   a) Write short note on Un-fair trade during colonial period.
   b) What is the role of Ayurveda?
   c) Write short note on Laws of motion.
   d) What is the role of Vatsayana and Refraction?
   e) Write a short note on Aryabhatta.
   f) What is the role of Dharma and Artha?
   g) Define Astrology.
   h) Define Janmakundali.
   i) Write a short note on Yoga and its benefits.
   j) What is meant by Yama and Niyamas?

UNIT I

2. a) How the origin of Ayurveda plays a vital role? 5M
   b) Explain manifestation of creation with regard to gunas like satva,rajas,tamasic. 5M

(OR)

3. a) Explain about Imperialist Bias during Pre-colonial and Colonial Period. 5M
   b) Describe Vata,Pitta and Kapha qualities. 5M

UNIT II

4. a) Explain about social needs and technological application growth in construction technology. 5M
   b) Discuss Particle Physics. 5M

(OR)

5. a) Discuss about the Impetus of metallurgy? 5M
   b) Illustrate about Optics and Sound in ITK? 5M

UNIT III

6. a) Explain Vedic Astronomy. 5M
   b) Elaborate the intensified interest in Vedic astrology in recent times in west. 5M

(OR)

7. a) Explain Vedic Astrology. 5M
   b) Examine the Heliocentric Theory of Gravitation. 5M

UNIT IV

8. a) Explain the general guidelines for Yoga Practice. 5M
   b) What are the different types of Yogasanas? Briefly explain. 5M

(OR)

9. a) Describe about traditional schools of yoga and its classifications. 5M
   b) Briefly analyze about pranayama. 5M

BAPATLA ENGINEERING COLLEGE, BAPATLA

(AUTONOMOUS)

III/IV B.Tech (Regular\Supplementary) DEGREE EXAMINATION

February, 2021 **Computer Science and Engineering**

Fifth Semester **Indian Traditional Knowledge18CS505**

SCHEME OF EVALUATION

a. Write short note on Un-fair trade during colonial period. 1M

In the early 1800s imports of Indian cotton and silk goods faced duties of 70-80%. British imports faced duties of 2-4 per cent. As a result, British imports of cotton manufactures into India increased by a factor of 50, and Indian exports dropped to one-fourth. A similiar trend was noted in silk goods, woollens, iron, pottery, glassware and paper. As a result, millions of ruined artisans and craftsmen, spinners, weavers, potters, smelters and smiths were rendered jobless and had to become landless agricultural workers.

b. What are the different branches of Ayurveda? 1M

The Branches of Ayurveda

Kayachikitsa: Internal medicine

Bala: Paediatrics

Graha: Treatment of diseases arising from possession by pathogens, evil spirits, etc. Mainly diseases of a mental nature.

Urdhvanga: Dealing with the eyes, ear, nose, throat and dentistry

c. Write about laws of motion in Physics and Chemistry 1M

Although the earliest attempts at classifying different types of motion were made by the **Vaisesikas**. **Prasastapada** took the study of the subject much further in the **7th century** A.D., and it appears that at least some of the concepts he enunciated must have emerged from a study of planetary motion. In addition to linear motion, **Prasastapada also described curvilinear motion (gamana), rotary motion (bhramana) and vibratory motion**.

d. What is the role of Vatsayana and Refraction 1M

Vatsyayana referred to this phenomenon as **rasmi-paravartana**, and the concept was adapted to explain the occurrence of shadows and the opacity(non transperant) of materials.**Refraction** was understood to be caused by the ability of light to penetrate inner spaces of translucent or transparent materials and **Uddyotakara** drew a comparison with fluids moving through porous objects.

e. Write short note on Aryabhatta? 1M

Aryabhatta is said to have been born in 476 A.D. at a town called Ashmaka in today's Indian state of Kerala. When he was still a young boy he had been sent to the University of Nalanda to study astronomy. He made significant contributions to the field of astronomy.He also propounded the heliocentric theory of gravitation, thus predating Copernicus by almost one thousand years.

f. What is the role of Dharma and Artha? 1M

Dharma, means our purpose/duty in life. The word Artha reflects our attitude toward the accumulation of money and resources.

