



Don Bosco College of Arts and Science, Keela Eral

NAAC - SSR - CYCLE I

1.1.1.. Curriculum Planning

## Internal Question Papers Sample



தொன் போள்கோ கலை மற்றும் அறிவியல் கல்வி, கிழவால்  
அகாதிப்பீட்டுத் தேர்வு - III  
முதலாயாண்டு மாணாக்கரிமலுக்கரியது இரண்டாம் பருவம்  
தான் : பொதுத்தமிழ்

நாள்: 20.03.2019

தேரம் : 1 மணிதேரம்  
மதிப்பெண் : 25

பகுதி - அ

சரியான விடையைத் தேர்வக :

(5x 1 = 5)

1. திருக்குறள் எச்சமயம் சார்ந்ததாக இருக்கலாம் எனக் கருதப்படுகின்றது?  
(அ) பெளத்தம் (ஆ) சமணம் (இ) சைவம் (ஈ) இவைபோதும்ல்லை
2. ஞானப்பால் உண்டவன் யார்?  
(அ) கந்தர் (ஆ) மாணிக்கவாசகர் (இ) திருநாவுக்கரசர் (ஈ) திருஞானசம்பந்தர்
3. 'நாலும் இரண்டும் சொல்லுக்கு உறுதி' இவற்றில் வரும் அறநூல் எது?  
(அ) குறள் (ஆ) நாலடியார் (இ) நான்மணிக்கடிகை (ஈ) ஆசாரக்கிகாவை
4. நாலடியாரை தொகுத்தவர்கள் யார்?  
(அ) சமண முனிகள் (ஆ) பெளத்த துறவிகள் (இ) வைணவர்கள் (ஈ) சைவர்கள்
5. திருஞானசம்பந்தரின் திருமுறை எந்த வகையினது?  
(அ) 1,2 (ஆ) 4,5,6 (இ) 7 (ஈ) அனைத்தும்

பகுதி - ஆ

ஒருபக்க அளவில் விடைதருக. (ஏதேனும் முன்று மட்டும்)

(3 x 4 = 12)

6. அறயிலக்கிய நாற்கள் குறித்து விவரிக்க.
7. பன்னிரு திருமுறைகளைப் பட்டியலிடுக.
8. திருக்குறளைப் பற்றி தெளிவாக எடுத்துரைக்கவும்.
9. திருஞானசம்பந்தர் குறித்து விளக்குக?

பகுதி - இ

முன்று பக்க அளவில் கட்டுரை வடிவில் விடைதருக (ஏதேனும் 1 மட்டும்)(1x8= 8)

10. பதினென் கீழ்க்கணக்கு நாற்களை வரிசைப்படுத்தவும்.
11. உன் ஊரில் நூலக வசதி வேண்டி பொது நூலக இயக்குநர்க்கு விண்ணப்பக் கடிதம் எழுதுக?



DON BOSCO COLLEGE OF ARTS & SCIENCE, KEELA ERAL  
I - B.A., B.Sc., BBA, BCA, B.Com.  
Second Semester - HICIA  
General English

Date: 18.03.2019  
Time Duration: 1 hour

Session: FN  
Total Marks: 25

PART - A

Choose the correct Answer:

(5 x 1 = 5 Marks)

1. \_\_\_\_\_ conquered China.

- (a) Indians (b) Japanese (c) Americans (d) Manchus

2. Your dream should not cloud your \_\_\_\_\_.

- (a) emotion (b) reason (c) night (d) rain

3. Aunt Jane gave \_\_\_\_\_ pounds as wedding gift to Jack and Jill.

- (a) 2000 (b) 20 (c) 200 (d) 2

4. The cheque of ten pounds was paid to \_\_\_\_\_.

- (a) the owner (b) the nurse (c) Dr. Martin (d) the painter

5. \_\_\_\_\_ is the main source of superstition.

- (a) fear (b) ghost (c) God (d) rumour

PART - B

Answer Any Three Questions

(3 x 4 = 12 Marks)

6. Explain the virtues said in the poem 'If'.
7. Describe the character of Jill in the play 'The Never-never nest'.
8. Write a conversation between two friends talking about the election and society.
9. Change the following sentences into passive voice
  - a) The old man planted a tree
  - b) Close the box
  - c) Who wrote this essay?
  - d) Mr. Kumar teaches us Physics.

PART - C

Answer Any One Question.

(1 x 8 = 8 Marks)

10. What are the rules given by Russell to escape from intellectual rubbish?
11. Describe the situation in the house of Jack and Jill in the play 'The Never - never nest'.



DON BOSCO COLLEGE OF ARTS AND SCIENCE, KEELA ERAL  
DEPARTMENT OF MATHEMATICS

I B.Sc(Maths)

Date: 16.03.2019

Second Semester - III Internal

Session: FN

Time: 1 hr

Analytical Geometry 3D- SMMA21

Marks: 25

Part - A

(Answer all questions)

5 x 1 = 5

- The lines is parallel to the plane if  $0 =$   
a) 0                      b) 90                      c) 1                      d) 45
- Two lines are coplanar if they are  
a) parallel                      b) not intersect                      c) intersect                      d) none
- The radius of the sphere  $x^2+y^2+z^2-2x+2y-4z-3=0$  is  
a) 4                      b) 2                      c) 3                      d) 5
- The plane passes through centre of the sphere is \_\_\_\_\_  
a) circum circle                      b) circle                      c) great circle                      d) none
- In the sphere equation  $x^2+y^2+z^2+2ux+2vy+2wz+d=0$  if  $d$  is positive, then origin lies \_\_\_\_\_ the sphere  
a) inside                      b) outside                      c) on                      d) within

Part - B

(Answer any three)

4 x 3 = 12

- Prove that the lines  $3x-4y+2z=0 = -4x+y+3z$ ,  $x+3y-5z+9=0 = 7x-5y-z+7$  are parallel .
- Find the equation of orthogonal projection of the line  $\frac{x-2}{4} = \frac{y-1}{2} = \frac{z-4}{3}$  onto the plane  $8x+2y+9z-1=0$ .
- Find the equation of the sphere having the circle  $x^2+y^2+z^2-2x+4y-6z+7=0$  and  $2x-y+2z=5$  for a great circle.
- Find the equation of the sphere which touches the sphere  $x^2+y^2+z^2-6x+2z+1=0$  at the point  $(2,-2,1)$  and passes through the origin.

Part - C

(Answer any one)

1 x 8 = 8

- Find the angle between the line  $\frac{x-1}{2} = \frac{y-2}{1} = \frac{z-3}{2}$  and the plane  $x+2y+z-3=0$ .
- Find the equation of sphere which passes through the circle  $x^2+y^2+z^2-2x-4y=0$ ,  $x+2y+3z=8$  and touches the plane  $4x+3y=25$ .



DON BOSCO COLLEGE OF ARTS & SCIENCE, KEELA ERAL

Department of Mathematics

I - B.Sc

Second Semester - III CIA

DIFFERENTIAL EQUATIONS

Date: 21/03/2019

Time Duration: 1 hour

Session: FN

Total Marks: 25

PART - A

(5 x 1 = 5 Marks)

Choose the correct Answer:

1. If C.F. is  $Ae^{x_1} + Be^{x_2}$ , then the two roots will be  
(a) equal (b) imaginary (c) unequal (d) zero
2. The particular integral of  $(D^2 - 1)y = 2$  is  
(a) 2 (b) -2 (c) x (d)  $x^2$
3. The number of roots of  $D^2 - 4D + 4)y = 0$   
(a) 1 (b) 3 (c) 2 (d) 0
4. If  $\theta = x \frac{d}{dx}$ , then  $x^m \frac{d^m}{dx^m} =$   
(a)  $\theta^m$  (b)  $\theta(\theta - 1) \dots (\theta - m + 1)$  (c) p (d)  $y^2$
5. The equation known as Clairaut's is of the form ?  
(a)  $y = px + f(p)$  (b)  $x = py + f(p)$  (c)  $xy = px + f(p)$  (d)  $xy = py + f(p)$

PART - B

(3 x 4 = 12 Marks)

Answer Any Three Questions

6. Solve  $(D^2 + 4)y = e^x + \cos 2x$
7. Solve  $(D^3 - 7D - 6)y = e^{2x}(1 + x)$
8. Solve  $(D^2 - 12D + 16)y = (e^x + e^{-2x})^2$
9. Solve  $(D^2 - 4)y = \sin^2 x$

PART - C

(1 x 8 = 8 Marks)

Answer ANY One Question.

10. Solve  $(D^3 - 3D^2 + 3D - 1)y = xe^x + e^x$
11. Solve  $x^3 \frac{d^3 y}{dx^3} + 3x^2 \frac{d^2 y}{dx^2} + x \frac{dy}{dx} + y = x + \log x$



DON BOSCO COLLEGE OF ARTS AND SCIENCE, KEELA ERAL  
DEPARTMENT OF MATHEMATICS

III B.Sc (Maths) - Sixth Semester

Date: 20-03-2019

Time: 1 hr

Number Theory- JMMA63

Session: FN

Marks:25

Part - A

(Answer all questions)

5 x 1 = 5

1.  $d$  is common divisor of  $a$  and  $b$  iff

a)  $\gcd(a/d, b/d)=1$

b)  $\gcd(a/d, b/d)=d$

c)  $\gcd(a, b)=1$

d)  $\gcd(a, b) = n$

2. A repunit integer has the form

a)  $\frac{10^n - 1}{6}$

b)  $\frac{10^n + 1}{9}$

p

c)  $\frac{10^n + 1}{6}$

d)  $\frac{10^n - 1}{9}$

3. Which of the following Diophantine equation can be solved?

a)  $6x + 51y = 22.$

b)  $14x + 35y = 93$

c)  $33x + 14y = 115.$

d)  $66x + 121y = 13$

4. The only prime number of the form  $n^3 - 1$  is

a) 7

b) 61

c) 97

d) 181

5.  $ax \equiv b \pmod{n}$  has a solution ( $\gcd(a, n) = d$ ) if

a)  $n/d$

b)  $d/a$

c)  $d/b$

d)  $b/d$

Part - B

(Answer any three)

3 x 4 = 12

6. Prove  $\gcd(a, b) \cdot \text{lcm}(a, b) = ab$

7. If  $p$  is prime then prove  $\sqrt{p}$  is irrational.

8. If  $p$  and  $p^2 + 8$  are prime then prove  $p^3 + 4$  is also prime.

9. Solve  $172x + 20y = 1000.$

Part - C

(Answer any one)

1 x 8 = 8

10. State and prove fundamental theorem of Arithmetic

11. Prove that the linear Diophantine equation  $ax + by = c$  has a solution if and only if  $d \mid c$ ,

where  $d = \gcd(a, b)$ . If  $x_0, y_0$  is any particular solution of this equation, then all other

solutions are given by  $X = X_0 + \left(\frac{b}{d}\right)t$ ;  $Y = Y_0 - \left(\frac{a}{d}\right)t$  where  $t$  is an arbitrary integer.



தொன் இளங்கோகலைபற்றும் அறிவியல் கல்லூரி, கிழசரால்  
தொடர்ச்சியான உள்மதிப்பீடு-1, பகுதி-II  
(முதலாமாண்டு மாணவர்களுக்கானது)  
மொத்த தூரம்

தா.நி. 11.02.2019

நேரம் : 1 மணிநேரம்  
மதிப்பெண் : 25

சரியானவிடையைத் தேர்வு :

பகுதி - அ

(5 x 1 = 5)

1. அக்காணல் தகவல்களாக செல்லுவதை கவிமணி எதை வளம்படுத்தினார்?

(அ) விவிலி (ஆ) விடுதலை (இ) மிதிவண்டி (ஈ) தொடர்வண்டி

2. சிவந்த செல்லின் யார்?

(அ) இளங்கோவடி (ஆ) சாத்தனார் (இ) மா. பொ. சி (ஈ) கோவலன்

3. அரண்மனைக்குள் இருந்ததயிழைவதற்கு இழுத்தவந்தவன்?

(அ) கல்யாண் (ஆ) பாரதி (இ) வள்ளுவன் (ஈ) இளங்கோவடி

4. கவிமணி எந்த தாளத்தில் தழுவி ஆசிய ஜோதியை எழுதினார்..

(அ) லைட்டிங் ஏசியா (ஆ) லைட்டிங் உட் (இ) லைட்டிங் மாஸ் (ஈ) லைட்டிங் வீசிட்

5. ஆயக்கலைகள் மொத்தம் எத்தனை?

(அ) 68 (ஆ) 46 (இ) 64 (ஈ) 63

பகுதி - ஆ

ஒருபக்க அளவில் விடைதருக. (ஏதேனும் மூன்றுமட்டும்)

(3 x 4 = 12)

6. தமிழ் பண்பாட்டை எடுத்துரைக்க?

7. 'கலைகள்' நவீன புரிந்துகொண்டதை எடுத்துரைக்கவும்?

8. கவிமணியின் தமிழ்த் தொண்டை எடுத்துரைக்க

9. இலக்கியத்தின் உயிராக நவீன புரிந்ததை எடுத்துரைக்கவும்?

