



# SRS PU COLLEGE, CHITRADURGA

(in coordination with Narayana Group of Institutions, Hyderabad)

## II PU ANNUAL EXAMINATION MARCH 2020

SUBJECT: BIOLOGY (36)

Max. Marks-70

INSTRUCTIONS:

Time: 3.15 Hrs

- This question paper consists of four Parts-A, B, C and D . Part-D consists of two Sections. Sections-I and Section-II.
- All the parts are compulsory.
- Draw diagrams wherever necessary. Unlabeled diagrams or illustrations do not attract any marks.

### PART-A

Answers the following questions in one word or one sentence each: (10x1=10)

1. How many chromosomes are there in the meiocytes of human beings? (PP-13 in NCERT)  
Ans: 46
2. Name the inducer which regulates the switching on and off of the lac operon.  
Ans: Lactose
3. Which type of R.N.A polymerase enzyme transcribes precursor m. R.N.A?  
Ans: RNA Polymerase II
4. Name the part of the flower which develops into the fruit after fertilization  
Ans: Ovary
5. Write the scientific name of the fungus which produce cyclosporine A.  
Ans: *Trichoderma polysporum*.
6. What are Poiner species?  
Ans: The species that invade a bare area are called pioneer species.
7. Which bacteria is commonly found in the anaerobic sludge during sewage treatment?  
Ans: Methanogens /Methanobacterium
8. Name the international treaty which controls the emission of ozone depleting substances.  
Ans: Montreal protocol
9. Define endemism.  
Ans: The species confined to that region and not found anywhere else.
10. What are Euryhaline organisms?  
Ans: Organisms are tolerant of a wide range of salinities are called as Euryhaline organisms.

### PART-B

Answer any five of the following questions in 3 to 5 sentences each wherever applicable.

(5x2=10)

11. Name the scientist who foundout D.N.A and what was the name given by him?  
Ans: Friedrich Meischer , the name given by him is 'Nuclein'

12. Write the accessory ducts found in male reproductive system.

Ans: Rete testis, vasa efferentia, epididymis and vas deferens

13. Mention the genotype of the parents when their children are with A, B, AB, O blood groups.

Ans:  $I^A i$  and  $I^B i$  or heterozygous A and heterozygous B Parents.

14. Name the two hormone releasing I.U.Ds.

Ans: Progestasert and LNG-20

15. What are the two types of disorders of humans where the Karyotype is 47?

Ans: Klinefelter's Syndrome and Down's syndrome.

16. Name the two primates those were existing in 15 mya.

Ans: Dryopithecus and Ramapithecus.

17. Mention the two diseases resisted by mungbean through mutation breeding.

Ans: Yellow mosaic virus and powdery mildew.

18. Write the two basic amino acid residues which are rich in histones.

Ans: Lysine and Arginine.

### PART-C

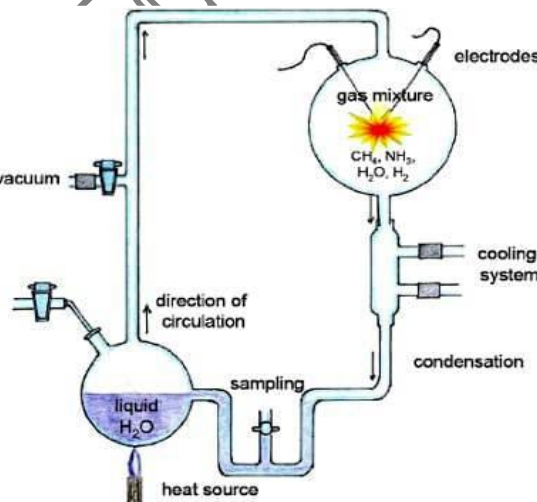
Answer any FIVE of the following questions.

