

## DEPARTMENT OF SCIENCE

Department : Science  
Semester: I

Program: B.Sc  
Name of the Subject: ENGLISH

### QUESTION BANK

#### UNIT-I:INTRODUCTION:

##### Unit – I

Markets have been said to reflect the ‘soul’ of the city . they are places where the inhabitants of the city visit to buy daily necessities and wants, as well where tourists come to buy the objects unique to that city as souvenirs .below are the questions to test the knowledge regarding the concept bazaars of Hyderabad.

#### PART –A

S NO	SHORT QUESTIONS
1	Describe the variety of articles the gold smiths make. Who will buy these things?
2	Can you think of a reason why the musicians and magicians are paired together in one stanza ? elaborate on your answer.
3	Comment on the juxtaposition of the flower- girls making garlands for bridegroom, while also making them for corpses at the same time.
4	How does this poem balance the physical world with philosophical?
5	The swadeshi movement launched during the freedom struggle urged Indians to boycott british products and to rely on local ones. Re-read naidu’s biography on page 1 , and discuss what relevance the poem must have in this context.
6	What did the narrator like about his travelling companion ?
7	Compare how the narrator and the new passenger each form an impression of the girl.
8	Describe what happens when the girl gets off the train.
9	Why do you think the narrator tries to trick people into believing he can see ?
10	<b>How does the girl respond to the narrator’s questions?</b>
<b>PART –B</b>	
S NO	LONG QUESTIONS
1	<b>Describe the scene of the bazaar in your own words ?</b>
2	<b>Reading this poem is an experience that involves the senses. Discuss.</b>
3	What do you think are the special features of the bazaar? How does it compare it with a fair bazaar in your town ?
4	<b>What are the instances in the story where it is evident that both the narrator and the girl are blind? How do they try to mislead each other? Do they succeed?</b>
5	Several times in the conversation, the narrator tries to cover up his disability.

	Identify these instances and comment upon them.
--	---

<b>UNIT-II:INTRODUCTION:</b>	
<b>UNIT - II:</b>	
<b>PART -A</b>	
S NO	SHORT QUESTIONS
1	The title of the poem is short and to the point . how does this apply to the overall theme of the poem ?
2	Explain the significance of the final two lines of the poem .
3	Explain the poets thoughts on the subject of patience
4	What does the poet say about perserverance
5	Briefly explain about the following with reference to context : But make allowance for their doubting too
6	Does the author feel sympathy for the lift man ? elaborate on your answer .
7	Write a short character sketch of the conductor
8	What does the author mean when he says that bad temper is infectious?
9	What is the significance of the chesterfield anecdote to the authors argument ?
10	Why is the author grateful that discourtesy is not a punishable offence ? do you agree with the authors opinion ?
<b>PART –B</b>	
S NO	LONG QUESTIONS
1	<b>What kind of a person does the poet want his child to be ? what are the qualities that the poet is espousing?</b>
2	<b>According to the poem , what are some of the challenges that a person will have to face in life ?</b>
3	Summarise the poets message in your words. Do you agree with it ?
4	<b>Why , according to the author , is it important to exhibit good social graces ?</b>
5	<b>Comment on the importance of patience with respect to the theme of this essay.</b>

<b>UNIT-III:INTRODUCTION:</b>	
<b>Unit – III</b>	

<b>PART -A</b>	
<b>S NO</b>	<b>SHORT QUESTIONS</b>
<b>1</b>	Who is the speaker of the poem , and what does he want to do ?
<b>2</b>	How does Ulysses describe Ithaca and its people? What is his attitude towards his subjects?
<b>3</b>	Who is telemachus, and what kind of a person does he seem to be?
<b>4</b>	“how dull it is to pause... not to shine in use” how does this statement reflect ulyssess attitude to life ?
<b>5</b>	Explain the meaning and significance of the following line : b. made weak by time and fate , but strong in will / to strive , to seek , to find and not to yield.
<b>6</b>	our failure is in exact ratio to the seriousness of the occasion , and to the depth of our feeling . what failure is Beerbohm talking about ? explain the meaning of this statement .
<b>7</b>	What about le ros surprisedBeerbohm at the train station ?
<b>8</b>	Elaborate on the purpose and working of the AASB in your own words.
<b>9</b>	Beerbohm says that despite being a good actor , le ros never found success on the London stage . comment on this statement in the light of the essay.
<b>10</b>	<b>Why does the author say that he envied le ros ? how is this connected to his request to le ros</b>
<b>PART -B</b>	
<b>S NO</b>	<b>LONG QUESTIONS</b>
<b>1</b>	<b>What is the theme of the poem? How does the poet communicate this to the reader through the images of the poem ?</b>
<b>2</b>	<b>Some modern critics condemn Ulysses for selfishly abandoning his responsibilities as a husband , father and king – in order to pursue his own goals. In your opinion , is Ulysses a heroic or an unheroic figure ?</b>
<b>3</b>	Who was Hubert le ros ? describe him and his personality in your own words. What difference did the author notice between le ross previous and present circumstances ?
<b>4</b>	<b>How did the authors farewell at the train station differ from le ros send off ? what was ironic about this difference ?</b>
<b>5</b>	<b>What is beerbohms attitude towards seeing people of f at a port or train station ? why does he feel this way , and what does he prefer instead ?</b>