g. Define Astrology? 1M

The astrology of ancient India is known by the name Jyotisha, which in Sanskrit means "the science of light". It is also known as Hindu Astrology, and as previously said, Vedic Astrology, for it comes from the ancient Vedas of India, reputed to be thousands of years old. Vedic astrology originally comes to us from the Rig Veda, the oldest of the four Vedas, the spiritual Bible of ancient India.

h. Define Janmakundali 1M

The Janmakundali was a complex mixture of science and dogma (established opinion). But the concept was born out of astronomical observations and perception based on astronomical phenomenon.

i. **Write a short note on yoga and its benefits. 1M**

Yoga is essentially a spiritual discipline based on an extremely subtle science which focuses on bringing harmony between mind and body. It is an art and science for healthy living.

j. Write about Yama and Niyamas? 1M

Yamas are restraints and Niyamas are observances.

UNIT-1

2.a How the Origin of Ayurveda plays a vital role? 5M

Origin

- The origins of this system of course are lost in time. In legend it is said to have been taught by the creator, Brahma, to the Prajapati Daksha, one of the lords of the animals, who taught it in turn to the divine twins called the Aswins.
- These Aswins are the heavenly healers. They taught Indra, the chief of the shining ones.
- The personages mentioned were deities of early Vedic times. Dhanvantari is the name of the physician of the gods.
- Ayurveda is the name, which the ancient Indians gave to the science of life.
- As such, Ayurveda means the science by the knowledge of which life can be prolonged or its nature can be understood.
- There are four sacred books of India, e.g! *Rigveda, Samveda, Yajurveda,* and A*tharvaveda*.
- These Vedas are believed to be not composed by man but they were taught by the gods to sages or they were revealed to the sages.
- Ayurveda is a sub-section or *Upanga* of A*tharvaveda*.
- Lord Divodasa Dhanvantari to Sushruta, Pauskalavata, Aurabha, Vaitarana and others revealed the origin of Ayurveda In S*usruta-Samhit*a Lord Dhanvantari is referred to as the master of Salya Tantra or major surgery.
- Lord Dhanvantari claims to have received the knowledge of Ayurveda from Indra, the King of gods.
- It is noted down in the sacred books of Ancient Indian Medicine that Brahma first expounded the Ayurveda to Prajapati. Prajapati taught it to two Aswini Kumars.
- From these twin brothers, Indra studied the subject of Ayurveda and later on from Indra, the Lord Dhanvantari obtained the knowledge In S*usruta-Samhita* the origin of medical science is described as follows:
- Dhanvantari, the King of Banares or Kasi, was sitting in his hermitage, encircled by sacred sages Susruta addressed Lord Dhanvantari and said, “We are sorry to see men afflicted by diseases.
- We wish to learn Ayurveda from you to cure diseases of these pleasure-seeking men, to protect our own bodies, and for the general good of mankind.
- Please do thou teach us this Science of Life.” Lord Dhanvantari replied, “You are qualified and fit to receive the instructions in Ayurveda.”
  Brahma composed Ayurveda in one hundred thousand *sloka*s and a thousand chapters

2.b Explain manifestation of creation with regard to gunas like satva,rajas,tamasic. 5M

- From the essence of *satva* the five senses are created: the ears to hear, skin to perceive touch, eyes to see, the tongue to taste, and the nose to smell. The essence of *rajas* is

manifested as the five motor organs: speech, hands, feet, genitals and the organs of excretion.

- The mind is derived from *satva,* while *rajas* is manifested as *prana,* the life force.
- The *tamasic* quality is also responsible for the creation of *tan matra,* the subtle elements, and from whom the five basic elements are manifested.
- They are space, air, fire, water and earth. It is from pure consciousness that space is manifested

Space

- Expansion of consciousness is space and space is all inclusive. We need space to live, and our bodily cells contain spaces.
- The synaptic, cellular and visceral spaces give freedom to the tissues to perform their normal physiological functions.
- The space in between two conjunctive nerve cells aids communication, while the space in the mind encompasses love and compassion.