5x3=15

19. Mention the sexual reproductive structures of the following:

- |               |                 |
|---------------|-----------------|
| a) Pencillium | - Conidia       |
| b) Hydra      | - External buds |
| c) Sponges    | - Gemmules.     |

20. Sketch and label Miller's Experiment.



21. Name the diseases caused by the following organism:

- |                           |               |
|---------------------------|---------------|
| a) Rhino virus            | - Common cold |
| b) Wuchereria bancrofti   | - Filariasis  |
| c) Haemophilus influenzae | - Pneumonia.  |

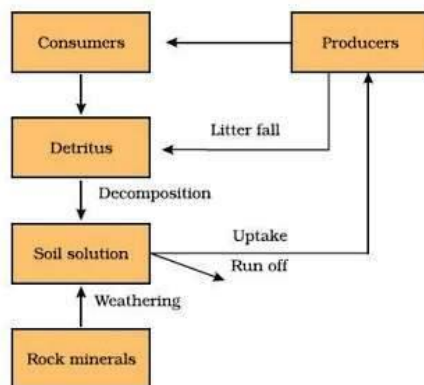
22. Define infertility. Write two assisted reproductive technology to overcome infertility.

Infertility refers to the inability of the couple to produce children in spite of unprotected sexual cohabitation.

There are numerous assisted reproductive technologies available which can bless infertile couples with children. They are;

- **IVF- ET – In Vitro Fertilization and Embryo Transfer (Test tube baby)**
- **AI – Artificial Insemination**
- **ICSI – Intra Cytoplasmic Sperm Injection**
- **GIFT – Gamete Intra Fallopian Transfer**
- **ZIFT – Zygote Intra Fallopian Transfer**
- **IUI - Intra Uterine Insemination**

23. Schematically represent phosphorus cycle.



24. What is ecological succession? How hydrarch succession is different from that of xerarch succession?

"The gradual and fairly predictable change in the species composition of a given area is called ecological succession".

Hydrich succession	Xerarch succession
It takes place in wetter areas and the succession series progress from hydrich to mesic conditions.	It takes place in dry areas and the succession series progress from Xeric to mesic conditions.

25. Alien species invasion caused declined or extinction of indigenous species. Justify the statements by giving three examples.

- The Nile perch introduced into Lake Victoria in east Africa led eventually to the extinction of an ecologically unique assemblage of more than 200 species of native africanichlid fish in the lake
- carrot grass (*Pathenium*), Lantana and water hyacinth (*Eichornia carssipes*)
- African catfish *Clarias gariepinus* for aquaculture purposes is posing a threat to the indigenous catfish in our rivers

26. Define Autogamy. Write the two different kinds of flowers that exhibit autogamy.

It is the transfer of pollen grains from anther to stigma of the flowers of the same plant.

E.g., Oxalis, Viola and Commelina

**PART-D**  
**(Section -I)**

Answer any four of the following questions in about 200 to 250 words each where applicable.

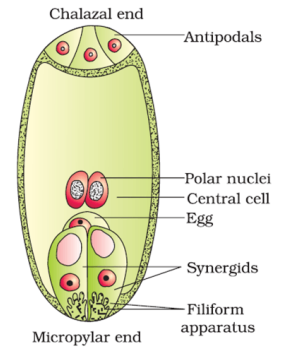
27. Explain a mature embryo sac with a neat labeled diagram.

**Ans:** A typical mature embryo sac of Angiosperms is a 7-celled and 8-nucleate structure.

(i) At the micropylar end, an egg apparatus is present which consists of an egg cell and 2 synergid cells. Synergids contain filiform apparatus which guides the pollen tube entry into the embryo sac during fertilisation.