#### UNIT-IV:INTRODUCTION:

**UNIT - IV:**

<b>PART -A</b>	
<b>S NO</b>	<b>SHORT QUESTIONS</b>
<b>1</b>	What does the poet accuse 'time' of ? what quality does the poem associate with time?
<b>2</b>	What prompted the poet to write this poem?
<b>3</b>	Whom does the poet feel jealous of , and why?
<b>4</b>	How does the poet console himself as the poem progresses ?
<b>5</b>	List the characteristic traits of the poet that you can deduce from this poem. Give brief reasons for your answer.
<b>6</b>	Why did Gandhi not talk at meetings ? what did people think of his silence ?
<b>7</b>	What was the conflict that the vegetarian society faced with regard to mr. Hills and mr.allinson? what was gandhis position ?
<b>8</b>	What happened when mr.howard invited Gandhi to speak at a meeting ? how did Gandhi feel about the incident ?
<b>9</b>	What preparations for a speech did Gandhi make before he left England ? how did the event end ?
<b>10</b>	What did his experience with public speaking teach Gandhi about himself ?
<b>PART -B</b>	
<b>S NO</b>	<b>LONG QUESTIONS</b>
<b>1</b>	<b>What does Milton focus on in the first eight lines of the poem ? what change do you notice in the final six lines ?</b>
<b>2</b>	<b>What is the poets main cause of regret in the poem , and how does he finally come to terms with it ?</b>
<b>3</b>	Comment on the tone of the poem . do you think the poem ends on a hopeful note ? give reasons to support your answer .
<b>4</b>	<b>When a serious question came up for discussion , Gandhi says ' I thought it wrong to be absent , and felt it cowardice to register a silent vote' . what light does this throw on gandhis attitude to shyness? Discuss.</b>
<b>5</b>	<b>Gandhi says that his shyness eventually turned out to be a useful trait . explain</b>

**DEPARTMENT OF SCIENCE**

**SUBJECT: SANSKRIT**

**QUESTION BANK**

लघुनिबन्ध प्रश्नाः

Semester-I , UNIT-I

1. मुदाभिषेक्तुं वरुद लमर्हसि :

1. श्रीमद्रामायण कर्ता कः ?
2. रामायणे कति काण्डः सन्ति ? ते कानि ?
3. रामायण ग्रन्थात् मूलश्लोकः कः ?
4. श्रीमद्रामायणस्य वैशिष्ट्यं श्लोकं लिखत ?
5. रामायणे कति श्लोकाः सन्ति ?
6. रामायण शब्दस्य व्युत्पत्तिः कः ?
7. रामायण कथा उपदेशः कः ?
8. वाल्मीकि महर्षेः अपरं नामानि कानि ?

Long Questions-

1. श्रीमद्रामायणञ्च वाल्मीकिमहर्षेः वैशिष्ट्यं लिखत ?
2. श्रीरामचन्द्रः उद्दिश्य अयोध्यप्रजानां मनोभिष्टं विवृणुत ?
3. श्रीरामचन्द्रस्य गुणगणान् वर्णयितुम् ?

2. टिमन्तयो नाम नगाधिराजः

1. "टिमन्तयो नाम नगाधिराजः" पाठ्यभागा रचयिता कः ?
2. कान्तिदास विरचिते महाकाव्यानि कानि ?
3. "टिमन्तयो नाम नगाधिराजः" इति पाठ्यभागाः कस्मात् ग्रन्थान् स्वीकृतः ?
4. कुमारसम्भव महाकाव्ये कति सर्गाः सन्ति ?
5. "उपमा कान्तिदासस्या" इति श्लोकं पूरयत ?
6. कान्तिदास महाकवेः विरचिते नाटकानि कानि ?

7. संस्कृतवाङ्मये पञ्चमहाकाव्यानि कानि ? ते कानि ?
8. कालिदासः कस्य राजस्य अस्थाने पण्डितः ?
9. कुमारसम्भवे महाकाव्ये प्रथमसर्गात् कस्मात् पर्वतवर्णनं आस्ति ?
10. अकालसन्ध्यामिव धानुमन्ताम् ? इति वाक्यं विवृणुत ?
11. यस्यार्थयुक्तं गिरिशज्जब्दं कुर्वन्ति वान्तव्यजनैश्चमर्यः। इति विवृणुतः

1. कविकुलगुरुं कालिदासमुद्दिश्य निबन्धं लिखत ?
2. हिमवत्पर्वतवर्णनं कालिदासस्य प्रकृतिवर्णनाचातुर्यं विवदयत ?
3. कालिदासेन वर्णितानुसारं नगाधिराजं हिमवन्तम् उद्दिश्य निबन्धं लिखत ?
4. कुमारसम्भवे प्रथमसर्गे उक्तरीत्या हिमवत्पर्वतस्य समीपतां वर्णयत ?
5. "उपमा कालिदासस्य" इति स उदाहरणानां निरूपयत ?

#### UNIT - II

#### 3. धर्मबद्धो दौवारिकः

1. श्रम्यतामेष आगच्छामि आगत्य च निखिलं निवेदयामि । इति विवृणुत ।
2. तदद्युनेव परिष्कृतं पारदशस्म नुभ्यं दद्याम ? इति ससन्दर्भं व्याख्यात ।
3. "दौवारिक ! मया बहुशः परीक्षितोऽसि" । ससन्दर्भं व्याख्यात ?
4. "धर्मबद्धो दौवारिकः" इति पाठ्यभागे प्रधान उद्देशः कः ?
5. शिवराजवीरस्य प्रधान अमातः कः ?
6. अम्बिकादत्तव्यास जीवितकालविशेषांशाः के ?
7. "धर्मबद्धो दौवारिकः" पाठ्यभागे रचयिता कः ?
8. अम्बिकादत्तव्यासस्य उपाधिः कः ?
9. नवरसानि कानि ?
10. "धर्मबद्धो दौवारिकः" इति पाठ्यभागे प्रधान नायकः कः ? उपनायकः कः ?