பகுதி - இ

மூன்றுபக்க அளவில் கட்டுரைவடிவில் விடைதருக (ஏதேனும் ஒன்றுமட்டும்) (1 x 8 = 8)

10. நாட்டுப் புரவியலில் தோய்ந்த பாரதியை கட்டுரைக்க?

11. விநாயகம் பிள்ளையின் தேசியத்தை கட்டுரைக்கவும்?



தொன் போஸ்கோ கலை மற்றும் அறிவியல் கல்லூரி, கீழ்சூரல்  
தொடர்ச்சியான உள்மதிப்பீடு-11, பகுதி-11  
இரண்டாமாண்டு தமிழியல், ஆங்கிலம், கணிதம் மாணாக்கர்களுக்குரியது  
நான்காம் பருவம்  
தாள் : பொதுத்தமிழ் (சங்க இலக்கியம்)

நாள்: 11.02.2019

நேரம் : 1  
மதிப்பெண் : 25

சரியான விடையைத் தேர்க :

பகுதி - அ

(5 x 1 = 5)

1. 'அடிகளாரின் அரசியல்' கட்டுரையின் ஆசிரியர் யார்?  
(அ) பாரதியார் (ஆ) தொ.பரமசிவன் (இ) இரா.காமராசு (ஈ) வெ.இறையன்பு
2. 'தென்மழ்நாட்டுச் செழுவில் கயல் புலி' எனும் செய்யுளில் மூவரசர்களின் சின்னங்களையும் சேர்த்து தமிழ்நாட்டுச் சின்னமாக்கு என்று கூறியவர்?  
(அ) இளங்கோவடிகள் (ஆ) கம்பர் (இ) சீத்தலைச் சாத்தனார் (ஈ) பீசிராந்தையார்
3. 'நிலம் தீ நீர் வளி விசும்போடு ஐந்தும்' - எனும் நூற்பாவில் பஞ்சப்பூதங்களின் செயல்பாட்டினால் தான் உயிரினங்கள் வாழமுடியும் எனும் கருத்தை விளக்கும் நூல்?  
(அ) தொல்காப்பியம் (ஆ) நன்னூல் (இ) யாப்பு (ஈ) அகத்தியம்
4. ----- நில மக்கள் தேன் எடுத்தலும், கிழங்கு அகழ்ந்தும் வாழும் பண்பு உடையவர்கள்.  
(அ) குறிஞ்சி (ஆ) மருதம் (இ) நெய்தல் (ஈ) பாலை
5. 'அழுக்குப் படாத அழகு' நாடகத்தின் தொகுப்பு ஆசிரியர் யார்?  
(அ) மா.கமலவேலவன் (ஆ) இரா.கவியரசு (இ) கண்ணதாசன் (ஈ) க.விஸ்வநாதன்

பகுதி - ஆ

ஒருபக்க அளவில் விடைதருக. (ஏதேனும் மூன்று மட்டும்)

(3 x 4 = 12)

6. வணிகம் - சொற்பொருள் குறித்து விளக்குக.
7. குறிஞ்சி நிலத்து மக்களின் வாழ்வாதாரங்களைப் பற்றி இரா.காமராசு நவில்வதைக் கூறுக.
8. மூவரசர்களின் தலைநகரம், சின்னம் குறித்து 'அடிகளாரின் அரசியல்' கட்டுரையின் வழியெழுதுக.
9. 'அழுக்குப்படாத அழகு' நாடகத்தின் மையக்கருத்தினையும், உரிப்பொருளினையும் எழுதுக.

பகுதி - இ

மூன்று பக்க அளவில் கட்டுரை வடிவில் விடைதருக(ஏதேனும் ஒன்றுமட்டும்) 1 x 8 = 8)

10. "ஆச்சரியமட்டும் அறிவியல் வளர்ச்சி! சிந்தனையற்றுச் சிதைவடையும் வாழ்க்கை" எனும் கட்டுரையில் ம.வின்சென்ட் நவிலும் கருத்துகளைத் தொகுத்துரைக்க.
11. 'அழுக்குப்படாத அழகு' நாடகத்தில் ஆசிரியர் படைத்துள்ள கதாபாத்திர ஆளுமையை விவரி.





DON BOSCO COLLEGE OF ARTS & SCIENCE, KEELA ERAL  
Department of MATHEMATICS

II- B.Sc

IV semester - II CIA

Abstract Algebra -I

Date: 13.02.2019  
Time Duration: 1 hour

Session: FN  
Total Marks: 25

Choose the correct Answer: PART - A

(5 x 1 = 5 Marks)

- The order of  $-i$  in  $(\mathbb{C}^*, \cdot)$  is  
(a) 1 (b) 2 (c) 4 (d) infinite
- The set of all generators of group  $(\mathbb{Z}_{12}, \oplus)$  is  
(a) 1, 2, 3, 4 (b) 1, 3, 6, 9 (c) 1, 5, 7, 11 (d) 2, 3, 5, 7, 11
- The order of  $-1$  in  $(\mathbb{Z}, +)$   
(a) 1 (b) 2 (c) 4 (d) infinite
- Number of elements in a cyclic subgroup  $\langle 2 \rangle$  is  $(\mathbb{Z}_{18}, \oplus)$   
(a) 1 (b) 18 (c) 9 (d) 5
- $S_3$  contains  
(a) 1 (b) 4 (c) 9 (d) 6

PART - B

Answer Any Three Questions

(3 x 4 = 12 Marks)

- A subgroup of a cyclic group is cyclic
- Let  $G$  be a group and let  $a$  be an element of order  $n$  in  $G$ . Then the order of  $a^s$ , where  $0 < s < n$ , is  $n/d$  where  $d$  is the g.c.d of  $n$  and  $s$ .
- prove that the collection of all left cosets forms a partition of a group.
- prove that any group of prime order has no proper subgroup.

PART - C

Answer Any One Question.

(1 x 8 = 8 Marks)

- Let  $G$  be a group and  $H$  be a subgroup of  $G$ . Then (i)  $a \in H \Leftrightarrow aH = H$  (ii)  $aH = bH \Leftrightarrow a^{-1}b \in H$  (iii)  $a \in bH \Leftrightarrow a^{-1} \in Hb^{-1}$  (iv)  $a \in bH \Leftrightarrow aH = bH$
- State and prove lagrange's theorem.



DON BOSCO COLLEGE OF ARTS & SCIENCE, KEELA ERAL  
Department of MATHEMATICS  
III- B.Sc

VI semester - H CIA  
Abstract Algebra- II

Date: 11 .02.2019  
Time Duration: 1hour

Session: FN  
Total Marks: 25

Choose the correct Answer: PART - A

(5 x 1 = 5 Marks)

1.  $R$  in  $V_3(R)$ ,  $S = \{(1,0,0), (2,0,0), (3,0,0)\}$  Then  $L(S) =$   
(a)  $S$  (b)  $\{(x, y, 0) / x, y \in R\}$  (c)  $V_3(R)$  (d)  $\{(x, 0, 0) / x \in R\}$
2. Let  $\alpha = a + ib \in \mathbb{C}$  and  $u \in R$  is not a vector space, since  
(a)  $\alpha u \in R$  (b)  $0 \in R$  (c)  $1 \in R$  (d)  $\alpha u \notin R$
3.  $L(\{1, i\}) =$   
(a)  $R$  (b)  $Q$  (c)  $Z$  (d)  $C$
4. A linear transformation:  $V \rightarrow W$  is called a  
a) constant b) variable c) linear functional d) none
5. If  $S = \{(1,0), (0,1)\} \subseteq V_2(R)$ , then  $L(S) =$   
a)  $V_2(R)$  b)  $V_3(R)$  c)  $V_4(R)$  d)  $R$

PART - B

Answer Any Three Questions

(3 x 4 = 12 Marks)

6. Prove that  $T: R^2 \rightarrow R^2$  defined by  $T(a, b) = (2a - 3b, a + 4b)$  is a linear transformation.
7. Let  $V$  be a vector space over a Field  $F$  and  $S, T \subseteq V$ . Then (a)  $S \subseteq T \Rightarrow L(S) \subseteq L(T)$   
(b)  $L(S \cup T) = L(S) + L(T)$  (c)  $L(S) = S$  iff  $S$  is a subspace of  $V$ .
8. prove that the vectors  $(1, 2, 1)$ ,  $(2, 1, 0)$  and  $(1, -1, 2)$  are linearly independent in the vectorspace  $V_3(R)$
9. show that any subset of linearly independent set is linearly independent.

PART - C

Answer Any One Question.

(1 x 8 = 8 Marks)

10. State and Prove Fundamental theorem of homomorphism on vector spaces.
11. If  $V$  is a vector space over a field  $F$  and  $A, B$  subspaces of  $V$ . Then show that

$$\frac{A+B}{A} \cong \frac{B}{A \cap B}$$



தொன் போஸ்கோகலைமற்றும் அறிவியல் கல்லூரி, கீழசரால்  
அகமதிப்பீட்டு மாதிரித் தேர்வு  
(முதலாம் ஆண்டுபயிலும் மாணவர்களுக்கானது)  
தாள் : பொதுதமிழ்

நாள்: 24 அக்டோபர் 2018

நேரம் : 2 1/2 மணி நேரம்  
மதிப்பெண் : 50

சரியானவிடையைத் தேர்வு : பகுதி - அ (6x1=6)

1. 'அப்துல் கலாமின் வீணை' என்ற கவிதையின் ஆசிரியர் -----  
(அ) வைரமுத்து (ஆ) கண்ணதாசன் (இ) உமாஹரிஹரன் (ஈ) சிற்பி
2. நாமக்கல் கவிஞரின் இயற்பெயர் -----  
(அ) கப்புரத்தினம் (ஆ) சுப்பிரமணியம் (இ) தேசிகவிநாயகம் (ஈ) ராமலிங்கம்
3. கட்டெழுத்துக்கள் எத்தனை வகைப்படும்?  
(அ) 9 (ஆ) 7 (இ) 5 (ஈ) 3
4. சார்பெழுத்துக்கள் எத்தனை வகைப்படும்?  
(அ) 40 (ஆ) 30 (இ) 20 (ஈ) 10
5. தமிழில் புதுக்கவிதையின் முன்னோடியாகத் திகழ்ந்தவர் -----  
(அ) பாரதியார் (ஆ) ந.பிச்சமுர்த்தி (இ) பாலா (ஈ) புதுமைபித்தன்
6. பரமர்த்த குரு கதைகளை முதியவர் யார்?  
(அ) வீரமாமுனிவர் (ஆ) ராஜாஜி (இ) பாரதியார் (ஈ) ஜெயகாந்தன்

பகுதி - ஆ

250 வார்த்தைகளில் விடைதருக. (4x5=20)

7. அ. 'ஒன்றுஎங்கள் ஜாதியே' என்ற பாடலின் கருத்தை எழுதுக. (அல்லது)  
ஆ. 'வெற்றிமுகம்' என்ற தலைப்பில் தமிழன்பனின் கருத்துக்களை எழுதுக.
8. அ. 'கங்கை இங்கே ஓட வேண்டும்' என்ற பாடலின் கருத்தை எழுதுக. (அல்லது)  
ஆ. முதலெழுத்துக்களின் வகைகளை விளக்குக.
9. அ. குறுக்கங்களின் வகைகளை விளக்குக. (அல்லது)  
ஆ. வினா எழுத்துக்கள் பற்றி எழுதுக.
10. அ. தமிழ் வளர்ச்சியில் பத்திரிகைகளின் பங்கினை விவரி. (அல்லது)  
ஆ. புதின இலக்கியங்கள் பற்றி எழுதுக.

பகுதி - இ

500 வார்த்தைகளில் விடைதருக. (அல்லது ஆ) (3x8=24)

11. அ. 'தேசப் பிதாவுக்கு ஒரு தெருப்பாடகனின் அஞ்சலி-கட்டுரை ரக. (அல்லது)  
ஆ. 'ஆசைப்படு' என்ற பாடலின் வழி கவிஞர் பா.விஜய் தரும் கருத்துக்களை  
எழுதுக.
12. அ. சார்பெழுத்துக்களில் குற்றியலுகரம், குற்றியலிகரம் பற்றி எழுதுக. (அல்லது)  
ஆ. மொழிமுதல் எழுத்துக்கள் - கட்டுரை வரைக.
13. அ. புதுக்கவிதையின் தோற்றமும் வளர்ச்சியும் பற்றி எழுதுக. (அல்லது)  
ஆ. நாடகத்தின் தோற்றமும் வளர்ச்சியும் பற்றி எழுதுக.