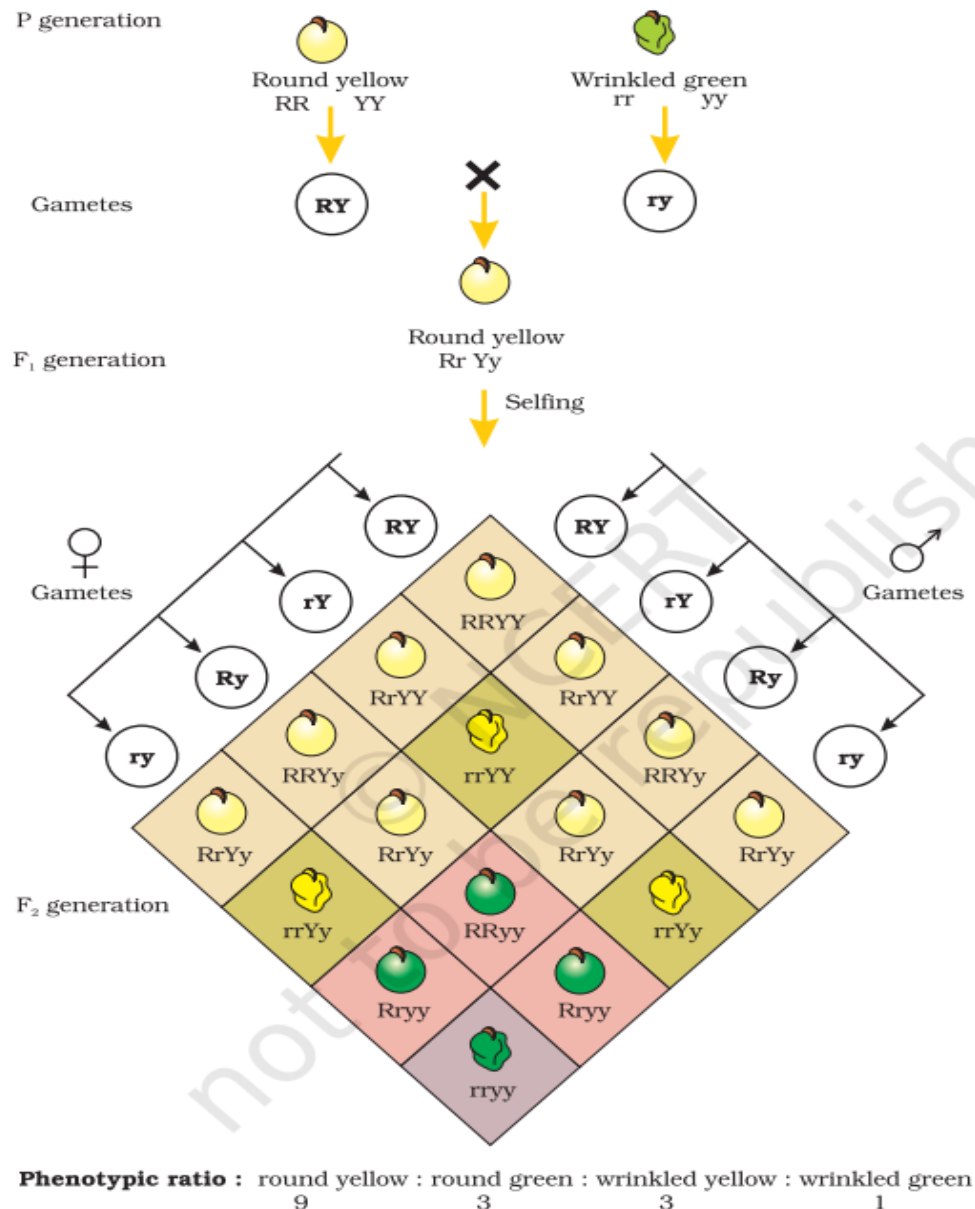
(ii) At the chalazal end, three antipodal cells are present.

(iii) In the centre, two polar nuclei are present which get fused prior to fertilisation to form a diploid secondary nucleus. Hence, 8 nuclei are constituted within 7 cells. Thus, embryo sac is 7-celled and 8-nucleate.