Long Answers-

1. धर्मबद्धो दौवारिक इति पाठ्यांशे गौश्वसिंहस्य पात्रं विवृणुत ?
2. धर्मबद्धो दौवारिक इति पाठ्यांशस्य सारं लिखत ?
3. गौश्वसिंहस्य पात्रे कविः किं निरूपयति ?
4. धर्मबद्धो दौवारिक इति पाठ्यांशे दौवारिकस्य स्वामिभक्तिम् उल्लिखत ?
5. शिवराजविजय रचयितुं परिचयं प्रस्तुत ?

4. कृतद्धे नास्ति निष्कृतिः

- विष्णुशास्त्री

1. मनवे वाचस्पतये शुक्राय पराशरस्य ससुताय ।  
घाणक्याय च विदुषे नमोऽस्तु नयशास्त्र कर्तृभ्यः ॥  
इति श्लोकं भावं अरचयत ?
2. "पञ्चतन्त्रस्य" ग्रन्थस्य पाठ्यभाग रचयिता कः ?
3. पञ्चतन्त्रे कति भागः सन्ति ?
4. "कृतद्धे नास्ति निष्कृतिः" इति पाठ्यभागः पञ्चतन्त्रे कति तन्त्रात् स्वकृतः ?
5. महिन्तारोष्य नगरं पालयितुं राजा नाम किम् ?
6. अमरशकत्य राज पुत्राः कीदृशः ?
7. समुत्पन्नेषु कार्येषु बुद्धिर्यस्या न दीयते ।  
स एव दुर्गं तरति जलस्थो वानरो चया । श्लोकः भावं लिखत ?
8. एकं प्रश्रूयते माता द्वितीयं वाक् प्रश्रूयते ।  
वाग्जातमधिकं प्रोचुः सोदयदपि बन्धुवत् ॥ भावं लिखतु ।
9. "द्वितीयपदेशः" कर्ता कः ?
10. वैश्वदेवानमापन्नः सोऽतिथिः स्वशिशुः क्रमः । ससन्दर्भं व्यास्यात् ।

### Long Answers

1. वानरमकरयोः कथां पञ्चतन्त्रमनुसृतं वर्णयत ।
2. विष्णुशर्मणः पञ्चतन्त्रस्य परिचयं कुरुत ।
3. वानरमकरयोः कथां पञ्चतन्त्रमनुसृतं वर्णयत ।
4. करालमुखस्य विश्वासघातकान् प्रथमनात् श्वेतमुखः कथं श्वं रक्षितुं धनितवान् ? विवृणुत ।
5. पञ्चतन्त्रमनुसृत्या श्वेतमुख - करालमुखयोः कथां संक्षेपेण लिखत ?

### UNIT-III

#### 5. एष धर्मः सनातनः

1. एषधर्मः सनातनः इति पाठ्यभागे कति श्लोकः सन्ति ?
2. एष धर्मः सनातनः इति पाठ्यभागे कति विषयाः सन्ति ?
3. नीति शब्दस्य व्युत्पत्तिः कः ?
4. श्वेतदार्ष्टिक भाषे "धर्मः" इति पदस्य अर्थः कः ?
5. उद्वेगमेव हि सिद्ध्यन्ति कार्याणि न मनोरथैः ।  
न हि शुभस्य सिद्धस्य प्रविशन्ति मुखे मृगाः ॥ श्लोक अर्थः कः ?
6. कति दोषाः पुरुषाः हतव्यः ? ते कानि ?
7. सन्मित्रं लक्षणं किम् ?
8. कस्मिन् प्रान्ते न वस्तव्यम् ?
9. कति दोषाः पुरुषाः न हतव्यः ? ते कानि ?
10. विद्वान्नीलं लक्षणं किम् ?

### Long Answers-

1. "दृष्य धर्मः सनातनः" इति पाठ्यभांशस्य सारं विवृणुत ?
2. नीतिश्लोकानाम् अध्ययनेन किम् प्रयोजनम् ? विवृणुत ?
3. "दृष्यः धर्मः सनातनः" इति पाठ्यभांशस्य अध्ययेन मानवताविकासः भवति, कथमिति निरूपयत ।

### UNIT - IV

#### शब्दाः

1. शब्दः निर्वचनं किम् ?
2. शब्दः कति विधाः ? ते कानि ?
3. विभक्तिः नाम किम् ? कति विभक्तयः ?
4. वचनं नाम किम् ? कति ?
5. शमः दशरथस्य पुत्रः ।  
शमः सदा विजयते ॥ इति वाक्याद्याः लिखति ?
6. शमाय तस्मै नमः ।  
शमात् नास्ति पशयणम् ॥ इति वाक्यार्थं लिखतु ।
7. अजन्तशब्दः निर्वचनं किम् ? उदाहरणानि कानि ?
8. दन्तशब्दः निर्वचनं किम् ? उदाहरणानि कानि ?
9. "वारि" शब्दस्य चतुर्थी विभक्तिः, द्विवचनम् किम् ?
10. शमा शब्दस्य पञ्चमी विभक्तिः किम् ?

### Long Answers-

1. ऋकारान्त पितृ शब्दः सविभक्ति रूपेण लिखत ?
2. अकारान्त देव, अच्युत शब्दः सविभक्ति रूपेण लिखत ?

3. अकारान्त श्रिता, अहल्या शब्दाः संपूर्णेन लिखत ?
4. उकारान्त अम्बु, जत्रु शब्दाः संघूर्णेन लिखत ?