DON BOSCO COLLEGE OF ARTS & SCIENCE, KEELA ERAL  
MODEL EXAMINATION – OCTOBER, 2018

I – B.Sc

CLASSICAL ALGEBRA

Date: 29.10.18  
Time: 2 1/2 hrs

Sub. Code: SMMA12  
Total Marks: 50

PART - A

Choose the correct answer

(6 × 1 = 6 marks)

- If  $\alpha$  is a multiple root of  $f(x) = 0$  its multiplicity  $m$ , then it is a multiple root of  $f'(x) = 0$  with multiplicity.  
a)  $m$                       b)  $m-1$                       c)  $m+1$                       d) none
- One of the root of the reciprocal equation  $x^5 + 4x^4 + 3x^3 + 3x^2 + 4x + 1 = 0$  is  
a)  $x = 1$                       b)  $x = -1$                       c)  $x = 2$                       d)  $x = -2$
- If we multiply the roots of the equation  $2x^4 - 3x^3 + 3x^2 - x + 2 = 0$  by 2 we get  
a)  $4x^4 - 6x^3 + 6x^2 - 2x + 4 = 0$                       b)  $4x^4 - 3x^3 + 6x^2 - x + 4 = 0$   
c)  $x^4 - 3x^3 + 3x^2 - x + 2 = 0$                       d)  $x^4 - 3x^3 + 6x^2 - 4x + 16 = 0$
- If  $x^3 + 3Hx + G = 0$  where  $G^2 + 4H^3 = 0$  then two roots are  
a) Real                      b) Imaginary                      c) real & equal                      d) none
- Between two consecutive real roots of the equation  $f(x) = 0$  there is atleast one real root of the equation  
a)  $f(x) = 0$                       b)  $f'(x) = 0$                       c)  $f''(x) = 0$                       d)  $f'''(x) = 0$
- \_\_\_\_\_ method is used to find irrational roots.  
a) Newton's                      b) Homer's                      c) Rolle's                      d) Sturm's

PART - B

Answer ALL questions, choosing either (a) or (b)

(4 × 5 = 20 marks)

- a) Find the nature of the roots of the equation  $4x^3 - 21x^2 + 18x + 20 = 0$ . (OR)  
b) Solve the equation  $x^4 + 2x^3 - x - 2 = 0$  through integral roots.
- a) Find the sum of the cubes of the roots of the equation  $x^5 = x^3 + x + 1$  (OR)



DON BOSCO COLLEGE OF ARTS & SCIENCE, KEELA ERAL  
MODEL EXAMINATION – OCTOBER, 2018  
I – B.Sc

CLASSICAL ALGEBRA

Date: 29.10.18  
Time: 2 1/2 hrs

Sub. Code: SMMA12  
Total Marks: 50

PART - A

Choose the correct answer

(6 × 1 = 6 marks)

1. If  $\alpha$  is a multiple root of  $f(x) = 0$  its multiplicity  $m$ , then it is a multiple root of  $f'(x) = 0$  with multiplicity.  
a)  $m$                       b)  $m-1$                       c)  $m+1$                       d) none
2. One of the root of the reciprocal equation  $x^5 + 4x^4 + 3x^3 + 3x^2 + 4x + 1 = 0$  is  
a)  $x = 1$                       b)  $x = -1$                       c)  $x = 2$                       d)  $x = -2$
3. If we multiply the roots of the equation  $2x^4 - 3x^3 + 3x^2 - x + 2 = 0$  by 2 we get  
a)  $4x^4 - 6x^3 + 6x^2 - 2x + 4 = 0$                       b)  $4x^4 - 3x^3 + 6x^2 - x + 4 = 0$   
c)  $x^4 - 3x^3 + 3x^2 - x + 2 = 0$                       d)  $x^4 - 3x^3 + 6x^2 - 4x + 16 = 0$
4. If  $x^3 + 3Hx + G = 0$  where  $G^2 + 4H^3 = 0$  then two roots are  
a) Real                      b) Imaginary                      c) real & equal                      d) none
5. Between two consecutive real roots of the equation  $f(x) = 0$  there is atleast one real root of the equation  
a)  $f(x) = 0$                       b)  $f'(x) = 0$                       c)  $f''(x) = 0$                       d)  $f'''(x) = 0$
6. \_\_\_\_\_ method is used to find irrational roots.  
a) Newton's                      b) Homer's                      c) Rolle's                      d) Sturm's

PART - B

Answer ALL questions, choosing either (a) or (b)

(4 × 5 = 20 marks)

7. a) Find the nature of the roots of the equation  $4x^3 - 21x^2 + 18x + 20 = 0$ . (OR)  
b) Solve the equation  $x^4 + 2x^3 - x - 2 = 0$  through integral roots.
8. a) Find the sum of the cubes of the roots of the equation  $x^5 = x^3 + x + 1$  (OR)



தொன் போஸ்கோகலைமற்றும் அறிவியல் கல்லூரி, கீழசரால்  
அகமதிப்பீட்டுமாதிரித் தேர்வு  
(இரண்டாம் ஆண்டுபயிலும் மாணவர்களுக்கானது)  
தாள் : பொதுதமிழ்

நாள்: 24 அக்டோபர் 2018

நேரம் : 2 1/2 மணி நேரம்  
மதிப்பெண் : 50

சரியான விடையைத் தேர்வு :

பகுதி- அ

1. சிலப்பதிகாரம் ----- காப்பியம். (6x 1 = 6)  
(அ) பெளத்தம் (ஆ) சமணம் (இ) சைவம் (ஈ) வைணவம்
2. 'தாயின் நல்லான்' எனக் குறிப்பிடப்படுபவன் யார்?  
(அ) இராமன் (ஆ) இலக்குவன் (இ) பரதன் (ஈ) குகன்
3. 'அடியின் வகைகளைக் கூறு.  
(அ) 3 (ஆ) 5 (இ) 7 (ஈ) 9
4. 'பா'வின் வகைகள் எத்தனை?  
(அ) 10 (ஆ) 8 (இ) 6 (ஈ) 4
5. "அரைசியல் பிழைத்தோர்க்கு ----- கூற்றாகும்"  
(அ) வரம் (ஆ) அறம் (இ) மறம் (ஈ) கரம்
6. குண்டலகேசியின் ஆசிரியர் யார்?  
(அ) இளங்கோவடிகள் (ஆ) சாத்தனார் (இ) காளன் (ஈ) நாதகுத்தனார்

பகுதி- ஆ

- 250 வார்த்தைகளில் விடைதருக. (4x 5 = 20)
7. அ கண்ணகிவாயிற்காவலனிடம் சினந்துரைத்தவையாவை? (அல்லது)  
ஆ வசந்தவல்லியின் அழகுபற்றி எழுதுக.
  8. அ 'தளை' என்றால் என்ன? விளக்குக. (அல்லது)  
ஆ இன்னிசைவெண்பாவின் இலக்கணம் கூறிவிளக்குக.
  9. அ எடுத்துக்காட்டு உவமையணி-விளக்குக. (அல்லது)  
ஆ தற்குறிப்பேற்ற அணி-விளக்குக.
  10. அ கலம்பகம் பற்றி எழுதுக. (அல்லது)  
ஆ பிள்ளைத்தமிழ் பற்றிகுறிப்புவரைக.

பகுதி- இ

- 500 வார்த்தைகளில் விடைதருக. (அல்லது ஆ) (3 x 8 = 24)
11. அ குகப்பலம் தரும் செய்திகளைத் தொகுத்துரைக்க. (அல்லது)  
ஆ பாந்தள் வசனித்தபடலத்தில் வரும் செய்திகளைத் தொகுத்துரைக்க.
  12. அ செய்யுளின் உறுப்புகள் எத்தனை? அவையாவை? எழுத்து, அசைபற்றிவிளக்குக.  
(அல்லது)  
ஆ உவமை அணியைச் சான்றுகளுடன் விளக்குக.
  13. அ இரட்டைக்காப்பியங்கள் பற்றி விரிவாக எழுதுக. (அல்லது)  
ஆ பரணி இலக்கியம் பற்றி விரிவாக எழுதுக.



**DON BOSCO COLLEGE OF ARTS & SCIENCE, KEELA ERAL**  
**MODEL EXAMINATION – OCTOBER, 2018**

**II – B.Sc Maths-Allied**  
**Introduction To Computers**

**Sub. Code: SAMA3A**  
**Total Marks: 50**

**Date: 27.10.18**  
**Time: 2 1/2 hrs**

**PART - A**

**Choose the correct answer**

**(6 × 1 = 6 marks)**

1. CD-ROM stands for  
(a) compact disk read only memory (b) compact disk read on memory  
(c) computer disk read only memory (d) None
2. \_\_\_\_\_ disks are slower to access than hard disks.  
(a) Floppy (b) zip (c) compact (d) hard disk
3. The internal structure of www is built on a set of rules called  
(a) TCP/IP (b) HTTP (c) FTP (d) None
4. The service used to transmit live video and sound is .  
(a) ISDN (b) ATM (c) TI (d) DSL
5. A \_\_\_\_\_ is a program that combines object modules to form an executable program.  
(a) linker (b) compiler (c) debuggers (d) assembler
6. \_\_\_\_\_ forms a barrier between networked computers within an organization and those outside the organization.  
(a) firewall (b) disk cleanup (c) virus protection (d) All

**Answer ALL questions, choosing either (a) or (b)**

**(4 × 5 = 20 marks)**

7. (a) Define RAM and its types. (Or)  
(b) Write short notes on interaction between RAM, ROM & CPU.
8. (a) Explain about the basic internet terms. (Or)  
(b) Explain about E-commerce.
9. (a) Explain about types of Operating system. (Or)  
(b) Explain about software piracy
10. (a) Write about Data over internet. (Or)  
(b) Explain about imminent technologies.

**PART - C**

**Answer ALL questions, choosing either (a) or (b)**

**(3 × 8 = 24 marks)**

11. (a) Describe about types of Magnetic disk (Or)  
(b) Explain about types of Optical disk
12. (a) Discuss about Internet Application. (Or)  
(b) Briefly discuss on Bluetooth and GPS
13. (a) Explain about Functions of Operating System. (Or)  
(b) Explain about categories of software.



Date: 30.10.2018

Total: 50

## PART - A

1. Choose the correct answer:-

(6 × 1 = 6 Marks)

1. A single-valued function  $f(x, y, z)$  is said to be a harmonic function if value of the Laplace equation \_\_\_\_\_.  
a) 0  
b)  $f$   
c)  $f'$   
d)  $\nabla\phi$
2. If  $R$  is the projection of the surface  $S$  on the  $xy$  - plane then  
a)  $\iint \phi \, dS = \iint \phi \frac{dx \, dy}{|\vec{u} \cdot \vec{k}|}$   
b)  $\iint \phi \, dS = \iint \phi \frac{dy \, dz}{|\vec{u} \cdot \vec{j}|}$   
c)  $\iint \phi \, dS = \iint \phi \frac{dz \, dx}{|\vec{u} \cdot \vec{i}|}$   
d) none
3. If  $V$  is the volume of the region enclosed by the surface  $S$ , then  $\iint \vec{r} \cdot d\vec{S}$  is \_\_\_\_\_.  
a)  $V$   
b)  $2V$   
c)  $3V$   
d)  $4V$
4. The volume of the upper hemi sphere  $x^2 + y^2 + z^2 = a^2$  is \_\_\_\_\_.  
a)  $\frac{1}{3}\pi a^3$   
b)  $\frac{2}{3}\pi a^3$   
c)  $\pi a^3$   
d)  $\frac{4}{3}\pi a^3$
5. The value of  $\int \vec{r} \cdot d\vec{r}$  along any closed curve is \_\_\_\_\_.  
a) 0  
b)  $2\pi$   
c)  $-\pi$   
d)  $\pi$
6.  $\iint \vec{A} \cdot d\vec{S} = \iiint (\nabla \cdot \vec{A}) dV$  is \_\_\_\_\_.  
a) Gauss divergence theorem.  
b) Green's theorem  
c) Stokes' theorem  
d) None

## PART - B

Answer ALL questions, choosing either (a) or (b) (4 × 5 = 20 marks)

7. a) Find the equation of the tangent plane to the surface  $x^2 + 2y^2 + 3z^2 = 6$  at the point  $(1, -1, 1)$ .  
(OR)  
b) Find the value of 'a' if  $\vec{A} = (axy - z^2)\vec{i} + (x^2 - 2yz)\vec{j} + (y^2 - axz)\vec{k}$  is irrotational.
8. a) If  $\vec{r} = x\vec{i} + y\vec{j} + z\vec{k}$  that is, if  $\vec{r}$  is the position vector of a variable point  $(x, y, z)$  and  $|\vec{r}| = r$ . Show that (i)  $\nabla\left(\frac{1}{r}\right) = \frac{\vec{r}}{r^3}$ . (ii)  $\nabla f(r) = f'(r)\hat{r}$   
(OR)  
b) Find  $\int \vec{F} \cdot d\vec{r}$ , if  $\vec{F} = (3x^2 + 6y^2)\vec{i} - 14yz\vec{j} + 20x^2\vec{k}$  and  $C$  is the curve  $x = t$ ,  $y = t^2$ ,  $z = t^3$  from  $(0,0,0)$  to  $(1,1,1)$ .