28. Schematically represent the inheritance of two genes in pea plants with reference to seed colour and shape.

**Ans:**



29. Mention five salient features of human genome project.

Ans:

**Salient features of Human Genome:**

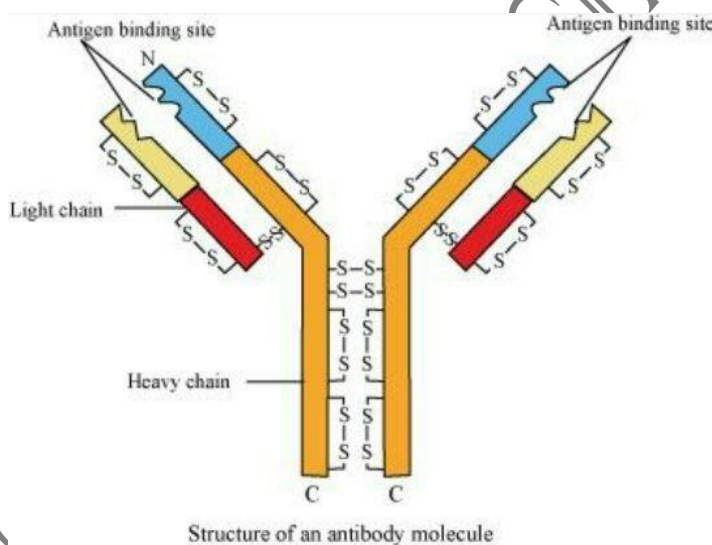
- a) Human genome contains 3164.7 million nucleotide bases.
- b) Total number of genes are about 30,000.
- c) Average gene consists of 3000 bases but sizes vary. Largest known human gene (dystrophin on X-chromosome) contains 2.4 million bases.
- d) About 99.9% nucleotide bases are identical in all people. It is that 0.1% which makes each one unique.
- e) Functions of over 50 of discovered genes are unknown.
- f) Chromosome I has most genes (2968) and Y has the least genes (231).
- g) Repetitive sequences are stretched of DNA sequences that are repeated many times. They make the largest portion of DNA. They have no direct coding functions but they shed light on chromosome structure, dynamics and evolution.
- h) There are about 1.4 million locations where single-base DNA differences (SNPs- Single nucleotide polymorphism) occur in humans.

30. a) Define immunity and name two different types of immunity.

Ans: The overall ability of the host to fight the disease-causing organisms, conferred by the immune system is called immunity.

Innate immunity and acquired immunity

b) Draw a neat labeled diagram of structure of an antibody molecule



31. With reference to tissue culture explain the following terms.

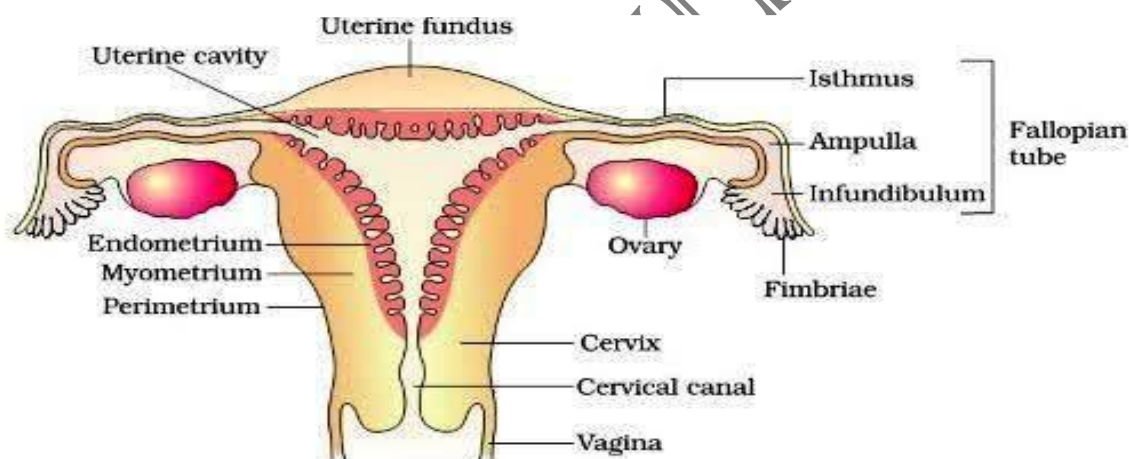
- a) **Explants:** Any part of the plant taken out and grown in a test tube under sterile conditions in special nutrient media.
- b) **Totipotency:** Capacity of explants to generate a whole plant from any cell/explant is called totipotency
- c) **Micropropagation:** Method of producing thousands of plants through tissue culture is called micropropagation.
- d) **Somaclones:** Each of the plants produced by micropropagation are genetically identical to the original plant from which they were grown are called somaclones.
- e) **Somatic hybrids:** Protoplasts from two different varieties of plants – each having desirable character- can be fused to get hybrid protoplasts, which can be further grown to form a new plant. These hybrids are called somatic hybrids.