### UNIT-V

#### सन्धयः

1. सन्धिः निर्वचनं किम् ?
2. सन्धिः शब्दस्य व्युत्पत्तिः किम् ?
3. सन्धिः कति विधाः ? ते कानि ?
4. अच् सन्धिः निर्वचनं किम् ? उदाहरणानि कानि ?
5. इत् सन्धिः निर्वचनं किम् ? उदाहरणानि कानि ?
6. सवर्णदीर्घ सन्धिः सूत्रं किम् ? उदाहरणानि लिखत ?
7. पशमौदार्यम्, धातुणम् शब्दाः विघटयत ।
8. वाङ्मयम्, कश्चिन्नरः इति विघटयत ।

#### Long-Answers-

1. व्याकरणशास्त्रे सन्धयः प्राधान्यं, प्रयोजनं विशदयत ।
2. अच् सन्धयः कति भेदाः ? सर्वे सन्धयः सूत्राणि, उदाहरणानि, लिखत ?
3. इत् सन्धयः कति भेदाः ? सर्वे सन्धयः सूत्राणि, उदाहरणानि लिखत ?

## ENVIRONMENTAL STUDIES

### QUESTION BANK

	UNIT - I : Ecosystem, Biodiversity & Natural Resources ( 15 hrs. ) 1. Definition, Scope & Importance of Environmental Studies. 2. Structure of Ecosystem – Abiotic & Biotic components Producers, Consumers, Decomposers, Food chains, Food webs, Ecological pyramids) 3. Function of an Ecosystem :Energy flow in the Ecosystem ( Single channel energy flow model ) 4. Definition of Biodiversity ,Genetic,Species& Ecosystem diversity , Hot-spots of Biodiversity, Threats to Biodiversity , Conservation of Biodiversity (Insitu&Exsitu ) 5. Renewable &Non – renewable resources, Brief account of Forest , Mineral & Energy (Solar Energy & Geothermal Energy) resources 6. Water Conservation , Rain water harvesting & Watershed management.
1.	SHORT ANSWER QUESTIONS
2.	Write briefly about Abiotic and biotic components.
3.	Discuss about food chain and food webs
4.	Write a short note on Decomposers.
5.	Write about renewable and non-renewable energy resources.
6.	Write a note on water conservation
7.	Write a short note rainwater harvesting.
8.	Discuss about solar energy.
	LONG ANSWER QUESTIONS
9.	Define Environmental studies and discuss its scope and importance
10.	Brief account of Forest resources
11.	Define and explain conservation of Biodiversity.
	UNIT – II: Environmental Pollution , Global Issues & Legislation (15 hrs.) 1. Causes, Effects & Control measures of Air Pollution, Water Pollution 2. Solid Waste Management 3. Global Warming & Ozone layer depletion. 4. Ill – effects of Fire- works 5. Disaster management – floods, earthquakes & cyclones 6. Environmental legislation :- (a) Wild life Protection Act (b) Forest Act (c) Water Act (d) Air Act 7. Human Rights 8. Women and Child welfare 9. Role of Information technology in environment and human health ∞ Field Study: (5 hours) • Pond Ecosystem • Forest Ecosystem
1	SHORT ANSWER QUESTIONS
2	Discuss about global warming
3	Discuss about depletion of ozone layer.
4	Write in brief about role of Information technology in environment and human health.
5	Discuss about women and child welfare.
6	Write about forest act and wildlife protection act.
7	Write about solid waste management.
8	Write a note on ill effects of fireworks.
9	LONG ANSWER QUESTIONS
10	Discuss about causes ,effects and control measures of Air pollution, water pollution.
11	Write a brief note about disaster management

Department: Science

Program:

BSC(Computers)

Semester: I Semester

Name of the Subject:

Differential and Integral Calculus

QUESTION BANK

Unit - I	
<p><b>Partial Differentiation: introduction – Function of two variables – Neighbourhood of a point (a,b) – Continuity of a function of two variables, continuity at a point – Limit of a function of two variables – partial derivatives – Geometrical representation of a Function of two variables – Homogeneous functions.</b></p>	
<b>PART-A</b>	
SNo	SHORT QUESTIONS
1	Define function of two variables and neighbourhood of a point (a,b).
2	Define continuity of a function of two variables and limit of a continuous function.
3	Find the second order partial derivatives of the following (a) $e^{x-y}$ (b) $e^{x^y}$
4	If $z = \tan(y+ax) + (y-ax)^{3/2}$ , find the value of $\frac{\partial^2 z}{\partial x^2} + a^2 \frac{\partial^2 z}{\partial y^2}$
5	If $u = \sqrt{\frac{x^2}{1} + \frac{y^2}{1} + \frac{z^2}{1}}$ , show that $u_x + u_y + u_z = 0$ .
6	If $u = \sin^{-1} \frac{x}{y} + \tan^{-1} \frac{y}{x}$ , show that $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} = 0$ .
7	State and prove Euler's theorem for homogeneous functions.
8	If $Z = (x+y)\phi(y/x)$ , where $\phi$ is an arbitrary function, prove that $x \frac{\partial Z}{\partial x} + y \frac{\partial Z}{\partial y} = Z$ .
9	If $u = \log \left\{ \frac{x^2+y^2}{x+y} \right\}$ , show by Euler's theorem that $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} = 3$ .
10	If $u = \log \frac{x^2+y^2}{x+y}$ , prove that $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} = 1$ .
<b>PART-B</b>	
SNo	LONG QUESTIONS
1	If $u = \log(x^3+y^3+z^3-3xyz)$ show that (a) $(\frac{\partial}{\partial x} + \frac{\partial}{\partial y} + \frac{\partial}{\partial z})^2 u = (x+y+z)^2$ and (b) $\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} + \frac{\partial^2 u}{\partial z^2} = (x+y+z)^2$
2	Find the value of $\frac{1}{a^2} \frac{\partial^2 z}{\partial x^2} + \frac{1}{b^2} \frac{\partial^2 z}{\partial y^2}$ when $a^2 + b^2 - c^2 z^2 = 0$ .
3	If $Z = (x+y) + (x+y)(y/x)$ , prove that $x \left[ \frac{\partial^2 Z}{\partial x^2} + \frac{\partial Z}{\partial y} \right] = y \left[ \frac{\partial^2 Z}{\partial y^2} + \frac{\partial Z}{\partial x} \right]$
4	If $u = \tan^{-1} \frac{x+y}{x-y}$ , $x \neq y$ show that (a) $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} = \sin 2u$ (b) $x^2 \frac{\partial^2 u}{\partial x^2} + 2xy \frac{\partial^2 u}{\partial x \partial y} + y^2 \frac{\partial^2 u}{\partial y^2} = (1-4\sin^2 u) \sin 2u$ .