Air

- The movement of consciousness determines the direction along which change of position in space takes place.
- According to the Ayurvedic perspective, this is the air principle. There is a cosmic magnetic field responsible for the movement of the earth, wind and water.
- Its representative in the body is the biological air responsible for movement of afferent and efferent, sensory and motor-neuron impulses When someone touches the skin, that tactile skin sensation is carried to the brain by the principal of movement, which is the sensory impulse.
- Then there is a reaction to the impulse, which is the motor response, which is carried from the brain to the periphery.
- This is a very important function of air. Our breathing is due to the movement of the diaphragm. Movements of the intestines and subtle cell movements are also governed by the biological principal of air.
- The air principal also governs the movement of thought, desire and will.

Fire

- Where there is movement, there is friction, which creates heat, so the third manifestation of consciousness is fire, the principal of heat.
- There are many different representations of fire in the body.
- The solar plexus is the seat of fire, and this fire principle regulates body temperature.
- Fire is also responsible for digestion, absorption and assimilation. It is present in the eyes.
- Fire is necessary for transformation, comprehension, appreciation, recognition and total understanding. In our small universe, the sun is a burning ball of consciousness and the sun gives us light and heat.
- In the body, the representative of the sun is the biological fire: the solar plexus which gives us heat, digestion, and liver function.

Water

- Because of the heat of the fire, consciousness melts into water. According to chemistry, water is H, O, but accords Ayurveda water is liquefaction of consciousness.
- Water exists in the body in many different forms, such as: plasma, cytoplasm, serum, saliva, nasal secretion, orbital secretion and cerebrospinal fluid.
- Excess water, which we eliminate in the form of urine and sweat, is water

Earth

- The next manifestation of consciousness is the earth element. Because of the heat of the fire and water, there is crystallization. According to Ayurveda, earth molecules are nothing but crystallization of consciousness.

3.a Explain about Imperialist Bias during Pre-colonial and Colonial Period 5M

Britain was not the only beneficiary of colonial rule.

British trade regulations even as they discriminated against Indian business interests created a favourable trading environment for other imperial powers.

By 1939, only 25 per cent of Indian imports came from Britain, 25 per cent came from Japan, the US and Germany. Canada and Australia contributed another 8 per cent.

In the period immediately before independence, the process of "globalization" was already taking shape. But none of this growth trickled down to India.

In the last half of 19th century, India's income fell by 50 per cent. In the 190 years prior to independence, the Indian economy was literally stagnant-it experienced zero growth.

- It is significant to note that today less than 10% of India's labor works in the 'organized sector', namely as employees of a company.
- The remaining 90% are individual freelancers, contract laborers, private entrepreneurs, and so on, many of which still practice their traditional trades.
- However, given the perpetuation(sasvatam) of colonial laws that render much of their work illegal, they are highly vulnerable to all sorts of exploitation, corruption, and abuse.
- The descendants(varasulu) of India's traditional knowledge workers, who built massive cities, technologies, and dominated world trade for centuries, are today delegitimize in their own country under a democratic government.
- Many of today's poor jatis, such as textile, masonry, and metal workers, were at one time the guilds that supplied the world with so many and varied industrial items.
- A guild is an association of artisans and merchants who oversee the practice of their craft/trade in a particular area.
- It is important to note that amongst all the conquered(swadinam) and colonized (valasa rajyam) civilizations of the Old World, India is unique in the following

- Its wealth was industrial and created by its workers' ingenuity (chaturyam) and labor. In all other instances, such as the Native Americans, the plunder(dopidi)by the colonizers was mainly of land, gold and other natural assets.
- But in India's case, the colonizers had a windfall of extraordinary profit margins from control of India's exports, taxation of India's economic production, and eventually the transfer of technology and production to the colonizer's home.
- This comprised the immense transfer of wealth out of India.
- From being the world's major exporting economy (along with China), India was reduced to an importer of goods;