### 32. Explain Briefly how the transgenic animals benefit the human beings

- **Normal physiology and function:** Transgenic animals are used to study gene regulation and its effect on normal functions of the body and its development  
E.g., Study of complex factors involved in growth such as insulin-like growth factor.
- **Study of diseases:** Transgenic animal models are used to understand the contribution of genes in the development of disease and to investigate new treatments for diseases like fibrosis, rheumatoid arthritis, Alzheimer's etc
- **Biological products:** Transgenic were created to produce milk containing particular human proteins, ( $\alpha$ -1-antitrypsin) which may help in the treatment of human emphysema.  
E.g., Rosie is the first transgenic cow (1997) that produced the milk enriched with human protein,  $\alpha$ -lactalbumin (2.4g per ltr) which is nutritionally more balanced product for human babies than natural cow milk.
- **Vaccine safety:** Transgenic animals are exposed to toxic substances to study their effects in less time
- **Chemical safety testing:** This is known as toxicity/safety testing

### Section -II

### 33. Draw a neat labelled diagram of sectional view of female reproductive system.



### 34. Explain the biogas plant with a neat labelled diagram.

- The biogas plant consists of a concrete tank (10-15 feet deep) in which bio-wastes are collected and slurry of dung is fed
- A floating cover is placed over the slurry, which keeps on rising as the gas is produced in the tank due to the microbial activity
- The biogas plant has an outlet, which is connected to a pipe to supply biogas to nearby houses
- The spent slurry is removed through another outlet and may be used as fertilizer