5	If $u = \sin^{-1} \left\{ \frac{x^{1/2} + y^{1/2}}{x + y} \right\}^{1/2}$ , show that $x^2 \frac{\partial^2 u}{\partial x^2} + 2xy \frac{\partial^2 u}{\partial x \partial y} + y^2 \frac{\partial^2 u}{\partial y^2} = \frac{4 \sin u}{144} (13 + \tan^2 u)$ .
---	---

**Unit-II**

**Theorem on total differentials – Composite functions – Differentiation of composite functions– Implicit functions– Equality of  $f_{xy}(a,b)$  and  $f_{yx}(a,b)$ – Taylor’s theorem for a function of two variables– Maxima and Minima of a function of two variables– Lagrange’s method of undetermined multipliers.**

**PART-A**

SNo	SHORT QUESTIONS
1	Find $\frac{dz}{dt}$ when $z=xy^2+x^2y, x=at^2, y=2at$ verify by direct substitution.
2	Prove that if $y^3-3ax^2+x^3=0$ , then $\frac{dy}{dx} + \frac{2ax}{y^5} = 0$ .
3	If $z = \frac{\sin u}{\cos v} u = \frac{\cos y}{\sin x} v = \frac{\cos x}{\sin y}$ , find $\frac{\partial z}{\partial x}$
4	Find $\frac{dy}{dx}$ for the equation $x \sin(x-y) - (x+y) = 0$
5	If $H = f(y-z, z-x, x-y)$ then show that $\frac{\partial H}{\partial x} + \frac{\partial H}{\partial y} + \frac{\partial H}{\partial z} = 0$ .
6	If $F(x,y,z) = 0$ find $\frac{\partial z}{\partial x} - \frac{\partial z}{\partial y}$
7	Find $\frac{d^2y}{dx^2}$ for $x^3+y^3=3axy$ .
8	Expand $f(x,y) = 6x^2y^2$ as a Taylor series in terms of $(x-1)$ and $(y-1)$ .
9	Expand $x^2y + 3y - 2$ in powers of $x-1$ and $y+2$ .
10	Define stationary and extreme points.

**PART-B**

SNo	LONG QUESTIONS
1	If $f(x,y)$ possesses continuous second order partial derivatives $f_{xy}$ and $f_{yx}$ then $f_{xy} = f_{yx}$ .
2	In a triangle ABC, the angles and sides a and b are made to vary in such a way that the area remains constant. Show that a and b vary by small amounts $\delta a, \delta b$ respectively, then $\cos A \delta a + \cos B \delta b = 0$ .
3	Show that the minimum value of $f(x,y) = xy + \frac{a^3}{x} + \frac{a^3}{y}$ is $3a^2$ .
4	Find the minimum value of $x^2 + y^2 + z^2$ subject to the condition $x + 2y - 4z = 5$ .
5	Find the maximum and minimum values of $f(x,y) = x^4 + 2x^2y - x^2 + 3y^2$ .

Unit- III	
Curvature and Evolutes: introduction – definition of curvature – Radius of Curvature – Length of arc Length of arc as a Function, Derivative of arc = Radius of curvature – Cartesian equations – method – Newtonian method – Centre of Curvature – Chord of Curvature. <b>Evolutes: evolutes and Involutives – Properties of the evolute.</b> <b>Envelopes: One parameter family of curves – Consider the family of straight lines –            Definition – Determination of envelope.</b>	
PART-A	
SNo	SHORT QUESTIONS
1	Find the radius of curvature for the curve $y = \frac{50}{x}$ at P(3,10).
2	Find the radius of curvature of the curve $y = c \cosh x$ at any point P(x,y).
3	Find the envelope of the family of curves $y = mx + am^3$ .
4	Find the envelope of the family of straight lines $y = mx + \frac{1}{m}$ .
5	Show that the chord of the curvature through the pole of the curve $r^n = a^n \cos n\theta$ is $\frac{2a}{n+1}$ .
6	Find the envelope of the family of straight lines $\frac{x}{a} + \frac{y}{b} = 1$ , where $a + b = c$ , $c$ is a constant.
7	<b>Find the envelope of the family of straight lines <math>x \cos \alpha + y \sin \alpha = a</math> where <math>\alpha</math> is a parameter</b>
8	<b>Find the envelope <math>x^2 \sin \alpha + y^2 \cos \alpha = a^2</math> where <math>\alpha</math> is a parameter</b>
9	Using Newton's method find the radius of curvature for the curve $x^3 + y^3 - 2x^2 + 6y = 0$ at the origin O (0,0).
10	Using Newton's method find the radius of curvature for the curve $y = x^4 - 4x^3 - 18x^2$ at the origin O (0,0).
PART-B	
SNo	LONG QUESTIONS
1	Prove that the curvature of a circle is constant.
2	Find the evolute of the ellipse $x = a \cos \theta$ , $y = b \sin \theta$ .
3	(a) Find the evolute of the hyperbola $2xy = a^2$ . (b) Find the envelope of the curve $\left[\frac{x}{a}\right]^m + \left[\frac{y}{a}\right]^n = 1$ . Where $a^n + b^n = c^n$ .
4	Find the envelope of the family of parabolas $\left[\frac{x}{a}\right]^{1/2} + \left[\frac{y}{a}\right]^{1/2} = 1$ . Where $ab = c^2$ .
5	Find the radius of curvature at the origin for the curve $x^4 - y^4 + x^3 - y^3 + x^2 - y^2 + y = 0$ .