3.b Describe Vata, *Pi*tta and K*apha*: The Three Do*sha*s 5M

- The structural aspect of the body is made up of five elements, but the functional aspect of the body is governed by three biological humors. Ether and air together constitute vata; fire and water, *pitta;* and water and earth, *kapha. V*ata, pitta and *kapha* are the three biological humors that are the three biological components of the organism. They govern psychobiological changes in the body and physio-pathological changes too. *Vata-pitta-kapha* are present in every cell, tissue and organ. In every person they differ in permutations and combinations The sperm is the male seed, and the ovum is the female egg. They also contain *vata-pitta-kapha* (VPK).
- Bodily *vata-pitta kapha* changes according to diet, life style and emotions.
- ***Vata* Qualities**
- V*ata, pi*t*ta* and *kapha* are distinctly present in every individual and express in each human being differently according to the predominance of the different qualities (g*unna*s).
- For example *vata* is dry, light, cold, mobile, active, clear, astringent, and it is dispersing. All of these qualities can manifest in an individual.
- For example, if a person has excess *va*ta in his or her constitution, because of the dry quality, he or she will have dry hair, dry skin, dry colon and a tendency towards constipation.
- Because of the light quality, which is opposite of heavy, the vata person will have a light body frame, light muscles, and light fat, and so will be thin and underweight, or "skinny-minny"
- ***Pitta* Qualities**
- *Pitta* is a biological combination of fire and water elements. It has hot, sharp, light, liquid, sour, oily and spreading qualities. *Pitta* has a strong smell, like a fleshy smell, and has a sour or bitter taste. If an individual has excess *pitta* in the body, these qualities will be manifested.
- ***Kapha* Qualities**
- The next *dosha is kapha.* Subjects having mo*re kapha* in their body will have heavy, slow, cool, oily, liquid, dense, thick, static and cloudy qualities.

- These are the important qualities of *kapha*, and *kapha is* sweet and salty. Because of the heavy quality, *kapha* people have heavy bones, muscles and fat.
- They will have a tendency to put on weight. A *kapha pe*rson may even do a water fast and will put on weight. *Kapha* is slow therefore a *kapha p*erson has slow metabolism and digestion.

UNIT-2

4.a Explain about social needs and technological application growth in construction technology.5M

It is quite possible that the decline in civil society extended to other areas such as agricultural planning and maintenance of irrigations systems making the civilization more vulnerable to natural disasters such as droughts, floods, fires or earthquakes- thus contributing to the eventual extinction of that vibrant civilization. This suggests that technological progress cannot be divorced from social conditions that may either encourage the progress of technology or conversely cause civilizations that may be (in relative terms) quite advanced to stagnate and even decline. For instance, 3,000 years after Harappa, we find anecdotal(stories) evidence of impressive urban settlements constructed during the Mauryan period. Greek travellers have left behind admiring descriptions of Patliputra--the Mauryan capital. But social strife (samajika kalahalu)brought a precipitous end to the grand civilization The growth of a parasitic, exploitative and socially oppressive elite led to massive social upheavals.

- In the course of the civil wars, fires and looting destroyed virtually all of the wood-based dwellings including grand palaces and public buildings.
- Thus, an entire tradition of wood-based urban construction (which may have taken several centuries to develop) was destroyed.
- But it also led to a greater emphasis on the use of more lasting construction materials.
- The very social conditions that destroyed technological progress in one direction gave birth to technological progress in another.
- Sculptural finds from the Mauryan period indicate that Mauryan sculptors of that time had achieved a high degree of proficiency in working with stone.
- They must have had tools and implements that enabled them to create smoothly modelled and highly polished representations of human and animal figures.
- Later civilizations in India employed these skills not only for the purposes of sculpting but also for creating entire monuments constructed from a variety of hard building materials.
- For instance, various methods for preparing cements were developed, and by the 7th century, cement of highly durable quality came into use in the construction of important monuments that survive to this day.

4.b Discuss Particle Physics? 5M

- In India, virtually every rational school of philosophy (whether Hindu, Buddhist or Jain) had something to say on the nature of elementary particles, and various schools of thought promoted the idea that **matter was composed of atoms that were indivisible and indestructible**.
- Later philosophers further elaborated on this notion by positing that atoms could not only combine in pairs (dyads) but also in threes (triads)—and that the juxtaposition(comparision) of dyads and triads determined the different physical properties of substances seen in nature.
- The Jains also postulated that the combinations of atoms required specific properties in the combining atoms, and also a separate "catalyst" atom.
- In this way, the earlier atomic theories became converted into a molecular theory of matter.
- While many details of these theories no longer stand the test of scientific validity, there was much in these formulations that was conceptually quite advanced and sophisticated for its time.
- The development of the Jain molecular theory appears to parallel practical developments in other fields such as medicine or metallurgy where the vital role of catalyst had been observed and carefully documented.
- Indian medical texts had postulated that proper human digestion and the successful absorption of medicinal pills and potions also required the presence of "catalytic" substances.
- The requirement of catalytic substances relating to the **manufacture of acids and alkalis** (relevant to medicinal and surgical applications) had also been documented, as had the role of suitable **catalysts in metallurgical processes**, and in the manufacture of **colorfast dyes**.
- Today, a variety of minerals, vitamins and enzymes have been identified as playing a key role (as catalysts) in a range of essential chemical processes that take place in our bodies, as do catalytic compounds in other physical processes.
- Atomic/molecular theories were also utilized in (albeit speculative) explanations of chemical changes caused by heat.
- **Prasastapada**(6^{th} century B.C Indian philosopher) proposed that the **taijasa** (heat) factor affected molecular groupings, thus causing chemical changes.