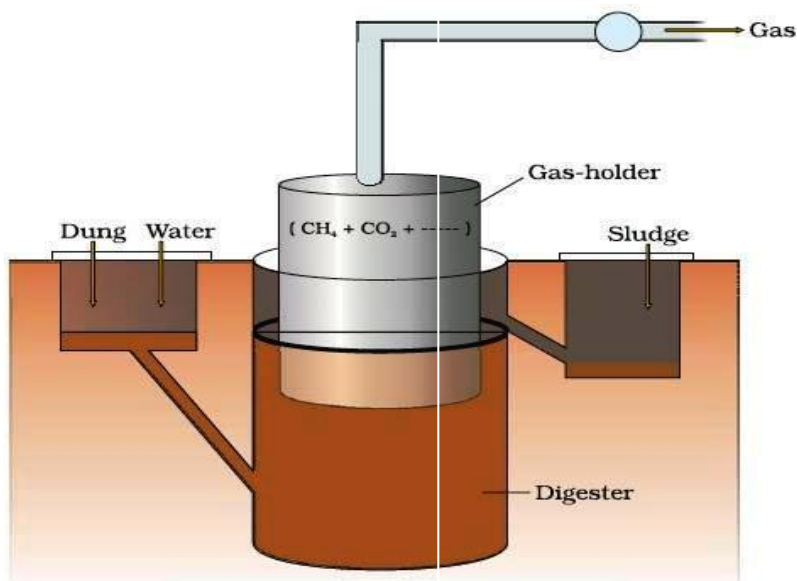


Figure 10.8 A typical biogas plant

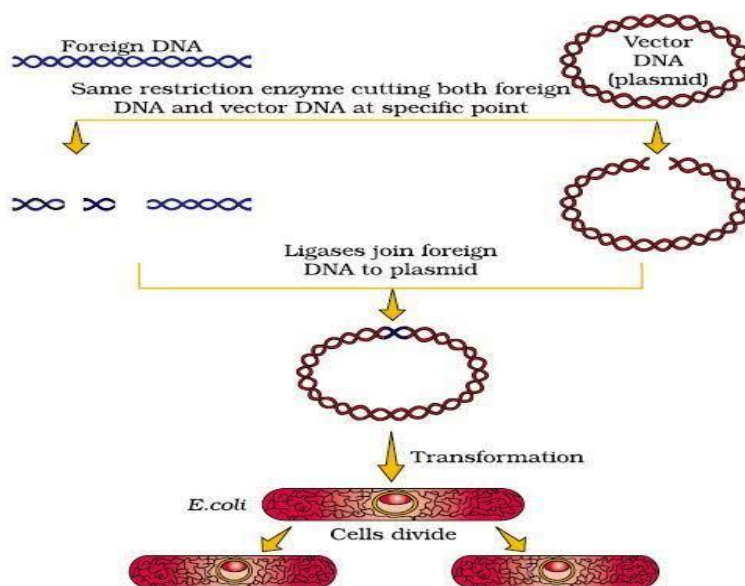
**35. Mention the population interactions exist among the following:**

- a) Abingdon tortoise and goats in galapagos islands- **Competition**
- b) Cuckoo lays eggs in crow's nest- **Brood parasitism.**
- c) Sea-anemone and clown fish- **Commensalism**
- d) Wasp laying eggs in fig fruit- **Co-evolution**
- e) Orchid ophrys and bees.- **Sexual deceit**

**36. a) Differentiate Endonucleases and Exonucleases.**

- Exonuclease removes the nucleotides from the ends of DNA
- Endonucleases cut the DNA at specific positions anywhere in its length

**b) Diagrammatically represent recombinant D.N.A technology.**



**37. Write a note on the following :**

**a) Remedy for plastic waste –**

Ahmed Khan, a plastic sac manufacturer in Bangalore has manufactured Polyblend, a fine powder of recycled modified plastic. This Polyblend is mixed with the bitumen that is used to lay roads Ahmed Khan in collaboration with R.V.College of Engineering and the Bangalore City Corporation, proved that the mixture of Polyblend and bitumen, when used to lay roads, enhanced the bitumen's water repellent properties, and helped to increase road life by a factor of three.

**b) Radioactive wastes:**

Any discarded nuclear material that emits radiation is called a radioactive waste

- The radiations emitted from nuclear wastes induce mutations and cancer
- It is difficult to avoid the accidental leakage of nuclear radiations  
E.g., Three Mile Island and Chernobyl incidents.
- It is very difficult to dispose the radioactive waste safely



**SRS Residential PU College**  
NARAYANA Be proud of getting into a premier institute..... Chitradurga



**SRS Ranks**  
Competitive Exams

**ಕ್ರಾಶ್ ಕೋರ್ಸ್**

**ಎಸ್.ಆರ್.ಎಸ್. ಬಾಣ್ಣ**

**NEET/CET** ಮಾರ್ಚ್ 26ರಿಂದ ಪ್ರಾರಂಭ

ಹಿಂದು ಹೊಸ್ತಿಲಿಲ್ಲದವರಿಗೆ ವಿಶೇಷ ಖ್ಯಾತಿಗಳು

**CET : 27 ದಿನಗಳು NEET : 37 ದಿನಗಳು**

- ◆ ಪ್ರತಿ ನಾಲ್ಕು ದಿನಕ್ಕೊಂದರಂತೆ ಟೆಸ್ಟ್
- ◆ 5ನೇ ದಿನ ಗ್ರಾಂಡ್ ಟೆಸ್ಟ್
- ◆ ಪ್ರತಿದಿನ SYNOPSIS DISCUSSIONS
- ◆ ಪ್ರತಿ ವಿಷಯದಲ್ಲಿ ಕನಿಷ್ಠ 60 ಪ್ರಶ್ನೆಗಳ DISCUSSION
- ◆ ಪ್ರಥಮ ಪಿಯು Syllabus Exclusive Coverage
- ◆ B.Sc Ag & Horticulture practical 200 ಅಂಕಗಳಿಗೆ ವಿಶೇಷ ತರಬೇತಿ
- ◆ NEET ಆಕಾಂಕ್ಷಿಗಳಿಗೆ ಹೆಚ್ಚಿನ PRACTICE ತರಗತಿಗಳು
- ◆ ಕೊನೆಯ 8 ದಿನಗಳಲ್ಲಿ 8 ಸರಣಿ ಗ್ರಾಂಡ್ ಟೆಸ್ಟ್‌ಗಳು