<b>Unit-IV</b>	
<p>Lengths of plane curves: Introduction-Expression for the lengths of curves <math>y=f(x)</math> or the length of arcs <math>x=f(y)</math>; <math>x=f(t), y=\phi(t); r=f(t)</math></p> <p>Volumes and surfaces of revolution: Introduction-Expression for the volume obtained by revolving about either axis-expression for the volume obtained by revolving about any line-area of the surface of the frustum of a cone-Expression for the surface of revolution-Pappus Theorems-Surface of revolution</p>	
<b>PART-A</b>	
<b>SNo</b>	<b>SHORT QUESTIONS</b>
1	Find the length of the curve $y = x^{3/2}$ from $x = 0$ to $x = 4$ .
2	Find the length of the curve $y = \frac{1}{3}(x^2+2)^{3/2}$ from $x = 0$ to $x = 3$ .
3	Find the length of the curve $x = e^\theta \sin \theta, y = e^\theta \cos \theta$ from $\theta = 0$ to $\theta = \pi/2$ .
4	Find the length of the arc of the curve $x = t^2 \cos t, y = t^2 \sin t$ .
5	Find the volume of the solid obtained by revolving the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ about x-axis.
6	Find the volume of the region generated by revolving the curve $y = \cos x, y = 0$ from $x = 0$ to $x = \pi/2$ about x-axis.
7	<b>Find the surface area of a sphere of radius 'a'.</b>
8	Derive the expression for the surface area of the frustum of a cone.
9	Prove that the volume of the reel formed by the revolution of the cycloid $x = a(\theta + \sin \theta), y = a(1 - \cos \theta)$ about the x-axis is $\pi^2 a^3$ .
10	The area included between the curves $y^2 = x^3$ and $x^2 = y^3$ is rotated about the x-axis.
<b>PART-B</b>	
<b>SNo</b>	<b>LONG QUESTIONS</b>
1	Show that the volume of the solid obtained by revolving about x-axis the area enclosed by the parabola $y^2 = 4ax$ and its evolute $27ay^2 = 4(x-2a)^3$ is $80\pi a^3$ .
2	Show that the length of the curve $x^2 = a^2(1 - e^{-y/a})$ measured from $O(0, 0)$ to $P(x, y)$ is $a \log \left( \frac{a+x}{a-x} \right) - x$ .
3	Find the volume of the solid obtained by revolving one arc of the cycloid $x = a(\theta + \sin \theta), y = a(1 + \cos \theta)$ about x-axis
4	Prove that the length of the arc of the curve $x = a \sin 2\theta(1 + \cos 2\theta), y = a \cos 2\theta(1 - \cos 2\theta)$ measured from $O(0, 0)$ to $P(x, y)$ is $\frac{4}{3} a \sin 3\theta$ .
5	Find the volume of the solid obtained by revolving the cardioid $r = a(1 + \cos \theta)$ about the initial line.

Department: SCIENCE  
Semester: Ist Semester

Program: B Sc  
Name of the Subject: Programming with C  
QUESTION BANK

Unit - I	
Introduction: Types of Languages- History of C language – Basic Structure – Programming Rules – Flow charts-algorithms–Commonly used library functions - Executing the C program - Pre-processors in “C”- Keywords & Identifiers – Constants – Variables: Rules for defining variables - Scope and Life of a Variable-- Data types - Type Conversion - Formatted Input and Output operations. Operators: Introduction – Arithmetic – Relational – Logical – Assignment - Conditional - Special - Bitwise - Increment / Decrement operator	
PART -A	
S No	SHORT QUESTIONS
1	Who is the father of C Language?
2	What are C tokens?
3	What is a Pre-processor directive?
4	Define Data Type.
5	What are the Relational operators in C?
6	What is the scope and life of a variable in C?
7	What is a flow chart?
8	Why do we use algorithms in C?
9	What are built in functions?
10	How many key words are there in C? Name them.
PART -B	
S No	LONG QUESTIONS
1	Write the Basic structure of C program.

2	Write a few lines on: an operator, operand and expression in C.
3	Write about various data types in C.
4	What are the operators used in C language.
5	What are the formatted input and output operations in C?

## Unit – II

**WORKING WITH CONTROL STATEMENTS, LOOPS** Conditional statements: Introduction - If statements - If-else statements – nested if-else – break statement continue statement-go to statement-Switch statements. Looping statements: Introduction While statements – Do-while statements - For Statements-nested loop statements.

### PART -A

S No	SHORT QUESTIONS
1	What are the conditional control statements?
2	Write about if-else statement.
3	What are the unconditional control statements?
4	Write about Do-while statements.
5	Write about while statement.
6	Write about nested looping statements.
7	Write about break statement in C.
8	Write about the switch statement.
9	What is the difference between While and Do-while statements.
10	What is go-to statement?

### PART -B

S No	LONG QUESTIONS
1	Write about conditional control statements in C. with example program.

2	Write about looping control statements. With example program.
3	Write a program to find days of week using Switch statement.
4	Differentiate between while and Do-while statements with a supporting program.
5	Write a program to find the sum of first n numbers using for loop.

