

Series Solution of differential equations: Power series method, Bessel, Legendre and Hypergeometric equations. Bessel, Legendre functions and their properties . Sturm-Liouville problem, Orthogonality of eigen functions. Orthogonality of Bessel functions and Legendre polynomials.

Partial Differential Equations of the 1<sup>st</sup> order. Lagrange's solution some special types of equations, their solution, Charpit's general method of solution. Partial Differential Equations of second and Higher orders. Classification of linear partial differential equations of second order. Homogeneous and non-homogeneous equations with constant coefficients, Monge's method.

Fourier Series and Fourier Transform, Convergence of Fourier series, Application of Fourier series and Fourier Transforms to Boundary value problems. Solution of Laplace equation, wave equation and heat conduction equations.

## Music

### "VOCAL MUSIC".

#### **PAPER-I**

1. Theoretical description of the following Raagas:  
Nata, Shree, Suddhadeshi, Mukhari, Varadi, Sokavaradi, Debagandhari, Kiravani, Malavgouda.  
  
Yaman, Todi, Malkanunsh, Marubihag, Puriya Kalyan, Suddha Saranga, Jog, Hansadhawani, Bhimpalasi, Darbari Kanda.
2. Analytical and comparative study of the following Raagas:
  - i) Kalyan – Jamunakalyan.
  - ii) Kedar Kamodi – Kedargouda.
  - iii) Gouda – Jhinjhoti,
  - iv) Ahari – Ashabari
  - v) Kalingagouda – Gouri.  
  - i) Puriya – Marwa
  - ii) Alhaiya Bilawal – Devgiri Bilawal
  - iii) Bilashkhani Todi – Komal rishav Ashawari
  - iv) Nat Bhairav – Ahir Bhairav
  - v) Meghmalhar – Surmalhar.
3. Knowledge about the following Compositions:  
Champu (Ka, Kha, Ga and Gha), Chhanda (Chokhi, Ashadhasukla and Rasakulya Vaani ), Janana (one each of poet Banamali and Kavi Surya Baladev Rath).  
  
Dhrupad, Dhamar Thumri, Kajri & Bhajan

4. Theoretical knowledge of the following Talas with different Layakriyas :  
Ektali, Rupak, Tripata, Jhampa, Matha, Kuduka, Yati, & Aditala.  
Ektal, Tilwada, Chautala, Jhumura, Dhamar, Roopak, Deepchandi, Teental, Kaharwa.
5. Knowledge of writing rotation of the following composition :  
Raganga Prabandha (from Unit 1), Champu (From Unit 3), Chhanda or Devotional Song (From Unit-3).  
Khayal (from Unit-I), Dhurap (From Unit 3), Dhamar (From Unit -3).
6. Comparative study on the presentation style of Odishi Music, Hindustani Music and Karnataka Music.
7. Ability to compose one song based on appropriate Raaga and Tala according to its mood.
8. Knowledge about the essential qualities of a good performer.

## **PAPER-II**

1. Detailed knowledge on Naada.
2. Deep knowledge on shruti and swara.
3. Historical development on Raaga Bargikaran.
4. Rasa theory of Indian Music.
5. History of Odishi Music :
  - a. Period of Kharavela and Natyasastra
  - b. Charya sahitya and Jayadeva
  - c. Period of Reetiyuga
  - d. Development of Odishi Music in the present period.
6. History of Indian Music
  - a. Time of vedic
  - b. Moghul period
  - c. Time of Bharat
  - d. Time of Sarangadana
  - e. Modern time
7. Study on the following musical treatises.  
Geeta Prakash, Sangeeta Kalpalatika, Sangeet Narayan, Natya Manorama.  
Natyasastra, Sangeet Ratnakar, Sangeet parijat, Swaramela kalanidhi.
8. Knowledge about the Guruparampara and their style in Odishi Music.

9. Study of different Gharanas and comparative study of different gharanas of Hindustani Music.

10. Knowledge about the following musical terms and phrases.

Sangeeta, Tala, Laya, Raagavistar, Vaadi- Sambadi-Anuvadi and Bivadi, Abirhaba-Tirohaba, Alptwa-Bahutwaa, Purbanga-Uttaranga.

## Odia

### PAPER-I

#### ଓଡ଼ିଆ ଭାଷାର ଇତିହାସ

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#### ଓଡ଼ିଆ ସାହିତ୍ୟର ଇତିହାସ

ଯୁନିଟ - I : ଓଡ଼ିଆ ଭାଷାର ଉତ୍ପତ୍ତି ଓ କ୍ରମ ବିକାଶ (ଆଦିକାଳରୁ ଷୋଡ଼ଶ ଶତାବ୍ଦୀ ପର୍ଯ୍ୟନ୍ତ) ।

ଯୁନିଟ - II : ଓଡ଼ିଆ ଭାଷା ସହିତ ସଂସ୍କୃତ, ପାଲି ଓ ପ୍ରାକୃତ ଭାଷାର ସଂପର୍କ ।

ଯୁନିଟ - III : ଓଡ଼ିଆ ଶବ୍ଦ ଭଣ୍ଡାର (ତତ୍ସମ, ତତ୍ତ୍ୱ, ଦେଶଜ ଓ ବୈଦେଶିକ) ।

ଯୁନିଟ - IV : ଓଡ଼ିଆ ଭାଷା ଉପରେ ବୈଦେଶିକ ପ୍ରଭାବ ।

ଯୁନିଟ - V : ଓଡ଼ିଆ ସାହିତ୍ୟର ଇତିହାସ (ଆଦି ପର୍ଯ୍ୟାୟ) ।

[ବୌଦ୍ଧଗାନ ଓ ଦୋହା, ପ୍ରାଚୀନ ଓଡ଼ିଆ ଗଦ୍ୟ ସାହିତ୍ୟ, ପ୍ରାଚୀନ ଓଡ଼ିଆ କବିତାର ସ୍ୱରୂପ]

ଯୁନିଟ -VI : ଓଡ଼ିଆ ସାହିତ୍ୟର ଇତିହାସ (ମଧ୍ୟ ପର୍ଯ୍ୟାୟ) ।

[ଓଡ଼ିଆ ପୁରାଣ ଓ ସନ୍ଥ ସାହିତ୍ୟ, ପ୍ରାକ୍ ରୀତି କାବ୍ୟଧାରା]

ଯୁନିଟ -VII : ଓଡ଼ିଆ ସାହିତ୍ୟର ଇତିହାସ (ଉତ୍ତର ମଧ୍ୟ ପର୍ଯ୍ୟାୟ) ।

[ଓଡ଼ିଆ ରୀତି ସାହିତ୍ୟ, ଓଡ଼ିଆ ପଦାବଳୀ ସାହିତ୍ୟ ]

ଯୁନିଟ -VIII : ଓଡ଼ିଆ ସାହିତ୍ୟର ଇତିହାସ (ଆଧୁନିକ ପର୍ଯ୍ୟାୟ) ।

[ଓଡ଼ିଆ ସାହିତ୍ୟରେ ନବ ଜାଗରଣ, ପଦ୍ମ-ପତ୍ରିକା, ପ୍ରବନ୍ଧ, ଗଳ୍ପ, ଉପନ୍ୟାସ, କବିତା ଓ ନାଟକର କ୍ରମ ବିକାଶ]