- The **Pilupakavada** theory, as proposed by the Vaisesikas(Indian school of philosophy) held that the application of heat (through fire, for instance) reduced the molecules of the earthen pot into atoms; and the continued application of heat caused the atoms to re-group creating new molecules and a different color.
- The Pitharapakavada of Nyayikas (of the Nyaya school) disagreed with the theory that molecules are breaking up into atoms.

5.a Discuss about the impetus of metallurgy? 5M

Monumental architecture required considerable advances in the technology of lifting, loading and transportation, building construction ramps, scaffolding, and related tools and implements. As in **ancient Egypt or Babylon,** appropriate techniques also had to be developed and implemented in India.

- But more importantly, stone-based construction presupposes the existence of hard metal-based tools and implements for cutting and shaping stone.
- The discovery of iron thus played an essential role in the development of monumental architecture in India, which may have in turn given a further impetus to the development of metallurgical skills.
- As early as the **4th century B.C., Kautilya's(Chanakya)** Arthashastra has a section' outlining the processes for metal extraction and alloying.
- Later Sanskrit texts talk about assessing metal purity and describe techniques for achieving metal purity.
- The **5th century Iron Pillar of Delhi** is a remarkable example of those skills. Standing over 23 feet high it consists of a single piece of iron and has weathered over 1500 monsoons without showing any signs of rust. The pillar is made of wrought iron with an iron content of 99.72 per cent and appears to have been protected from rust by the application of a thin coating of manganese dioxide.
- By the 12th century, construction engineers were using iron girders and beams on a scale unknown in any other part of the world.
- The most significant use of **iron beams was in the temples of Puri and Konarak**. The Puri temple contains 239 iron beams and one of the beams in Konarak is 35 feet long.
- All are 99.64 per cent iron and were produced in a similar manner to the Delhi iron pillar.
- During the middle ages, India acquired a reputation for producing very high quality steel and was also able to extract zinc from its ore by the 14th century.

- Various alloying techniques were in use and **Abul Fazl in Aini Akbari** mentions the coating of copper vessels with tin.
- Bidari (an alloy of copper, lead and tin developed in the Deccan) was also extensively used.

5.b Illustrate about Optics and Sound in physics and chemistry? 5M

The earliest of the Indian rationalists also attempted to provide theories on the nature of light and sound. Like the ancient Greeks, the eye was assumed to be a source of light by the early Indian philosophers, and this error wasn't corrected until the **1st century A.D. by Sushruta**.

- Sushruta posited(put forward) that it was light arriving from an external source at the retina that illuminated the world around us. (**Aryabhatta in the 5th century** reiterated this.)
- The earlier philosophers were more on the mark, with **Chakrapani suggesting that both sound and light traveled in waves**, but that light traveled at a much higher speed.
- Others like the **Mimamsakas imagined light to comprise of minute particles** (now understood to be **photons**) in constant motion and spreading through radiation and diffusion from the original source.
- **The wave character of sound was elaborated on by Prastapada** who hypothesized that sound was borne by air in increasing circles, **similar to the movement of ripples in water**. Sound was understood to have its own reflection-**pratidhvani (echo)**.
- **Musical pitches (sruti)** were seen as **caused by the magnitude and frequency of vibrations.** A **swara (tone)** was believed to consist of a sruti (fundamental tone) and some anuranana (partial tones or harmonics).
- In the **6th century Varahamihira** discussed reflection as being caused by light particles arriving on an object and then back-scattering.
- **Vatsyayana** referred to this phenomenon as **rasmi-paravartana**, and the concept was adapted to explain the occurrence of shadows and the opacity(non transperant) of materials.
- **Refraction** was understood to be caused by the ability of light to penetrate inner spaces of translucent or transparent materials and **Uddyotakara** drew a comparison with fluids moving through porous objects.