### Unit – III

**FUNCTIONS, ARRAYS AND STRINGS** Functions: Definition and declaration of functions- Function proto type-return statement- types of functions-formatted and unformatted functions. Built in functions: Mathematical functions - String functions - Character functions - Date functions. User defined functions: Introduction - Need for user defined functions - Elements of functions – Function call – call by value and call by reference - Recursive functions. Arrays: Introduction - Defining an array - Initializing an array –characteristics of an array- One dimensional array – Two dimensional array – Multi dimensional array. Strings: Introduction - Declaring and initializing string - Reading and Writing strings - String standard functions.

### PART -A

S No	SHORT QUESTIONS
1	Define array.
2	What is a function prototype?
3	What are built in functions?
4	Write about user defined functions.
5	What are the string handling functions?
6	What is recursive function?
7	What are function calls?
8	What are formatted functions?
9	What are unformatted functions?
10	Write about call by value and call by functions.

PART -B	
S No	LONG QUESTIONS
1	Write a program to find factorial of a number using recursion.
2	Write a program to find multiplication of matrices.
3	Write about call by value and call by reference. Give an example program for each.
4	What are the string handling functions in C? Explain with syntax and example.
5	Write the procedure to declare and initialize two dimensional arrays with example.

Unit - IV	
<p>POINTERS, STRUCTURES AND UNIONS Pointers: Features of pointers- Declaration of Pointers-arithmetic operations with pointers Structures: Features of Structures - Declaring and initialization of Structures –Structure within Structure, Array of Structures- Enumerated data type-Unions-Definition and advantages of Unions comparison between Structure &amp; Unions.</p>	
PART -A	
S No	SHORT QUESTIONS
1	Write about pointer variables.
2	Define structures.
3	Define unions.
4	What is an Enumerated data type?
5	Write about features of structures.
6	What is the difference between structure and union?
7	Write about features of pointers.
8	Write the advantages of Unions.
9	Write about structure using pointers.

10	Write about calling functions with pointers as arguments.
<b>PART -B</b>	
<b>S No</b>	<b>LONG QUESTIONS</b>
1	What are the features of pointers? How to declare pointers?
2	What is Enumerated data type? Write an example program.
3	What are the advantages of Unions over structures?
4	Write a program to declare arrays using pointers.
5	Write a program to display student details

**Department:SCIENCES**

**Program: BSc**

**(MSCs)Semester:1stSemester**

**NameoftheSubject:Statistics**

**QUESTIONBANK**

<b>Unit-I</b>	
<p><b>Descriptive Statistics:</b> Concept of primary and secondary data, Methods of collection and editing of primary data, Designing a questionnaire and a schedule, Sources and editing of secondary data, Classification and tabulation of data, Measures of central tendency (Arithmetic mean, median, mode, geometric mean and harmonic mean) with simple applications, Absolute and relative measures of dispersion (range, quartile deviation, mean deviation, standard deviation and variance) with simple applications, Importance of moments, central and non-central moments, their inter-relationships, Sheppard's correction for moments for grouped data, Measures of skewness based on quartiles and moments, kurtosis based on moments with real life examples.</p>	
<b>PART-A</b>	
<b>SNo</b>	<b>SHORT QUESTIONS</b>
<b>1</b>	State the important methods of primary data
<b>2</b>	Write various secondary data sources of government organizations
<b>3</b>	Define central and Non-central moments. State their interrelationship
<b>4</b>	Define Arithmetic mean, Geometric mean and Harmonic mean
<b>5</b>	Define Symmetrical distribution

<b>6</b>	DefineSkewnessandKurtosis						
<b>7</b>	Stateandprovethatmomentsareindependentof changingtheoriginbutnotonscale						
<b>8</b>	ProvethatlimitsofBowley'scoefficientofskewnessis-1to+1						
<b>9</b>	Calculatemeandeviationaboutmediantothefollowingdata						
	C.I	10-20	20-30	30-40	40-50	50-60	
	Frequency	5	10	15	10	5	
<b>10</b>	Thefirstfourmomentsofadistributionaboutthevalue4 ofavariable are1,4,10,45.Findfirstfourmomentsaboutthemean						

**PART-B**

<b>SNo</b>	<b>LONGQUESTIONS</b>							
<b>1</b>	What is primary data? State various methods of collecting the primary data and discuss their relative merits							
<b>2</b>	What is mean by classification of data? Discuss various method of classification							
<b>3</b>	Define central and Non-central moments. Derive central moments in terms of Non-central moments and vice-versa							
<b>4</b>	Show that for discrete distribution (i) $B_2 > 1$ (ii) $B_2 > B_1 + 1$							
<b>5</b>	Calculate standard deviation to the following data							
	C.I	20-30	30-40	40-50	50-60	60-70	70-80	80-90
	F	3	61	132	153	140	51	2

**Unit-II**

Probability: Basic concepts of probability, deterministic and random experiments, trial, outcome, sample space, event, operations of events, mutually exclusive and exhaustive events, equally likely and favorable events with examples, Mathematical, Statistical and Axiomatic definitions of probability, their merits and demerits. Properties of probability based on axiomatic definition, Conditional probability and independence of events, Addition and multiplication theorems for 'n' events, Boole's inequality and Bayes' theorem, Problems on probability using counting methods and theorems.