**DON BOSCO COLLEGE OF ARTS AND SCIENCE, KEELA**  
**III B.Sc(Maths)**  
**Fifth Semester - Model Exam**  
**Numerical Methods- JMMA5A**

Date: 26.10.18  
 Time: 2 ½ hours

Marks: 50

**PART - A**

Choose the correct answer

(6 × 1 = 6 marks)

- If the given data consist of unequal intervals we use \_\_\_\_\_ formula  
 a) Divided difference    b) Trapezoidal    c) Lagrange    d) differentiation
- Given  $u_0 = 5, u_1 = 15, u_2 = 57$ . Then  $u''(0) =$  \_\_\_\_\_  
 a) 32                                  b) 10                                  c) 42                                  d) 52
- Evaluating  $\int_0^1 \frac{dx}{1+x^2}$  by numerical integration we obtain approximate value of  
 a)  $\log_e 2$                               b)  $\log_{10} 2$                               c)  $e$                                       d)  $\pi$
- The error in Simpson one-third rule is of order  
 a)  $h^4$                                       b)  $h^2$                                       c)  $h$                                       d) none
- The complementary function for  $y_{n+1} = \sqrt{y_n}$  is  
 a)  $A(1/2)^n + B$                       b)  $A(1/2)^n$                               c)  $A2^n$                                       d)  $A^{1/2}$
- The particular integral for  $U_{n+2} - 4U_{n+1} + 4U_n = 2^n$  is  
 a)  $(A+Bn)2^n$                           b)  $\frac{n(n-1)}{2}2^{n-2}$                               c)  $\frac{n(n-1)}{2}$                                       d)  $A2^n + Bn$

**PART - B**

Answer ALL questions, choosing either (a) or (b)

(4 × 5 = 20 marks)

- (a) The value of  $U(x)$  are known at  $a, b, c$ . Show that maximum or minimum of lagrange interpolation polynomial is attained at  $x = \frac{\sum u_a(b^2 - c^2)}{2\sum u_a(b-c)}$ . (OR)  
 b) Find  $f(4)$  by Newton divided difference formula

|   |    |    |    |    |
|---|----|----|----|----|
| x | 2  | 3  | 5  | 6  |
| y | 13 | 19 | 38 | 51 |

- a) Find the first and second derivative at  $x=51$  from following data (OR)

|   |       |       |       |       |       |
|---|-------|-------|-------|-------|-------|
| x | 50    | 60    | 70    | 80    | 90    |
| y | 19.96 | 36.65 | 58.81 | 77.21 | 94.61 |



DON BOSCO COLLEGE OF ARTS AND SCIENCE, KEELA ERAL  
DEPARTMENT OF MATHEMATICS

Date: 25-10-2018  
Time: 2 ½ hrs

III B.Sc (Maths)  
Fifth Semester - Model Exam  
Mechanics- JMMA52

Marks: 50

PART - A

Choose the correct answer

(6 × 1 = 6 marks)

- If the resultant force is least then the angle between the two forces P and Q will be  
a) 0                      b)  $\pi/4$                       c)  $\pi/2$                       d)  $\pi$
- The magnitude of the resultant of two like parallel forces was their \_\_\_\_\_ a)  
sum                      b) difference                      c) product                      d) quotient
- The intrinsic equation of the catenary is  
a)  $s = c \tan \psi$                       b)  $s = c \sinh(x/c)$                       c)  $y = c \cosh(c/x)$                       d)  $y^2 = s^2 + c^2$
- Tension at any point of catenary varies as \_\_\_\_\_ of the point  
a) height                      b) weight                      c) parabola                      d) co-ordinates
- Law of inverse square is  
a)  $P = \frac{\mu}{r^2}$                       b)  $P \propto \frac{\mu}{r^2}$                       c)  $P \propto \frac{1}{r^2}$                       d)  $P = \frac{1}{r^2}$
- The periodic time of a particle moving in an elliptic orbit is  
a)  $\frac{\pi ab}{h}$                       b)  $\frac{2\pi ab}{h}$                       c)  $\frac{\pi ab}{2h}$                       d)  $2\pi hab$

PART - B

Answer ALL questions, choosing either (a) or (b)

(4 × 5 = 20 marks)

- (a) State and prove converse of the triangle law of force. (OR)  
(b) P and Q are two like parallel forces. If Q is moved parallel to itself through a distance x, prove that the resultant of P and Q moves through a distance  $\frac{Qx}{P+Q}$ .
- (a) State and prove Polygon law of forces. (OR)  
(b) In a common catenary show that  $s = c \sinh x/c$



DON BOSCO COLLEGE OF ARTS AND SCIENCE  
III – B.Sc (Maths)  
INTERNAL - II  
REAL ANALYSIS II

Date: 10.09.2018

Total: 25

PART – A

I. Choose the Correct Answer:-

(5 x 1 = 5 Marks)

- If  $f$  is a continuous bijection, then  $f^{-1}$  \_\_\_\_\_.  
a) Is continous      b) is not continous      c) need not be continous      d) none
- $f: R \rightarrow R$  defined by  $f(x) = x^2$  is \_\_\_\_\_  
a) continous      b) uniformly continous      c) not continous      d) both (a) & (b)
- Which of the following metric spaces is not complete?  
a)  $R$       b)  $C$       c)  $(0,1]$       d)  $R^n$
- Any subset of a discrete metric space has \_\_\_\_\_ limit point.  
a) many      b) one      c) no      d) infinitely many
- For any convergent sequence  $(x_n)$ , the limit is \_\_\_\_\_.  
a) many      b) unique      c) 0      d) none

PART – B

II. Answer Any Three Questions:-

(3 x 4 = 12 Marks)

- Prove that the function  $f: (0,1) \rightarrow R$  defined by  $f(x) = \frac{1}{x}$  is not uniformly continous.
- Let  $(M,d)$  be a metric space then any convergent sequence in  $M$  is a Cauchy sequence.
- Prove that  $C$  with usual metric is complete.
- $f: R \rightarrow R$  is continous at  $a \in R$  iff  $\omega(f, a) = 0$ .

PART – C

III. Answer any ONE of the following:-

(1 x 8 = 8 Marks)

- State and prove Cantor's intersection theorem.
- Prove that  $f$  is continous iff inverse image of every open set is open.



**DON BOSCO COLLEGE OF ARTS & SCIENCE, KEELA ERAL**  
 Department of Mathematics  
 III – B.Sc(Maths)  
 Fifth Semester - II CIA  
 Numerical Methods

Date: 12.09.2018  
 Time Duration: 1 hour

Session: FN  
 Total Marks: 25

**Part -A**

5 x 1 = 5

(Answer all Questions)

- $\Delta \nabla =$  a) E-1      b)  $\delta^2$       c)  $1-E^{-1}$       d)  $\nabla \Delta$
- The formula for finding the value of y in unequal interval is  
 a) Gauss Backward      b) Stirling      c) Lagrange      d) Newton
- If  $f(4)=1, f(6)=3$  then the interpolating polynomial is  
 a)  $3x-8$       b)  $x=3$       c)  $x-3$       d)  $3x-2$
- If  $f(x) = 1/x^2$  then  $[a,b] =$  \_\_\_\_\_
- a)  $-\frac{a+b}{a^2b^2}$       b)  $\frac{a+b}{a^2+b^2}$       c)  $\frac{a+b}{-a^2+b^2}$       d)  $\frac{a^2+b^2}{a+b}$
- When the value of x lie in the middle of table we use \_\_\_\_\_ formula  
 a) Newton forward      b) Gauss forward      c) divided difference      d) Trapezoidal

**Part -B**

3 x 4 = 12

(Answer any three)

- Prove that  $\frac{1}{2}\delta^2 + \delta\sqrt{1 + \frac{\delta^2}{4}} = \Delta$
- Explain the difference between  $\left(\frac{\Delta^2}{E}\right)f(x)$  and  $\frac{\Delta^2 f(x)}{E^2 f(x)}$ . Hence find the values of these when  $f(x) = x^2$ .
- Find cubic polynomial which takes given data using Newton's interpolation formula
- Apply Gauss Backward interpolation formula to find  $y(25)$  for the given data.

|   |   |   |   |    |
|---|---|---|---|----|
| x | 0 | 1 | 2 | 3  |
| y | 1 | 2 | 1 | 10 |

|   |      |      |      |      |
|---|------|------|------|------|
| x | 20   | 24   | 28   | 32   |
| y | 2854 | 3162 | 3544 | 3992 |

**Part -C**

1 x 8 = 8

(Answer any one)

- For the following table estimate the value of y  
 When (i)  $x=48$  (ii)  $x=84$  using suitable formula

|   |     |     |     |     |     |     |
|---|-----|-----|-----|-----|-----|-----|
| x | 40  | 50  | 60  | 70  | 80  | 90  |
| y | 184 | 204 | 226 | 250 | 276 | 304 |

- Estimate  $y_9$  using (i) Lagrange formula (ii) Newton divided difference

|   |     |     |      |      |      |
|---|-----|-----|------|------|------|
| x | 5   | 7   | 11   | 13   | 17   |
| y | 150 | 392 | 1452 | 2366 | 5202 |

**DON BOSCO COLLEGE OF ARTS & SCIENCE, KEELA ERAL**

**II – BSC-Allied**

**Third Semester - II CIA**

**Introduction to Computers**

**Date: 14.09.2018**

**Time Duration: 1 hour**

**Session: FN**

**Total Marks: 25**

**PART - A**

**Choose the correct Answer:**

**(5 x 1 = 5 Marks)**

1. WORM stands for \_\_\_\_  
(a) write once read many      (b) write once read once      (c) read only      (d) write only
2. concentric rings called \_\_\_\_  
(a) tracks      (b) sectors      (c) rings      (d) None
3. The \_\_\_\_ of a hard disk is the average time it takes for the disk to find the data you need on the platters  
(a) seek time      (b) rotation speed      (c) transfer rate      (d) All
4. \_\_\_\_ formatting is embedded in document as text base tags using special character sequences  
(a) RTF      (b) Plain text      (c) ASCII      (d) Unicode
5. \_\_\_\_ is a lossless compression replacement of GIF, additional capabilities compared to GIF  
(a) TIFF      (b) BMP      (c) JPEG      (d) PNG

**PART - B**

**(3 x 4 = 12 Marks)**

**Answer Any Three Questions**

6. Explain about types of magnetic disk.
7. Write about the types of ROM
8. Define Multimedia and Explain it.
9. Write short notes on Multimedia applications.

**PART - C**

**(1 x 8 = 8 Marks)**

**Answer ANY One Question.**

- 10) Explain about types of secondary storage devices.
- 11) Explain about building blocks of multimedia.



**DON BOSCO COLLEGE OF ARTS & SCIENCE, KEELA ERAL**  
II B.Sc Maths

**Third Semester (NME)**  
**INTRODUCTION TO ACCOUNTANCY**

Date: 17.09.2018  
Time Duration: 1.00 Hour

Subject Code: JNCO3A  
Total Marks: 25

**PART - A**

Answer ALL Questions:

(5 × 1 = 5)

- 1) Murali account is an example for  
a) personal A/c                      b) real A/c                      c) nominal A/c                      d) none of the above
- 2) The rule of debit all expenses and issues credit all gains and income  
a) personal A/c                      b) real A/c                      c) nominal A/c                      d) none of the above
- 3) Each entry is followed by a brief summary of the details of transactions known as  
a) entry                      b) debit entry                      c) narration                      d) credit entry
- 4) What is a Journal?  
a) lost journal                      b) ledger                      c) Primary book                      d) posting
- 5) \_\_\_\_\_ represent owners fund invested in a Business.  
a) Drawings                      b) Credit                      c) Owners                      d) Capital

**Part-B**

Answer any three Questions

(3 × 4 = 12)

- 6) Explain the Accounting rules.
- 7) Define the ledger. What are the advantages of Ledger?
- 8) Difference between Journal and Ledger.
- 9) Pass journal entries for the following transactions.

Rs.

|                             |          |
|-----------------------------|----------|
| I) Capital introduced       | 1,50,000 |
| II) Cash purchases          | 40,000   |
| III) Amount deposit in Bank | 1,00,000 |
| IV) Issue cheque to Mr.X    | 25,000   |
| v) Goods sold to Y          | 1,25,000 |

**Part - C**

Answer any one

(1 × 8 = 8)

- 10) Enter The following transactions in the journal.  
1.1.2015      Commenced business with a capital of Rs.1,00,000  
5.1.2015      Bought furniture Rs.6,000  
10.01.2015      Purchased goods for cash Rs.10,000  
15.1.2015      Bought goods from A Rs.25,000  
20.1.2015      Sold goods for cash Rs.32,000  
25.1.2015      Sold goods to B for Credit Rs.72,000  
30.1.2015      Paid salary to Krishnan Rs.7,000  
31.1.2015      Received commission Rs.2,800
11. What is journal? And explain the merits and demerits of journal?