- **Ibn al-Haytham (10th Century A.D.)** has been credited with advanced theory of optics using light rays, diagrammatically explaining the concepts of reflection and refraction.

UNIT-3

6.a Explain about Vedic astronomy? 5M

In India the first references to astronomy are to be **found in the Rig Veda**, which is dated around **2000 B.C.** Vedic Aryans in fact deified(treat as God) the Sun, stars and comets. Astronomy was then interwoven with astrology.Indians have involved the planets (called Grahas) with the determination of human fortunes. In the working out of horoscopes (called Janmakundli), the position of the **Navagrahas, nine planets plus Rahu and Ketu** (mythical demons, evil forces) was considered. The **Janmakundali was** a complex mixture of **science and dogma** (established opinion). But the concept was born out of astronomical observations and perception based on astronomical phenomenon. In ancient times personalities like **Aryabhatta and Varahamihira were associated with Indian astronomy.**

6.b Explain the intensified interest in Vedic astrology in recent times in the west? 5M

A well-respected philosopher and **Western astrologer Richard Tarnas**, in **his masterpiece The Passion of the Western Mind** wrote, **has our materially prosperous culture given the Western mind any peace of mind?** Perhaps not.There is a **growing restlessness in the Western mind** that is **looking for answers beyond the scope of our material and technological breakthroughs** an achievements. The search for answers takes **many Western minds back to** the Eastern mind of the Greeks and Babylonians as well as **the rishis and sages of ancient India**.The popularity of **Deepak Chopra's books such as Quantum Healing**. This Indian born, western Doctor of Medicine is taking the **wisdom of India's past and cross-fertilizing this knowledge with today's Western wisdom and technology**. The earliest of the Vedas exclaims: "If you want **to know your swadharma (personal purpose in life) consult a jyotishi** (a Vedic astrologer)." Vedic astrology offers an ancient astrological perspective that asks these very same profound and confounding questions(Ex: **Who am I?, Why I am here?**..), questions asked by the very authors of the Vedas, the Puranas, the Brahmanas, the Upanishads, and the Bhagavad Gita, who **asked these very same questions some 5000 years ago**.

7.a Explain Vedic Astrology? 5M

The astrology of ancient India is known by the name **Jyotisha**, which in Sanskrit **means "the science of light"**.It is **also known as Hindu Astrology**, and as previously said, **Vedic Astrology**, for it comes from the ancient Vedas of India, reputed to be thousands of years old. Vedic astrology originally comes to us from the Rig Veda, the oldest of the four Vedas, the

spiritual Bible of ancient India. The **Vedas** were originally an oral tradition passed down from family to family, generation to generation. They contain the **spiritual teachings of Hinduism**.Much latter in their history the Vedas were put in a written form, and so it is with Jyotisha as well. We also find **astrological references** abound **in** the great oral Epics of India, the **Mahabharata and the Ramayana**; particularly in the most famous portion of the Mahabharata, the **Bhagavad Gita**.

7.b Explain Heliocentric Theory of Gravitation? 5M

There is an old Sanskrit sloka (couplet), which is as follows: Sarva Dishanaam, Suryaha, Suryaha, Suryaha." This couplet, which describes the night sky as full of suns, indicates that in ancient times Indian astronomers had arrived at the important discovery that the **stars visible at night are similar to the sun visible during day time**. It was recognised that the sun is also a star, though the nearest one. This understanding is demonstrated in another sloka, which says that when one sun sinks below the horizon, a thousand suns take its place. **Brahmagupta** in the 7th century had said **about gravity**, "Bodies fall towards the Earth as it is in the **nature of the Earth to attract bodies**, just as it is in the nature of water to flow." About a **hundred years before Brahmagupta**, another astronomer, **Varahamihira** had **claimed** for the first time perhaps that there should be **a force which might be keeping bodies stuck to the Earth**, and also keeping heavenly bodies in their determined places.It was also recognised that this force is a tractive force. The **Sanskrit term for gravity is Gurutvakarshan**, which is an amalgam of **Guru-tva-akarshan**. Akarshan means to be attracted.The sun was recognised by all ancient people to be the source of light and warmth. The Sun (**Surya**) was one of the chief deities in the Vedas. He was recognised as the **source of light (Dinkara), source of warmth (Bhaskara).**