**PART-A**

<b>SNo</b>	<b>SHORTQUESTIONS</b>							
<b>1</b>	Define independent events, mutually exclusive events							
<b>2</b>	Define mathematical and statistical probability							
<b>3</b>	Define axiomatic definition of probability and its properties							
<b>4</b>	Define conditional probability							

5	State and prove that for any three events A, B and C $P(A \cup B \cup C) = P(A/C) + P(B/C) - P(A \cap B/C)$
6	State and prove that for any two events A and B $P(A \cap B) \leq P(A) \leq P(A \cup B) \leq P(A) + P(B)$
7	What is probability that a leap year contains 52 Mondays
8	Two cards are drawn from a well shuffled pack of 52 cards. Find the probability that they are (i) two aces, (ii) a king and a queen
9	A box contains 6 white and 4 green balls. If two balls are drawn at random. Find the probability that they are either white or green balls
10	What is the probability that four S's come consecutively in the word MISSISSIPPI

**PART-B**

SNo	LONG QUESTIONS
1	State and prove multiplication theorem for 'n' events
2	A bag contains 4 red and 5 black balls. If two balls are drawn in succession, then find the probability that they are red balls if the drawn ball at first draw was (i) replaced (ii) not replaced
3	State and prove Boole's inequality
4	State and prove Baye's theorem
5	A business man goes to hotels X, Y and Z 20%, 50%, 30% of the time respectively. It is known that 5%, 4% and 8% of the rooms in X, Y and Z hotels have faulty plumbings. What is the probability that a businessman's room having faulty is assigned to hotel Z?

**Unit- III**

**Random Variables:** Definition of random variable, discrete and continuous random variables, functions of random variables, probability mass function and probability density function with illustrations. Distribution function and its properties, Transformation of one-dimensional random variable (simple 1-1 function only), Notion of bivariate random variable, bivariate distribution, statements of its properties, Joint, marginal and conditional distributions, Independence of random variables.

**PART-A**

SNo	SHORT QUESTIONS
1	Define random variable with an example
2	Define discrete and continuous random variable with an example
3	Define distribution function and state its properties
4	Define probability mass function and probability density function

5	Define joint probability mass function and state its properties												
6	Define Stochastic independence of random variable												
7	Find mean and variance of the following probability distribution  Find $K$ , mean and variance												
8	The random variable $X$ has an exponential distribution $f(x) = e^{-x}, 0 \leq x < \infty$ Find the density function of random variable $Y = 3X + 5$												
9	Let $X$ be a random variable such that $P(X = -2) = P(X = -1), P(X = 2) = P(X = 1)$ Obtain probability mass function of $X$ and its distribution function												
10	Two fair dice are tossed simultaneously. Let $X$ denote the number on the first die and $Y$ denote the number on the second die. <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;"></td> <td style="width: 25%;">0.2</td> <td style="width: 25%;">2K</td> <td style="width: 25%;">0.4</td> </tr> <tr> <td style="text-align: center;">(i) Find joint probability distribution</td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">(ii) Find the following probability (a) <math>P(X+Y=8)</math> (b) <math>P(X+Y \geq 8)</math> (c) <math>P(X=Y)</math></td> <td></td> <td></td> <td></td> </tr> </table>		0.2	2K	0.4	(i) Find joint probability distribution				(ii) Find the following probability (a) $P(X+Y=8)$ (b) $P(X+Y \geq 8)$ (c) $P(X=Y)$			
	0.2	2K	0.4										
(i) Find joint probability distribution													
(ii) Find the following probability (a) $P(X+Y=8)$ (b) $P(X+Y \geq 8)$ (c) $P(X=Y)$													
<b>PART-B</b>													
SNo	LONG QUESTIONS												
1	Define random variable and give its distribution function and explain properties of distribution function												
2	Define Bivariate random variable and explain the concepts of joint marginal and conditionals												
3	A continuous random variable $X$ has the pdf $f(x) = y_0(x-x^2), 0 \leq x \leq 1$ where $y_0$ is a constant Find (i) arithmetic mean (ii) Harmonic mean (iii) Median (iv) mode (v) show that distribution is symmetrical												
4	The joint pdf of $X$ and $Y$ is given by $f(x,y) = xe^{-x(y+1)}, 0 \leq x, y < \infty$ (i) Find marginal												

	(ii) Check independence
--	-------------------------

5	<p>X and Y are two random variables with the joint probability mass function</p> $P(x, y) = 1/27(2x+y), x=0,1,2, y=0,1,2$ <p>Find (i) marginal distributions of X and Y          (iii) Conditional distribution of Y given X = x</p>
---	--

**Unit-IV**

**Mathematical Expectation:** Mathematical expectation of a function of a random variable, Raw and central moments, covariance using mathematical expectation with examples, Addition and multiplication theorems of expectation. Definitions of moment generating function (m.g.f), characteristic function (c.f), cumulant generating function (c.g.f), probability generating function (p.g.f) and statements of their properties with applications, Chebyshev's and Cauchy-Schwartz's inequalities and their applications

**PART-A**

SNo	SHORT QUESTIONS
1	Define expectation of random variable
2	Define expectation of function of random variable
3	State and prove that, If X, Y are two random variables then $E(x+y) = E(X) + E(Y)$
4	Show that $\text{var}(a+bX) = b^2 \text{var}(x)$
5	What is effect of change of origin and scale on moment generating function
6	Define moment generating function and write its limitations.
7	If two dice are thrown, find the expected value of sum of number of points on them.
8	If X has a probability density function $f(x) = e^{-x}, 0 \leq x < \infty$ . use Chebyshev's inequality to obtain a lower bound to the probability $P(-1 \leq X \leq 3)$ .
9	Define characteristic function and explain its properties.
10	Verify Cauchy-Schwartz inequality to the joint p.d.f $F(x, y) = x+y, 0 < x < 1, 0 < y < 1$

**PART-B**

SNo	LONG QUESTIONS
1	Define mathematical expectation of a random variable. State and Prove additivity on the theorem of expectations.
2	State and prove Cauchy-Schwartz inequality
3	State and prove Chebyshev's inequality

4	Definemomentgeneratingfunctionandexplainitsproperties
5	Definecumulantgeneratingfunctionandexplainitsproperties