DON BOSCO COLLEGE OF ARTS AND SCIENCE  
III – B.Sc (Maths)  
INTERNAL - I  
REAL ANALYSIS II

Date: 23.07.2018

Total: 25

PART – A

I. Choose the Correct Answer:-

(5 x 1 = 5 Marks)

- In a metric space  $(M, d)$  the diameter of an empty set  $\emptyset$  is  
a) 0                      b) 1                      c)  $\infty$                       d)  $-\infty$
- Which of the following is incorrect ?  
a)  $(0, 1]$  is uncountable      b)  $[0, 1]$  is uncountable      c)  $\mathbb{Q}$  is uncountable      d)  $\{0\} \cup \{1\} \cup \{2\}$  is uncountable
- In  $\mathbb{R}$  with usual metric Let  $A = [0, 1]$ . Then  $\text{Int } A =$   
a)  $\{0\}$                       b)  $\{1\}$                       c)  $\{0, 1\}$                       d)  $(0, 1)$
- Every subset of a discrete metric space is \_\_\_\_\_  
a) Open                      b) open ball                      c) closed                      d) 0
- $A$  is closed iff  $A =$  \_\_\_\_\_  
a)  $A$                       b)  $A \cup B$                       c)  $\bar{A}$                       d) 0  
b) \_\_\_\_\_

II. Answer Any Three Questions:-

(3 x 4 = 12 Marks)

- Prove that  $(0, 1]$  is uncountable
- Prove that every open ball is an open set
- In any metric space the intersection of a finite number of open sets is open.
- In any metric space arbitrary intersection of closed sets is closed.

III. Answer any ONE of the following:-

(1 x 8 = 8 Marks)

- In a metric space  $(M, d)$  if we define  $\rho(x, y) = \frac{d(x, y)}{1 + d(x, y)}$  then prove that  $\rho$  and  $d$  are equivalent metrics.
- In any metric space every closed ball is a closed set.



**DON BOSCO COLLEGE OF ARTS & SCIENCE, KEELA ERAL**  
**Department of Mathematics**  
**II – BSc Maths( NME)**  
**Third Semester**

**INTRODUCTION TO FINANCIAL ACCOUNTING**

Date: 30.07.18

Time Duration: 1 hour

Session: FN

Total Marks: 25

**PART - A**

Choose the correct Answer:

(5 x 1 = 5 Marks)

- 1) The Information generated by final reports of enterprise is known as  
a).Financial A/c      b) Cost A/c      c).Management A/c      d) None of these
2. Accounting is  
a) An Art      b) A Science      c) Both a and B      d) none of these.
- 3.The accounting equation of Dual Aspect concept is  
a).Capital +Liabilities= Asset      b).Capital + Assets= Liabilities  
c).Liabilities +Assets= Capital      d).None of these
4. Double entry means  
A) Entry in two sets of books      b) Entry at two dates  
C) Entry for two aspect of the transaction      d) None.
- 5) Business is Distinct from owner This concept is called  
a) Business Entity Concepts      b) Going Concern Concept  
c) Cost Concepts      d) Revenue Concepts

**PART- B**

Answer Any Three Questions

(3 x 4 = 12 Marks)

- 6). What are the Objectives of Accounting?
- 7).What are the Accounting Conventions?
- 8).What are the Advantages of Double Entry System?
- 9).Explain 1) Business Entity Concepts  
2) Money Measurement Concepts

**PART - C**

Answer ANY One Question.

(1 x 8 = 8 Marks)

- 10.Define Accounting? What are the Function of Accounting?
- 11).Explain various accounting concept briefly.





Date: 27.07.2018

Time Duration: 1 hour

Session: FN

Total Marks: 25

Part - A

Choose the correct answer

(5 × 1 = 5 Marks)

- If a polynomial  $f(x)$  is divided by  $x-3$  then the remainder is  
(a)  $f(-3)$  (b)  $f(3)$  (c)  $f(0)$  (d)  $f(\sqrt{3})$
- If one root of the equation  $x^4 + 2x^2 - 16x + 77 = 0$  is  $-2 + \sqrt{-7}$ , then the other root is  
(a)  $-2-7i$  (b)  $-2+7i$  (c)  $-2 + \sqrt{7}i$  (d) none
- The sum of the roots of the equation  $x^4 = x^2 - x + 2$  is  
(a) 5 (b) 2 (c) 3 (d) 0
- If the roots of the equation  $x^3 - 6x^2 + 13x - 10 = 0$  are in AP, then one root is  
(a) 2 (b) 3 (c) 4 (d) -2
- The equation  $x^3 + 5x^2 - 6x + 2 = 0$  has  
(a) atleast one positive real root (b) atleast one negative real root  
(c) atleast one real negative root (d) none

PART - B

Answer Any Three Questions

(3 × 4 = 12Marks)

- Solve the equation  $x^4 + 2x^3 - 5x^2 + 6x + 2 = 0$  given  $1 + \sqrt{-1}$  is a root of it.
- Solve  $x^4 - 5x^3 + 4x^2 + 8x - 8 = 0$  given that one of the root is  $1 - \sqrt{5}$ .
- Solve the equation  $27x^3 + 42x^2 - 28x - 8 = 0$  whose roots are in G.P
- Find the sum of the fourth powers of the roots of the equation  $x^3 - 2x^2 + x - 1 = 0$ .

PART - C

Answer Any One Question.

(1 × 8 = 8 Marks)

- Show that the roots of the equation  $x^3 + px^2 + qx + r = 0$  are in Arithmetic progression if  $2p^3 - 9pq + 27r = 0$ . Show that the above condition is satisfied by  $x^3 - 6x^2 + 13x - 10 = 0$  and solve it.
- If  $\alpha, \beta, \gamma$  are the roots of the equation  $x^3 + ax + b = 0$  find  
(a)  $\sum(\frac{\alpha}{\beta\gamma})$  (b)  $\sum(\frac{\alpha}{\beta+\gamma})$  (c)  $\sum \alpha^2\beta$  (d)  $\sum \alpha^3$



DON BOSCO COLLEGE OF ARTS & SCIENCE, KEELA ERAL  
Department of Mathematics

III - B.Sc, FIFTH Semester - I CIA  
LINEAR ALGEBRA

Date: 22.08.2017

Time Duration: 1 hour

Session: FN

Total Marks: 25  
(5 x 1 = 5)

PART - A

I. Choose the correct Answer:

- In  $V_3(R)$ ,  $S = \{(1,0,0), (2,0,0), (3,0,0)\}$  Then  $L(S) =$   
(a)  $S$  (b)  $\{(x, y, 0) / x, y \in R\}$  (c)  $V_3(R)$  (d)  $\{(x, 0, 0) / x \in R\}$
- The Value of  $\dim V_n(R)$ ,  
(a)  $n-1$  (b)  $n^2$  (c)  $2n$  (d)  $n$
- $\ker T$  is also called  
(a)  $\emptyset$  (b) null space (c) rank of  $T$  (d) nullity
- Let  $\alpha = a + ib \in C$  and  $u \in R$  is not a vector space, since  
(a)  $\alpha u \in R$  (b)  $0 \in R$  (c)  $1 \in R$  (d)  $\alpha u \notin R$
- $L(\{1, i\}) =$   
(a)  $R$  (b)  $Q$  (c)  $Z$  (d)  $C$

PART - B

II. Answer Any Three Questions

(3 x 4 = 12 Marks)

- Prove that  $T: R^2 \rightarrow R^2$  defined by  $T(a, b) = (2a - 3b, a + 4b)$  is a linear transformation.
- Let  $V$  be a vector space over a Field  $F$  and  $S, T \subseteq V$ . Then (a)  $S \subseteq T \Rightarrow L(S) \subseteq L(T)$   
(b)  $L(S \cup T) = L(S) + L(T)$  (c)  $L(S) = S$  iff  $S$  is a subspace of  $V$ .
- Let  $V$  be a finite dimensional vector space over a Field  $F$ . Any linearly independent set of vectors in  $V$  is a part of a basis.
- Let  $V$  be a vector space over a Field  $F$ . Let  $S \subseteq V$ . Then the following are equivalent (i)  $S$  is a basis for  $V$  (ii)  $S$  is a maximal linearly independent set (iii)  $S$  is a minimal generating set.

PART - C

III. Answer ANY One Question.

(1 x 8 = 8 Marks)

- Let  $V$  be a finite dimensional vector space over a Field  $F$ . Let  $A$  and  $B$  be subspaces of  $V$ . Then  $\dim(A + B) = \dim A + \dim B - \dim(A \cap B)$ .

- State and Prove Fundamental theorem of homomorphism on vector spaces.

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தொண்டிபாளையம் கலை மற்றும் அறிவியல் கல்லூரி, கிழவாலை  
மாநிலத் தேர்வு - ஏப்ரல் 2017

தாள் - 12/04/2017

பகுதி - IV - சமூக மதிப்புகள் கல்வி (VIBET)  
காலம் - 30 நிமிடங்கள்

மதிப்பெண் - 15

(அனைத்து குதலா மாண்புமிகு மாணவர்களுக்கும்)

சரியான விடையைத் தேர்ந்தெடுத்து எழுதுக.

பகுதி - அ

10 x 1 = 10

1. சாதிய ஒழிப்பில் பங்காற்றும் மிக முக்கியக் காரணி  
அ) கல்வி ஆ) கவையுத்திருமணம் இ) மது #) பணம்
2. தந்தை பெரியார் வகுப்பறிமை மாநாடு நடத்திய ஆண்டு  
அ) 1950 ஆ) 1953 இ) 1970 #) 1973
3. மனித உரிமைப் பிரகடனம் முதன் முதலாக இயற்றப்பட்ட ஆண்டு  
அ) 1928 ஆ) 1938 இ) 1948 #) 1958
4. சிறுபான்மையோர் மொழி - பண்பாட்டை காப்பாற்றிக் கொள்ள உரிமை உண்டு எனக் கூறும் கட்டல்பிரிவு  
அ) பிரிவு 14 ஆ) பிரிவு 24 இ) பிரிவு 29 #) பிரிவு 30
5. பின்வருவனவற்றில் சரியான கருத்து எது?  
அ) மது ஒரு சமூகக்கேடு ஆ) மது செயல் திறனை அதிகரிக்கும்  
இ) மது அருந்துவது கௌரவமானது #) மது ஓர் உணவு
6. பிற சமயத்தினருடன் ஒற்றுமையாக வாழ்வது  
அ) மதக்கலவரம் ஆ) மதப்பற்று இ) மத வாதம் #) மத நல்லிணக்கம்
7. ஊடகங்கள் கட்டமைக்கும் உலகம்  
அ) மாறாதது ஆ) பாதிக்காதது இ) உண்மையானது #) கற்பனையானது
8. ஊடகங்களின் பணிகள்  
அ) கண்காணிப்பு ஆ) கலாச்சாரப் பரிமாற்றம் இ) பொழுது போக்கு #) இவை அனைத்தும்
9. மனிதன் ஒரு சமூக விலங்கு - எனக் கூறியவர்  
அ) ஷேக்ஸ்பியர் ஆ) அரிஸ்டாட்டில் இ) காந்தி #) பெரியார்
10. "இவர் ஒரு சிறந்த மருத்துவர்" என்ற கூற்று புலப்படுத்துவது  
அ) அரசியல் மதிப்பு ஆ) பண்பாட்டு மதிப்பு இ) தொழில் மதிப்பு #) சமூக மதிப்பு



DON BOSCO COLLEGE OF ARTS & SCIENCE, KEELA ERAL

Department of English

II-B.A, B.Sc, B.B.A

Fourth Semester - Model Examination

NME- M.S Word

Date: 19.4.2017

Time Duration: 3.00 Hours

Subject Code: GNCA4A

Total Marks: 75

PART A - (10 x 1 = 10 marks)

Answer ALL Questions

I. Choose the correct Answer:

1. Shortcut key to save the document is \_\_\_\_\_

- (a) Ctrl + S                      (b) Ctrl + F12                      (c) Alt + Shift F 2                      (d) Above all

2. Predefined text formats are called as \_\_\_\_\_.

- (a) Design                      (b) Template                      (c) Themes                      (d) Model

3. A blinking starting point of a word document is known as \_\_\_\_\_

- (a) pointer                      (b) starter                      (c) cursor                      (d) beginner

4. Where can you find the horizontal split bar on MS Word screen?

- (a) On the left of horizontal scroll bar                      (b) On the right of horizontal scroll bar

- (c) On the top of vertical scroll bar                      (d) On the bottom of vertical scroll bar

5. Borders can be applied to

- (a) Cells                      (b) Paragraph                      (c) Text                      (d) All of above

6. Graphics for word processor

- (a) Peripheral                      (b) Clipart                      (c) Highlight                      (d) Execute

7. \_\_\_\_\_ is a key used to delete the wrongly typed character in your text.

- (a) Tab                      (b) Space bar                      (c) Back space                      (d) Arrow keys

8. Ctrl + X is used for

- (a) Cut                      (b) Copy                      (c) Paste                      (d) Find

9. Which file starts MS Word?

- (a) Word.exe                      (b) MSWord.exe                      (c) Word2003.exe                      (d) Winword.exe

10. Portraits and landscape are \_\_\_\_\_

- (a) page orientation                      (b) paper size                      (c) page layout                      (d) all of the above



Date: 11.04.2017

Time Duration: 3.00 Hour

Subject Code: GMMA62

Total Marks: 75

I. Answer ALL Questions:

PART A - (10 x 1 = 10 marks)

- \_\_\_\_\_ method cannot be used to solve LPP having more than two variables.
- The inverse of  $\begin{pmatrix} 1 & 2 \\ 1 & 4 \end{pmatrix}$  is.....
- The cost of surplus variable is.....
- An LPP has optimum solution when
- For a  $m \times n$  transportation problem a nondegenerate basic solution has values for the number of variables
- The other name for least cost method is.....
- If an assignment is optimum, the number of lines covering all zeros is equal to
- The assignment problem is balanced if \_\_\_\_\_
- The time for which the machine has no job to process is \_\_\_\_\_ on machine.
- How many machines are involved in processing  $n$  jobs through 2 machines?

