Questions: Lectures 5 and 6

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Exercise-1

- (*) What is a prastāra?
- (**) Explain the following 4 sūtras of Piṅgala.

dvikau glau	8.20
miśrau ca	8.21
pṛthaglā miśrāḥ	8.22
vasavastrikāḥ	8.23

- (***) Explain the recursion involved in the prastāra of Piṅgala.
- (****) Write a programme to generate the sequence of binary numbers of n bits recursively following Piṅgala's algorithm.

Exercise-2

- (**) Translate the Kedar Bhaṭṭa's śloka for prastāra into English/Hindi.

  pāde sarvagurau ādyāt laghu nyasya guroḥadhaḥ|
  yathā-upari tathā seśam bhūyaḥkuryāt amum vidhim ||
  ūne dadyāt gurūn eva yāvat sarve laghuḥbhavet |
  *prastāra*ḥayaṁ samākhyātaḥchandoviciti vedibhiḥ||

- (****) Write a programme to generate the sequence of binary numbers of n bits following Kedar Bhatt's algorithm.
- (***) Explain in what respects the two algorithms for prastāra given by Piṅgala and Kedar Bhatt differ.

Exercise-3

- (*) What is naṣṭa pratyaya in Chandasśāstra?
- (**) Explain Piṅgala's algorithm for naṣṭa.

l-arddhe	(8.24)
sa-eke-ga	(8.25)

- (**) Explain why Kedar Bhatt did not need any algorithm for naṣṭa.

Exercise-4

- (**) Explain the following Piṅgala's algorithm for uddiṣṭam.
  pratilomaguṇam dviḥ-l-ādyam (8.26)
  tataḥ-gi-ekaṁ jahyāt (8.27)
- (**) Translate Kedar Bhatt's algorithm for uddiṣṭam into English/Hindi and explain with an example.
  uddiṣṭam dvigunān ādyān upari ankān samālikhet |
  laghusthā ye tu tatra ankān taiḥ sa-ekaiḥ miśritaiḥ bhavet ||
- (**) Explain Kedar Bhatt's algorithm for C_r^n.
- (**) Explain Bhaskaracharya's method of obtaining Meru.

Exercise-5

- (**) Explain Kedar Bhatt's algorithm for finding total combinations of n-syllable chandas.
- (***) Explain the use of recursion and stack in Pingala's algorithm for finding the total combinations of n-syllable chandas. Piṅgala's sūtras are given here for ready reference.
  dviḥarddhe (8.28)
  rūpe śūnyam (8.29)
  dviḥśūnye (8.30)
  tāvadardhe tadguṇitam (8.31)
- (**) Explain fiollowing Piṅgala's sūtra
  dviḥ dviḥ-ūnam tat antānām (8.32)
- (***) Give the algorithm for finding the positions of chandas with 1 laghu, 2 laghus, etc. in a prastāra of 5 syllables.

Exercise-6

- (**) Explain the Fibbonacci sequence in the light of mātrā vṛttas.