UNIT-4

8.a Explain general guidelines for Yoga Practice?
5M

3 practises (4M + 4M+ 2M = 10)

BEFORE THE PRACTICE:

1. Cleanliness of surroundings, body and mind
2. Calm and quiet atmosphere with a relaxed body and mind
3. Empty stomach or light stomach
4. Bladder and bowels should be empty
5. Yoga mat
6. Light and comfortable cotton clothes

DURING THE PRACTICE:

1. Start with a prayer
2. Perform slowly, in a relaxed manner, with awareness of the body and breath
3. Do not hold the breath unless it is specially mentioned to do so
4. Breathing should be always through the nostrils unless instructed otherwise
5. Do not hold the body tight or give undue jerks to the body
6. Yoga session should end with meditation/ deep silence

AFTER PRACTICE:

1. Finish yoga practice, wait for 20-30 minutes to take bath/food

FOOD FOR THOUGHT: Vegetarian diet recommended, and for a person over 30 years, two meals a day should suffice

8.b Explain the different types of Yogasanas? 5M

4 Types (4*2.5= 10M)

A. Standing Postures:

TĀḌĀSANA (Palm Tree Posture): This āsana brings stability in the body, helps to clear up congestion of the spinal nerves and corrects faulty posture.

VṚUKṢĀSANA (The Tree Posture): Helps to improve neuro-muscular coordination, balance, endurance, alertness and concentration.

PĀDA-HASTĀSANA (The Hands to Feet Posture): Makes the spine flexible, improves digestion, and helps in overcoming menstrual problems.

ARDHA CHAKRĀSANA (The Half Wheel Posture): Makes the spine flexible and strengthens the spinal nerves and muscles, helps in management of cervical spondylosis.

TRIKONĀSANA (The Triangle Posture): Makes the spine flexible, Strengthens calf, thigh and waist muscles and improves lungs capacity

B. Sitting Postures:

BHADRĀSANA (The Firm/Auspicious Posture): Helps to keep the body firm and stabilizes the mind, helps during pregnancy and relieves abdominal pain often experienced during menstruation.

VAJRĀSANA (Thunderbolt Posture): This āsana is good for digestion, strengthens thigh muscles and calf muscles.

- **USṬRĀSANA (Camel Posture):** Uṣṭrāsana is extremely useful for defective eyesight. This is useful in relieving back and neck pain. It helps to reduce fat over the abdomen and hips. It is helpful in digestive problems and cardio-respiratory disorders.
- **ŚAŚAKĀSANA (The Hare Posture):** Helps to reduce stress and anxiety. Tones up reproductive organs, relieves constipation, improves digestion and helps to relieve back pain.
- **VAKRĀSANA (The Spinal Twist Posture):** Helps to increases flexibility of the spine, Stimulates pancreas functions and helps in the management of diabetes.

C. **Prone Postures:**

- **Makarāsana (The Crocodile Posture):** Promotes relaxation of the whole body. Helps in recovery of back problems. Counters stress and anxiety.
- **Bhujaṅgāsana (The Cobra Posture):** This āsana relives stress, reduces abdominal fat and relives constipation. Helps to relieve backache and bronchial problems.

- **Śalabhāsana (The Locust Posture):** Relieves in sciatica and lower backache. Helps to reduce fat in the thighs and buttocks, good in weight management. Helps to improve lungs capacity.