Part-B(5\*5=25)

II. Answer all the Questions. Choosing Either (a) or (b).

11. a. Solve graphically the following L.P.P. Maximize  $z = 5x_1 + 7x_2$   
Subject to  $x_1 + x_2 \leq 4$ ,  $3x_1 + 8x_2 \leq 24$ ,  $10x_1 + 7x_2 \leq 35$  and  $x_1 \geq 0, x_2 \geq 0$

(OR)

b. Compute all the basic feasible solutions to the L.P.P. Maximize  $Z = 7x_1 + 5x_2$  subject to  $x_1 + 2x_2 + x_3 = 6$ ,  $4x_1 + 3x_2 + x_4 = 12$ ,  $x_1, x_2, x_3, x_4 \geq 0$ .

12. a. Use penalty method to solve Maximize  $z = 3x_1 + 2x_2$  Subject to  $2x_1 + x_2 \leq 2$ ,  $3x_1 + 4x_2 \geq 12$  and  $x_1 \geq 0, x_2 \geq 0$

(OR)

b. Find the dual of Minimize  $Z = 2x_1 + 2x_2 + 4x_3$  subject to  $2x_1 + 3x_2 + 5x_3 \geq 2$ ,  $3x_1 + x_2 + 7x_3 = 3$ ,  $x_1 + 4x_2 + 6x_3 \leq 5$ ,  $x_1, x_2 \geq 0, x_3$  is unrestricted.

13. a. Obtain the initial basic feasible solution using VAM method.

|        | A       | B      | C      | D  | Supply |
|--------|---------|--------|--------|----|--------|
| I      | 3       | 3      | 4      | 1  | 100    |
| II     | 4       | 2      | 4      | 2  | 125    |
| III    | 1       | 5      | 3      | 2  | 75     |
| Demand | 1<br>20 | 8<br>0 | 7<br>5 | 25 |        |

(OR)



DON BOSCO COLLEGE OF ARTS & SCIENCE, KEELA ERAL  
MODEL EXAM - APRIL - 2017.  
III B.Sc- SIXTH SEMESTER  
MECHANICS

Time : Three hours  
Date : 12-04-2017

Maximum : 75 marks  
Subject Code : GMMA63

PART A — (10 × 1 = 10 marks)  
Answer ALL questions.

I. Choose the correct answer:

- The resultant of two forces  $\lambda$  oA and  $\lambda$  oB acting of a point along OA and OB is \_\_\_\_\_  
(a)  $(\lambda+\mu)OC$  (b)  $\lambda OC$  (c)  $\lambda\mu OC$  (d)  $(\lambda-\mu)OC$
- The magnitude of the resultant of two like parallel forces is their \_\_\_\_\_  
(a) sum (b) difference (c) product (d) none of these
- If P, Q are two forces acting at a point and if R is the resultant then the condition for equilibrium is \_\_\_\_\_  
(a)  $P+Q+R=0$  (b)  $P+Q-R=0$  (c)  $P+Q=0$  (d)  $R=0$
- The coefficient of friction is equal to \_\_\_\_\_  
(a) tangent of angle of friction (b) tangent of friction  
(c) tangent to cone of friction (d) tangent to coefficient of friction
- The horizontal velocity of a projectile is \_\_\_\_\_  
(a)  $u\sin\alpha$  (b)  $u\cos\alpha$  (c)  $u\tan\alpha$  (d) None of these
- \_\_\_\_\_ is the path which the particle describes.  
(a) angle of projection (b) velocity of projection (c) trajectory (d) range
- In a S.H.M. period is  $2\pi/n$  and amplitude is  $a$ , there its maximum acceleration is \_\_\_\_\_  
(a)  $na$  (b)  $n^2a$  (c)  $na^2$  (d)  $n^2a^2$
- In the S.H.M.  $x = a\cos 2t + b\sin 2t$ , period is \_\_\_\_\_  
(a)  $2\pi$  (b)  $3\pi$  (c)  $\pi$  (d)  $\pi/2$
- The (p- r) equation of a parabola is \_\_\_\_\_  
(a)  $p^2 = ar^3$  (b)  $p = ar$  (c)  $p = ar^2$  (d)  $p^2 = ar$
- The rate of description of the area traced out by the radius vector joining the particle to a fixed point is called the \_\_\_\_\_  
(a) velocity (b) acceleration (c) areal velocity (d) none

PART B — (5 × 5 = 25 marks)

II. Answer ALL questions, choosing either (a) or (b),

- a) State and prove parallelogram of forces. Or  
(b) State and prove polygon of forces.
- (a) State and prove the two trigonometrical theorems. Or  
(b) State the laws of friction.
- (a) Show that the path of a projectile is a parabola. Or  
(b) Derive the range on an inclined plane.
- (a) Derive the period of oscillation of a simple pendulum. Or



DON BOSCO COLLEGE OF ARTS & SCIENCE, KEELA ERAL  
 MODEL EXAM - APRIL - 2017.  
 III B.Sc-SIXTH SEMESTER  
 OPERATIONS RESEARCH

Time: Three hours  
 Date: 15-04-2017

Maximum: 75 marks  
 Code: GMMASB

PART A — (10 × 1 = 10 marks)  
 Answer ALL questions.

1. Choose the correct answer :

1. In  $(M/M/1 : \infty / F/F_s)$  model,  $E(n) = \dots$
2.  $P(n > k) = \dots$
3. The path that takes the longest duration is called  $\dots$
4.  $T_s = \dots$
5.  $S_A = \dots$  &  $S_B = \dots$
6. The value of the game  $\begin{bmatrix} 5 & 0 \\ 0 & 2 \end{bmatrix}$  is  $\dots$
7. The value of the game  $v = \dots$
8. A  $\dots$  for a player is a plan which specifies his action for every possible action of his opponent.
9. The position in the pay off matrix corresponding to optimal strategies is called  $\dots$
10. Present worth factor of Re. 1 after n year is  $\dots$

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

11. (A) Find the expected number of customers in the system and in the queue. Or  
 (B) A TV repairman finds that the time spent on his job has an exponential distribution with mean 30 minutes. If he repairs sets in the order in which they come in and if the arrival of sets is approximately poisson with average rate of 10 per 8 hour day (i) how many jobs are ahead of the set just brought in? (ii) what is the repairman's idle time each day?

12. (A) The following table gives the activities in a construction project and other relevant information.  

|                 |     |     |     |     |     |     |
|-----------------|-----|-----|-----|-----|-----|-----|
| Activity:       | 1-2 | 1-3 | 2-3 | 2-4 | 3-4 | 4-5 |
| Duration(days): | 20  | 25  | 10  | 12  | 6   | 10  |

  - (i) Draw the network for the project.
  - (ii) Find the critical path and the project duration.
  - (iii) Find the total float for each activity.Or

(B) The utility data for a network is given below. Determine the total, free, independent floats and identify the critical path.

| Activity | Duration |
|----------|----------|
| 0-1      | 2        |
| 1-2      | 8        |
| 1-3      | 10       |
| 2-4      | 6        |
| 2-5      | 3        |
| 3-4      | 3        |
| 3-6      | 7        |
| 4-7      | 5        |
| 5-7      | 2        |
| 6-7      | 8        |

Or

13. (A) Explain the games without saddle point.  
 (B) Solve the following game using dominance property



20.02.2017

Duration: 1.00 Hour

PART A - (4 x 1/2 = 2 marks)  
Answer ALL Questions!

Choose the correct Answer!

1. Find the centre of the sphere  $x^2 + y^2 + z^2 + 4x + 6y - 6z + 7 = 0$ .

2. Find the radius of the sphere  $3x^2 + 3y^2 + 3z^2 = 3$ .

3. Find the equation of the sphere whose centre is (1, 2, 3) and radius 3.

4. Find the symmetrical form of  $x + 5y - z - 7 = 0 = 2x - 5y + 3z + 1$ .

PART B - (3 x 5 = 15 marks)

Answer ALL questions, choosing either (a) or (b).

1. Find the equations of the image of the line  $\frac{x-1}{2} = \frac{y+2}{-5} = \frac{z-3}{2}$  in the plane  $2x - 3y + 2z + 3 = 0$

(OR)

2. Find the perpendicular distance from (3, 9, -1) to the line  $\frac{x+0}{-0} = \frac{y-31}{1} = \frac{z-13}{5}$ .

3. A sphere of constant radius  $k$  passes through the origin and meets the axes in A, B, C. Prove that the centroid of the triangle ABC lies on the sphere  $9(x^2 + y^2 + z^2) = 4k^2$ .

(OR)

4. A plane passes through a fixed point (a, b, c) and cuts the axes in A, B, C. Show that the locus of the centre of the sphere OABC is  $\frac{a}{x} + \frac{b}{y} + \frac{c}{z} = 2$ .

5. Find the equation of the sphere having the circle  $x^2 + y^2 + z^2 - 2x + 4y - 6z + 7 = 0$ ,

$2x - y + 2z = 5$ , for a great circle.

(OR)

6. Find the equation of the sphere which touches the sphere  $x^2 + y^2 + z^2 - 6x + 2z + 1 = 0$ , at the point (2, -2, 1) and passes through the origin.

PART C - (1 x 8 = 8)

III. Answer the following question, either (a) or (b)

1. Find the condition that the line  $\frac{x-a}{l} = \frac{y-b}{m} = \frac{z-c}{n}$  where  $l^2 + m^2 + n^2 = 1$  should touch the sphere  $x^2 + y^2 + z^2 + 2ux + 2vy + 2wz + d = 0$ . Show that there are two sphere through the points (0, 0, 0), (2a, 0, 0), (0, 2b, 0) which touch the above line and that the distance between their centres is  $\frac{2}{n^2} [c^2 - (a^2 + b^2 + c^2)n^2]^{1/2}$ .

(OR)

2. The plane ABC whose equation is  $\frac{x}{a} + \frac{y}{b} + \frac{z}{c} = 1$ , meets the axes in A, B, C. Find the equation to the circumcircle of the triangle ABC and obtain the coordinates of its centre and radius.





Date: 22.02.2017

Time Duration: 1 .00 Hour

Subject Code: JAST21

Total Marks: 25

**PART A - (4 x 1/2 = 2 marks)**

Answer ALL Questions:

**I. Fill in the blanks**

1. write a formula for t-test (single mean)
2. write a formula for Fiducial limit.
3. Degrees of freedoms for F-test.
4. Null hypothesis of one criterion classification.

**PART B - (3 x 5 = 15 marks)**

**II. Answer ALL questions, choosing either (a) or (b).**

5.a). A certain stimulus administered to each of 10 patients resulted in the increase of blood pressure 8,8,7,5,4,1,0,0,-1,-1. Can it be concluded that the stimulus was responsible for the increase in blood pressure? (Or)

b) A group of 10 rats fed on a diet A and another group of 8 rats fed on a different diet B recorded the following increase in weights in gms.

|        |   |   |   |   |    |    |   |   |   |    |
|--------|---|---|---|---|----|----|---|---|---|----|
| Diet A | 5 | 6 | 8 | 1 | 12 | 4  | 3 | 9 | 6 | 10 |
| Diet B | 2 | 3 | 6 | 8 | 1  | 10 | 2 | 8 | - | -  |

Test whether diet A is superior to B.

6 a). Two the random samples gave the following results

| Sample | Size | Sample mean | Sum of squares of deviations from the mean |
|--------|------|-------------|--|
| I      | 10   | 15          | 90   |
| II     | 12   | 14          | 108  |

Test the whether the samples could have come from the same normal population, test mean and variance. (Or)

b) A sample of 12 values shows the s.d to be 11. Does this agree with the hypothesis that the population s.d. is 10, the population being normal?