- ◆ ಎಸ್.ಎಸ್.ಎಲ್.ಸಿ ಪರೀಕ್ಷೆ ಮುಗಿದ 5ರಿಂದ 6ದಿನಗಳಲ್ಲಿ ತರಬೇತಿ ಪ್ರಾರಂಭ.
- ◆ ಬೇರೆ ವಿದ್ಯಾರ್ಥಿಗಳಿಗಿಂತ 2 ತಿಂಗಳ ಹೆಚ್ಚುವರಿ ಕಾಲಾವಕಾಶದ ಪ್ರಯೋಜನ
- ◆ ಪಿಯುನಲ್ಲಿ JEE/NEET/CET ಆಕಾಂಕ್ಷಿಗಳಿಗೆ ತುಂಬಾ ಪ್ರಯೋಜನಕಾರಿ.
- ◆ JEE/NEET/CETಗೆ ಬೇಕಾಗುವ ಎಲ್ಲಾ ಬೇಸಿಕ್ ಕಾನ್ಸೆಪ್ಟ್‌ಗಳ ಸಂಪೂರ್ಣ ತರಬೇತಿ.
- ◆ ಪಿಯು ಸಿಲಬಸ್‌ನ ಪರಿಚಯ ಹಾಗೂ ವಿವರಣೆಯೊಂದಿಗೆ ತರಬೇತಿ
- ◆ ಉಚಿತ ತರಬೇತಿ, ಉಚಿತ study material.

ಎಲ್ಲಾ ಬೆನ್ಸ್ ಅಂಕಗಳನ್ನು SMS ಮುಖಾಂತರ ಪೋಷಕರಿಗೆ ಕಳುಹಿಸಲಾಗುವುದು

ಆನ್‌ಲೈನ್ ನೋಂದಣಿಗೆ  
[srspucollege.in](http://srspucollege.in)ನ್ನು ಬಳಸಿ.

STATE 5 <sup>th</sup> Rank MEDICAL	STATE 4 <sup>th</sup> Rank B.Sc., Ag.
STATE 5 <sup>th</sup> Rank VET. SCIENCE	STATE 12 <sup>th</sup> Rank ENGINEERING
STATE 22 <sup>th</sup> Rank ISMH	ALL INDIA 18 <sup>th</sup> Rank NATA
STATE 30 <sup>th</sup> Rank NATA	STATE 34 <sup>th</sup> Rank B.Pharma

**Board Rank**

STATE 4 <sup>th</sup> Rank Sheetal	STATE 6 <sup>th</sup> Rank Tulasi T.
STATE 7 <sup>th</sup> Rank Chaitanya	STATE 8 <sup>th</sup> Rank Himalaya T.
STATE 10 <sup>th</sup> Rank	Neelaprasad

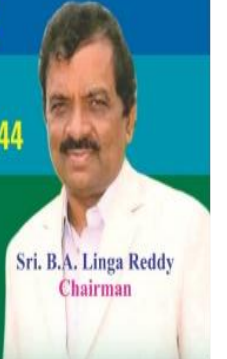
**SRS PU (Science & Commerce) College ☎ : 9341799417 | 7353787333 | 9900000811**

**Chitradurga**

SRS BLUE GEMS MONTESSORI, SRS HARITAGE (CBSE) SCHOOL (Res.) ☎ 9900000833  
SRS FIRST GRADE COLLEGE (BBM, BCA, B.Com) ☎ 9900000822, SRS B.Ed. College ☎ 9900000844

**Challakere**

SRS BLUE GEMS MONTESSORI, SRS HERITAGE (CBSE) (Res.)  
SRS PU (Science & Commerce) College & 81500 3222 / 81500 4222



Sri. B.A. Linga Reddy  
Chairman