D. Supine Postures:

- **Setubandhāsana (The Bridge Posture):** Relieves depression, anxiety and strengthens lower back muscles. Stretches abdominal organs, improves digestion and helps to relieve constipation.
- **Uttāna Pādāsana (Raised feet posture):** It balances the navel centre (Nābhi, Maṇipuracakra). It is helpful in relieving abdominal pain, flatulence, indigestion and diarrhea. It strengthens the abdominal and pelvic floor muscles. Effective in overcoming depression and anxiety.
- **Pavana Muktāsana (The Wind Releasing Posture):** Removes constipation; gives relief from flatulence, decreases the bloating sensation in the abdomen and aids digestion. Generates deep internal pressure, improves stretching of the highly complicated network of muscles, ligaments and tendons in the pelvis and waist region. It tones up the back muscles and spinal nerves.
- **Śavāsana (The Corpse/ Dead Body Posture):** Helps to relieve all kinds of tensions and gives rest to both body and mind.
- **Kapālabhāti:** It rejuvenates the whole body, and keeps the face glowing and vibrant. It strengthens the nervous system and tones up the digestive organs. It is useful in treating cold, rhinitis, sinusitis, asthma and bronchial infections.

9.a Describe about traditional schools of yoga and its classifications? 5M

The science of Yoga has its origin thousands of years ago, long before the first religion or belief systems were born. The seers and sages carried this powerful Yogic science to different parts of the world including Asia, the Middle East, northern Africa and South America. **Agastya**, the saptarishi, who **travelled across the Indian subcontinent**, crafted this culture around a core Yogic way of life. Yoga has proven itself to cater to both **material and spiritual upliftment of humanity**. Though Yoga was being practiced in the pre-Vedic period, the great sage **Maharishi Patanjali** systematised and codified its related knowledge through Patanjali's **Yoga Sutras**. Millions of people across the globe have benefitted by the practice of Yoga.

Fundamentals:

Introduction: 1 M

4Types = 4*1= 4marks

Yoga works on the level of one's body, mind, emotion and energy. This has given rise to four broad classifications of Yoga:

1. Karma Yoga where we utilise the body;
2. Jňāna Yoga where we utilise the lighter mind;
3. hakti Yoga where we utilise the emotion and
4. Kriyā Yoga where we utilise the energy.

Describe about classification of yoga? 5M

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Describe about traditional schools of yoga? 5M

The different philosophies, traditions, lineages and **Guru-shishya** paramparas of Yoga led to the emergence of different traditional schools.
These include
Gñāna Yoga, Bhakti Yoga, Karma Yoga,
Pātañjala Yoga, Kuṇḍalini Yoga, Haṭha Yoga,
Dhyāna Yoga, Mantra Yoga, Laya Yoga,
Rāja Yoga, Jain Yoga, Bouddha Yoga etc.
Each school has its own approach and practices that lead to the ultimate aim and objectives of Yoga.

9.b Explain in detail about paranayama? 5M

Any 5 types= (5 * 2M = 10M)

Naḍīśodhana or anuloma viloma prānāyāma (Alternate Nostril Breathing): Induces tranquillity and helps to improve concentration. Increases vitality and lowers the level of stress and anxiety. It alleviates cough disorders.

Śītalī Prāṇāyāma: It has cooling effect on body and mind. It is beneficial for persons suffering from high blood pressure. It satisfies thirst and appeases hunger. It relieves indigestion and

disorders caused by phlegm (cough) and bile (pitta) It destroys the disorders of gulma (chronic dyspepsia) and spleen or other related diseases (H.P 2/58). It is beneficial for skin and eyes.

Bhrāmarī Prāṇāyāma (Bhrāmarī Rechaka): The practice of Bhrāmarī relives stress and helps in alleviating anxiety, anger and hyperactivity. The resonance effect of humming sound creates a soothing effect on the nervous system and mind. It is a great tranquiliser

- **Dhyāna:** Meditation is the most important component of Yoga practice. It helps the practitioner to eliminate negative emotions like fear, anger, depression, anxiety and to develop positive emotions. Keeps the mind calm and quiet. Increases concentration, memory, clarity of thought and willpower. Rejuvenates the whole body and mind giving them proper rest. Meditation leads to self-realisation.
- **Sankalpa:** I commit myself to remain in a balanced state of mind all the time. It is in this state that my development reaches its greatest possibility. I commit to do my duty to self, family, at work, to society, and to the world, for the promotion of peace, health and harmony.
- **Śhantih pātha:** May All become Happy, May All be Free from Illness. May All See what is Auspicious, May no one Suffer. Om Shanthi, Shanthi, Shanthi.