7. a) For the 2 x 2 contingency table

|   |   |
|---|---|
| a | b |
| c | d |

$\chi^2$  is the independence is  $\chi^2 = \frac{N(ad-bc)^2}{(a+c)(b+d)(a+b)(c+d)}$  where  $N = a + b + c + d$ . (Or)

b) The following table gives the classification of 100 workers according to sex and nature of work. Using  $\chi^2$  – test examine whether the nature of work is independent of the sex of worker.

| Nature of work \ sex | Skilled | Unskilled | Total |
|----------------------|---------|-----------|-------|
|                      | Male    | 40        | 20    |
| Female               | 10      | 30        | 40    |
| Total                | 50      | 50        | 100   |



DON BOSCO COLLEGE OF ARTS & SCIENCE KEELA ERAL  
Fourth Semester – II Internal  
General English

Date: 18.02.2017

Time Duration: 1 .00 Hour

Subject Code: G2EN41  
Total Marks: 25

PART A - (4 x 1/2 = 2 marks)  
Answer ALL Questions:

Choose the correct Answer:

- Helen Keller was a -----  
a) Dumb                      b) Deaf-blind                      c) A graduate                      d) Both b & c
- According to Helen Keller ----- is the most delightful of all senses.  
a) Touch                      b) Hearing                      c) Smell                      d) Sight
- Sarah was a -----  
a) Dancer                      b) Chef in a restaurant                      c) Nurse                      d) Free-lance typewriter
- "Springtime" is a -----  
a) Story of innocent love with a happy end                      b) tragic love story  
c) Ghost of adventure                      d) Thrilling detective story

PART B - (3 x 5 = 15 marks)

II. Answer ALL questions, choosing either (a) or (b).

- a) How does Shakespeare glorify and immortalise his friend? (Or)  
b) Give a critical appreciation of "Mending Wall"
- a) Imagine that you are the Secretary of your College students Union and prepare the MINUTES of the inaugural meeting (Or)  
b) Imagine that you are the Secretary of your College students Union and prepare the AGENDA of the inaugural meeting
- a) Fill in the blanks with suitable tense forms  
1. Nathan ----- form asthma since childhood (suffer)  
2. When I ----- home my friends -----for me (reach/wait)  
3. I ----- here until you ----- (wait/return)  
4. Yesterday I----- to Guntur to meet my uncle (go)  
5. My uncle ----- by the morning flight tomorrow (arrive) (Or)

b) Rewrite the following conditional sentences:

- you eat well, you won't be healthy (if/unless)
- I were you, I would resign the post. (if/unless)
- If he does not stop smoking, he ----- (live) long
- If the rain stopped, we ----- (go) for a walk
- If you don't pay the fees, you cannot write the exam (rewrite using unless)

PART C (1\*8=8)

III. Answer ALL questions, choosing either (a) or (b).

- a) How would Hellen Keller use her vision if she gained it just for 3 days? (Or)  
b) Describe "Springtime" as a typical short story of O. Henry.



DON BOSCO COLLEGE OF ARTS & SCIENCE, KEELA ERAL  
Second INTERNAL TEST- Feb - 2017

III B.Sc- Sixth Semester

**Complex Analysis**

Date: 17.02.2017

Time Duration: 1.00 Hour

Subject Code : JMMA61

Total Marks : 25

PARTA - (4 x 1/2 = 2 marks)

Answer ALL Questions:

I Choose the correct Answer:

1. Write the C-R equation in complex form
2.  $f(z) = \operatorname{Re} z$  is differentiable at .....
3. Write Laplace's equation
4. If  $u(x, y) = x^2 + y$  is not harmonic or not.

PART B - (3 x 5 = 15 marks)

II. Answer ALL questions, choosing either (a) or (b).

5. a) Derive sufficient condition for Differentiability of a function.

(OR)

b) An analytic function  $f(z) = u + iv$  with  $\arg f(z)$  constant is constant function.

6. a) If  $\frac{\partial^2}{\partial x \partial y} = \frac{\partial^2}{\partial y \partial x}$  prove that  $\frac{\partial^2}{\partial x^2} + \frac{\partial^2}{\partial y^2} = 4 \frac{\partial^2}{\partial z \partial \bar{z}}$

(OR)

b) If  $f(z) = u + iv$  is analytic and  $f(z) \neq 0$  prove that (i).  $\left(\frac{\partial^2}{\partial x^2} + \frac{\partial^2}{\partial y^2}\right) \log |f(z)| = 0$

(ii).  $\nabla^2 \operatorname{amp} f(z) = 0$

7. a) Show that  $w = \frac{1}{z}$  the circle given by  $|z - 3| = 5$  is mapped into the circle  $\left|w + \frac{3}{16}\right| = \frac{5}{16}$ .

(OR)

- b) Find the image of the strip  $2 < x < 3$  under  $w = \frac{1}{z}$

PART C-(1x 8 =8)

III. Answer the following question, either (a) or (b)

8. a) Derive C-R equations for Differentiability of a function.?

(OR)

- b) State and prove C-R equations in polar coordinates?



தொன் போஸ்கோ கலை மற்றும் அறிவியல் கல்லூரி கீழ்ச்சாலை - 628908.  
இரண்டாம் பருவம்

பகுதி - ஒன்று - பொதுத்தமிழ்

தாள் 2- சமய நீதி இலக்கியங்கள் (JITL21)

( கணிதவியல், கணிணிப் பயன்பாட்டில், வணிகவியல், ஆங்கில இலக்கியம், வணிகநிர்வாகவியல் பயிலும் முதலாமாண்டு மாணாக்கர்களுக்கு மட்டும்)

நாள்

: 19.01.2017

காலம் : 1 மணி நேரம்

மதிப்பெண் : 25

I சீரியான விடையைத் தேர்ந்தெடுத்து எழுதுக. பகுதி - அ

1. இலக்கியத்தின் உயிர் எது?

(4 x 1/2 = 2)

(அ)பண்பாடு (ஆ)ஒழுக்கம் (இ)உணர்ச்சி (ஈ)குறிக்கோள்

2. 'திராவிடசிக' என்று அழைக்கப்படுபவர் யார்?

(அ)சம்பந்தர் (ஆ)திருமால் (இ)சிவஞானம் (ஈ)சுந்தரர்

3. 'கலைகளின் ஒன்றைக் கற்றுக்கொள்' - கட்டுரையின் ஆசிரியர் யார்?

(அ)பஜீவானந்தம் (ஆ)டி.செல்வராஜ் (இ)முனைவர்.அமுதன் (ஈ)முனைவர்.முத்துவேல்

4. "புனைக்கை மும்மத வேழ முரித்தவன்"- யார்?

(அ)சிவன் (ஆ)திருமால் (இ)பிரம்மா (ஈ)இந்திரன்

பகுதி - ஆ

II 250 சொற்களுக்கு மிகாமல் விடையளி

(3x5=15)

5. திருநாவுக்கரசர் பாடிய 'திருக்குறுந்தொகை' இறைவனின் இயல்புகளை விளக்குக

(அல்லது)

"நெடியவன் பிரமணும் நினைப்பரி தாய்அவர் - அடியோடு முடியறி யாஅழல் உருவினன்" எனும் செய்யுள் உணர்த்தும் கருத்து என்ன?

6. 'மண்ணில் நல்லவண்ணம் வாழலாம்' என்று திருஞானசம்பந்தர் கூறும் கருத்தினை எழுதுக?

(அல்லது)

பாரசீகப் புலவனின் உவமானத்தால் விளக்கும் வண்ணத்துப்பூச்சியின் நிலை என்ன?

7. சீவகனின் இசைத்திறமையினை முனைவர்அமுதன் கூறுவதை எழுதுக?

(அல்லது)

ஆய கலைகள் 64 நான்கில் எவையேனும் பத்தினைக் கூறுக?

பகுதி - இ

III 500 சொற்களுக்கு மிகாமல் விடையளி

(1x8=8)

8. இறைவன் வீற்றிருக்கும் 'திருக்கழுமலம்' தலத்தின் சிறப்புகளைத் திருஞானசம்பந்தர்

எவ்விதம் கூறியுள்ளார்?

(அல்லது)

'இலக்கியத்தின் உயிர்' குறித்து ப. ஜீவனாந்தம் நவிலும் கருத்தினை விளக்குக?



DON BOSCO COLLEGE OF ARTS & SCIENCE, KEELA ERAL  
FIRST INTERNAL TEST- JANUARY - 2017.

II B.Sc - Fourth Semester  
**NUMERICAL METHODS**

Subject Code: GSMA4A  
Total Marks: 25

Date: 25.01.2017 (AN)  
Time Duration: 1.00 Hour

PART A - (4 x 1/2 = 2 marks)

Answer ALL Questions:

I. Choose the correct Answer:

1. A \_\_\_\_\_ is one in which we start an approximation and move towards accuracy.  
a) direct method    b) iterative method    c) gauss seidal method
2. In  $f(x+h) - f(x)$ ,  $h$  is called as the  
a) arguments    b) entries    c) interval of differencing
3. Large systems of linear equations can be solved by one of the below method  
a) substitution method    b) crammers rule    c) gauss elimination method
4.  $\Delta$  is  
a) bilinear    b) linear    c) identical

PART B - (3 x 5 = 15 marks)

II. Answer ALL questions, choosing either (a) or (b).

5. a) Solve the following system of equations by gauss Jordan method

$$5x - 2y + 3z = 18$$

$$x + 7y - 3z = -22$$

$$2x - y + 6z = 22$$

OR

b) Solve the following by using gauss elimination method

$$x + y + z = 6; 3x + 3y + 4z = 20; 2x + y + 3z = 13$$

OR

6. a) P.T  $\Delta_m \Delta_n = \Delta_{m+n}[f(x)]$  and find  $\Delta[f(x)g(x)]$

b) Explain back substitution method

OR

7. a) Explain gauss Jordan method

b) Find the inverse of the matrix

$$A = \begin{pmatrix} 2 & 1 & 1 \\ 3 & 2 & 3 \\ 1 & 4 & 9 \end{pmatrix}$$

PART C - (1 x 8 = 8)

III. Answer the following question, either (a) or (b)

OR

8. a) Solve by  $2x + y = 3; 2x + 3y = 5$  by gauss seidal method.

b) Solve the following by Gauss Jordan method

$$10x - 2y + 3z = 23; 2x + 10y - 5z = -33; 3x - 4y + 10z = 41$$



தொண்டிபாளஸ்கோ கலை மற்றும் அறிவியல் கல்லூரி - கீழ்சரால்  
முதல் பருவம் - மாதிரித்தேர்வு  
இக்கால இலக்கியங்கள் (செய்யுள், உரைநடை,  
இலக்கணம், இலக்கியவரலாறு, சிறுகதை)

தாள்: 21.10.2016  
நாள்: 3 மணி

பாட குறியீடு: J1 TL 11  
மதிப்பெண்: 75

பகுதி - அ (10x1=10)

1. பரிபாண்டியை வயதேறிந்தேடுத்துளமுதுக :

1. இலக்கணம் மற்றும் சட்டங்கள் எவை?  
(அ) சாதிக்கள் (ஆ) இனங்கள் (இ) உடைகள் (ஈ) மதங்கள்
2. தந்திரத் தலைமையாடலென்றும்?  
(அ) உலாவுதலுக்கு (ஆ) களைப்புக்கு (இ) மூளைக்கு (ஈ) வயிற்றுக்கு
3. மூத்தர்கள் எத்தனைவரைகூப்பிடும்.  
(அ) 8 (ஆ) 6 (இ) 4 (ஈ) 2
4. விளவின் வகைகள் எத்தனை.  
(அ) 8 (ஆ) 6 (இ) 4 (ஈ) 2
5. தமிழ் நாடகத் தலைமையாசிரியர் என்று அழைக்கப்பட்டவர் யார்?  
(அ) கருணாநிதி (ஆ) என்னயினாப் புலவர் (இ) சங்கரதாஸ் சுவாமிகள் (ஈ) கல்கி
6. மரணத்த குரு கதைகளை எழுதியவர் யார்?  
(அ) மாதவையா (ஆ) அண்ணா (இ) வீரமாமுனிவர் (ஈ) அகிலன்
7. பொன்னகரம் என்ற சிறுகதையின் ஆசிரியர் யார்?  
(அ) கல்கி (ஆ) புதுமைப்பித்தன் (இ) பாவண்ணன் (ஈ) வேணுகோபால்
8. ஏழுமாதத்தில் எட்டுதடவைகட்சிமாறுவார்கள் என்று கூறியவர் யார்?  
(அ) வைரமுத்து (ஆ) பா.விஜய் (இ) மீரா (ஈ) மு.மேத்தா
9. யாகாவராயினும் எதனைக் காக்கவேண்டும் என்கிறார் வள்ளுவர்?  
(அ) காது (ஆ) நாடு (இ) ஒற்றுமை (ஈ) நாக்கு
10. எகிப்தின் நிர்வாகவியல் திறனுக்குச் சான்றாகப் பேராசிரியர் க. செந்தாமரை குறிப்பிடுவது யாது?  
(அ) பிரமீடு (ஆ) அஸ்வான் அணைக்கட்டு (இ) சூயஸ் கால்வாய் (ஈ) தொங்கும் தோட்டம்

Date: 25.10.2016  
Time Duration: 3.00 Hour

Part-A(10\*1=10 marks)

Answer all the Questions

- The sum of the roots of the equation  $ax^2 + bx + c = 0$  is  
a)  $\frac{b}{a}$       b)  $\frac{c}{a}$       c)  $\frac{-b}{a}$       d)  $\frac{-c}{a}$
- By Descartes's rule of sign, the maximum number of positive roots of  $x^7 - 3x^4 + 2x^3 - 1 = 0$  is  
a) 1      b) 2      c) 3      d) 4
- If  $\alpha$  is a root of a reciprocal equation  $f(x) = 0$ , then the another root is  
a)  $\alpha$       b)  $\alpha^3$       c)  $\frac{1}{\alpha}$       d)  $\frac{1}{\alpha^2}$
- The method to find approximate values of the irrational roots of  $f(x) = 0$  is  
a) Newton's method      b) Horner's method      c) (a) and (b)      d) None
- The value of  $f(1) = 0$  for the equation  $x^3 - x - 3 = 0$  is  
a) 0      b) -1      c) -3      d) 3
- If an equation has only one variation of sign then it has a \_\_\_\_\_.  
a) Negative root      b) Positive root      c) Either negative or positive      d) None of these.
- Cardon's method is used to solve \_\_\_\_\_.  
a) Linear equation      b) Quadratic equation      c) Cubic equation      d) Biquadratic equation
- If  $f(-x) = 0$  has no change of sign then  $f(x) = 0$  has \_\_\_\_\_ roots.  
a) No positive      b) No negative      c) One positive      d) None of these.
- If an equation remains unaltered when  $x$  is changed into  $\frac{1}{x}$  its reciprocal, then it is called a  
a) Cubic equation      b) Reciprocal equation      c) Quadratic equation      d) None
- The number of negative roots of the equation  $x^5 + x^4 + x^3 - x + 1 = 0$  is  
a) 4      b) 3      c) 2      d) 1.



**DON BOSCO COLLEGE OF ARTS & SCIENCE, KEELA ERAL**  
**B.A DEGREE MODEL EXAMINATION, OCTOBER - 2016.**  
**II -B.Sc&BA - THIRD SEMESTER**

**Prose, Drama, fiction, Language Study and Composition**

**Subject Code:G2EN31**

**Total Marks: 75**

**Date: 22.10.2016**

**Time Duration: 3.00 Hour**

**PART A - (10 x 1 = 10 marks)**

**I. Choose the correct Answer:**

1. Buddha born in \_\_\_\_\_  
a. Kapilavastu                      b. Bodh Gaya                      c. Gujarath                      d. Bihar
2. \_\_\_\_\_ became a Public speaker after practice.  
a. Katherine Mansfield              b. George Bernard Shaw              c. M.K. Gandhi              d. A.J. Cronin
3. Mahesh Dattani is an Indian \_\_\_\_\_  
a. Poet                      b. Essayist                      c. Dramatist                      d. Novelist
4. Chandan and Tara are \_\_\_\_\_ twins.  
a. Identical                      b. non identical                      c. Siemese                      d. ordinary
5. \_\_\_\_\_ is the main character in Great Expectations.  
a. Ms. Havisham                      b. Estella                      c. Joe                      d. Pip
6. Who is the benefactor of Pip?  
a. Abel Magwitch                      b. Ms. Havisham                      c. Joe                      d. Jagers
7. \_\_\_\_\_ is the synonym of Lament.  
a. Mercy                      b. Love                      c. mourn                      d. beautiful
8. \_\_\_\_\_ is the antonym of lend.  
a. cheat                      b. borrow                      c. painful                      d. fearful
9. You can exchange ideas and opinions with many people in a \_\_\_\_\_.  
a. Interview                      b. Dialogue                      c. Group Discussion                      d. Debate
10. Appreciating or criticizing a work of art is called as a \_\_\_\_\_.  
a. Letter                      b. Journal                      c. Group Discussion                      d. Agenda

**PART B - (5 x 5 = 25 marks)**

**II. Answer ALL questions, choosing either (a) or (b).**

11. (a) Write a short note on "How I Became a Public Speaker" (Or)  
(b) Explain the following Passages with reference to the Context  
i. But all the same the law cannot become the guardian of our private manners.  
ii. His calm and immutable serenity were constantly replenished by meditation.
12. (a) Comment on the plot of Tara (Or)  
(b) Draw a character sketch of Chandan
13. (a) Sketch the character of Estella (Or)  
(b) Explain the narrative technique of "The Great Expectations"
14. (a) i) Choose the word which best expresses the meaning of the word vehement  
a. truthful              b. forceful              c. examine              d. substitute  
ii) Choose an alternative word which is the exact opposite of the word hostile.  
a. friendly              b. Stable              c. Stationary              d. volatile  
iii) Choose the correct word which expresses the meaning of given expression. Bag of Bones  
a. a bag full of bones              b. a person about to die              c. a dead person              d. an extremely weak person.  
iv) Choose the correct phrasal verb.  
I \_\_\_\_\_ new clothes for my birthday.  
a. put off              b. Put down              c. put across              d. put out





DON BOSCO COLLEGE OF ARTS & SCIENCE, KEELA ERAL  
BCA DEGREE MODEL EXAMINATION, OCTOBER - 2016,  
II BA/BSC/BBA - Third Semester

Introduction to Computers

Subject Code: GNCA3B  
Total Marks: 75

Date: 27 .10.2016  
Time Duration: 3.00 Hour

PART A - (10 x 1 = 10 marks)  
Answer ALL Questions:

1. Choose the correct Answer:

1. The brain of any computer system is

- (a) Control Unit (b) Arithmetic Logic Unit (c) Central Processing Unit (d) Storage Unit

2. The first electronic computer in the world was

- (a) UNIVAC (b) EDVAC (c) ENIAC (d) None of the above

3. Which of the following memories needs refreshing?

- (a) SRAM (b) DRAM (c) ROM (d) All of these.

4. The \_\_\_\_\_ memory is placed between the main memory and the CPU to speed up the data access.

- (a) flash (b) ROM (c) virtual (d) cache.

5. Which of the following is not a input device?

- (a) keyboard (b) projector (c) track ball (d) light pen.

6. \_\_\_\_\_ is a type of scanning technology that reads magnetized-ink characters printed at the bottom of checks and converts them to computer- acceptable digital form.

- (a) Barcode Reader (b) Magnetic-ink character recognition  
(c) Optical character recognition (d) Optical mark recognition

7. The language that the computer can understand and execute is called.

- (a) machine language (b) system program (c) application software (d) all of these.

8. \_\_\_\_\_ is distributed free of charge but requires users to make a contribution later on?

- (a) public domain software (b) shareware (c) freeware (d) proprietary software.

9. The operating system manages, all the other programs that run on the PC and provides services such as:

- (a) File management (b) Memory management (c) CPU scheduling (d) All of the above

10. \_\_\_\_\_ acts as an interface between the user of the computer system and the underlying computer hardware.

- (a) Application Software (b) Operating software (c) Firmware (d) None



**DON BOSCO COLLEGE OF ARTS & SCIENCE, KEELA ERAL,  
DEPARTMENT OF MATHEMATICS, III-B.SC  
FIFTH SEMESTER - MODEL EXAM  
REAL ANALYSIS**

Date: 22.10.2016

Time Duration: 3.00 Hour

Subject Code: GMMA52

Total Marks: 75

**PART A — (10 × 1 = 10 marks)**

**I. Answer ALL questions, choose the correct answer :**

1. The incorrect statement from the following statements is  
 (a)  $(0, 1]$  is uncountable                      (b)  $[0, 1]$  is uncountable  
 (c)  $\mathbb{Q}$  is uncountable                              (d)  $\{0\} \cup \{1\} \cup \{2\}$  is uncountable
2. In any metric space  $(M, d)$  the diameter of the empty set  $\Phi$  is .....  
 (a) 0    (b) 1    (c)  $\infty$     (d)  $-\infty$
3. In  $\mathbb{R}$  with usual metric, let  $A = [0, 1]$ . Then  $\text{Int } A = \dots\dots\dots$   
 (a)  $\{0\}$     (b)  $\{1\}$     (c)  $\{0, 1\}$     (d)  $(0, 1)$
4. In  $\mathbb{R}$  with usual metric every singleton set is .....  
 (a) closed    (b) open    (c) both open and closed    (d) neither open nor closed
5. The incorrect statement is .....  
 (a)  $\mathbb{Q}$  is of second category                      (b)  $\mathbb{R}$  is of second category  
 (c)  $\mathbb{I}_2$  is of second category                      (d) Any complete metric is of second category
6. In  $\mathbb{R}$  with discrete metric.....  
 (a)  $\mathbb{Q}$  is unbounded                      (b)  $(0, \infty)$  is unbounded                      (c) every set is bounded                      (d)  $\mathbb{R}$  is unbounded
7. A connected subset of  $\mathbb{R}$  is  
 (a)  $[1, 0)$     (b)  $\mathbb{Q}$     (c) Finite set    (d)  $\{0\}$
8. Which of the following is a dense set in  $\mathbb{R}$  with discrete metric?.....  
 (a)  $\mathbb{R}$     (b)  $\mathbb{Q}$     (c)  $\mathbb{R} - \mathbb{Q}$     (d)  $\mathbb{Z}$
9. In usual metric there exists a continuous function from.....  
 (a)  $(0, 1)$  onto  $[0, 1]$                       (b)  $(0, 1)$  onto  $\mathbb{R}$                       (c)  $[0, 1]$  onto  $(0, 1)$                       (d)  $(0, 1)$  onto  $\mathbb{Q}$
10. Any totally bounded metric space is  
 (a) Unbounded    (b) Separable    (c) Complete    (d) Compact

**PART B — (5 × 5 = 25 marks)**

**II. Answer ALL questions, choosing either (a) or (b).**

11. (A) Prove that  $\mathbb{N} \times \mathbb{N}$  is countable.    (Or)  
 (B) Prove that every open ball is open.
12. (A) Define a Cauchy sequence. Prove that every convergent sequence is also a Cauchy sequence.    (Or)  
 (B) Prove that for any subset  $A$  of a metric space  $\text{diam } A = \sup \{d(x, y) : x, y \in A\}$  where  $\text{diam } A$  denotes the diameter of  $A$ .
13. (A) If  $f : M_1 \rightarrow M_2$  and  $g : M_2 \rightarrow M_3$  are continuous then show that  $g \circ f : M_1 \rightarrow M_3$  is also continuous.    (Or)  
 (B) Let  $f : \mathbb{R} \rightarrow [a, b]$  be a monotonic function. Prove that set of points of  $[a, b]$  at which  $f$  is discontinuous is countable.
14. (A) A metric space  $M$  is connected iff there does not exist a continuous function  $f$  from  $M$  onto the discrete metric space  $\{0, 1\}$     (Or)  
 (B) Define a connected space. Prove that any discrete metric space with more than one point is disconnected.



DON BOSCO COLLEGE OF ARTS & SCIENCE, KEELA ERAL  
MODEL EXAMINATION, OCTOBER - 2016.

III B.COM, BBA, BSC, BCA - Fifth Semester

**Personality Development**

Subject Code: CCSE25A

Total Marks: 75

Date: 26.10.2016  
Time Duration: 3.00 Hour

PART A - (10 x 1 = 10 marks)

Answer ALL Questions:

I. Choose the correct Answer:

1. The term personality derived from the ..... word 'Persona'  
a) Latin      b) English      c) American      d) Greek
2. Knowing yourself is known as  
a) Self-awareness      b) Self-Monitoring      c) Self-Motivation      d) Goal setting
3. Strengths and \_\_\_\_\_ are the internal factors of SWOT analysis.  
a) Weakness      b) Opportunities      c) Threats      d) All the above
4. Hearing voices or seeing visions which are not real is  
a) Hallucination      b) Illusion      c) Perception      d) Emotion
5. Self-monitoring means observing ones \_\_\_\_\_ and evaluating it.  
a) Mind      b) Behavior      c) Goal      d) None of these
6. Which skill is acquired from educational institutions?  
a) Soft skill      b) Managerial skill      c) Hard skill      d) Leadership skill
7. Which acts as an energizing factor in communication?  
a) Sender      b) Receiver      c) Decoding      d) Feedback
8. Symptoms of stress  
a) Memory loss      b) Loneliness      c) High blood pressure      d) All the above
9. Table manners is \_\_\_\_\_  
a) Set of meals      b) Set of rules      c) Set of behaviors      d) Set of works
10. Group discussion is done with \_\_\_\_\_ persons  
a) One      b) Two      c) Eight or Ten      d) Three



DON BOSCO COLLEGE OF ARTS & SCIENCE - KEELA ERAL  
Department of Mathematics  
Fifth Semester - II Internal  
III- B.Sc  
Linear Algebra

Date: 13.10.2016  
Time Duration: 1.00 Hour

Subject Code: GMMMA51  
Total Marks: 25

Part - A

Answer all the Questions

I. Fill in the blanks:-

$$4 \times \frac{1}{2} = 2$$

1. An inner product space is called a Euclidean Space, if  $F$  is the field of \_\_\_\_\_ numbers.
2.  $x$  is called a unit vector if \_\_\_\_\_
3. 2 is the eigen value for a matrix  $A$ . Then what is the eigen value for a matrix  $A^4$  \_\_\_\_\_.
4. The general form of a Characteristic equation of  $A$  is \_\_\_\_\_.

Part - B

II. Answer the following:-

$$3 \times 5 = 15$$

1. Define Rank and Nullity. State and prove Rank and Nullity Theorem.  
OR
2. Let  $V$  be a finite dimensional inner product space. Let  $W$  be a subspace of  $V$ , then  $(W^\perp)^\perp = W$ .
3. Find the characteristic equation of the following matrix  $A = \begin{pmatrix} 8 & -6 & 2 \\ -6 & 7 & -4 \\ 2 & -4 & 3 \end{pmatrix}$ .  
OR
4. If  $\lambda$  is a characteristic root of  $A$  then  $f(\lambda)$  is a Characteristic root of the matrix  $f(A)$  where  $f(x)$  is any polynomial.
5. State and prove Cayley Hamilton Theorem.  
OR
6. State and prove Schwartz's inequality.

Part - C

III. Answer the following

$$1 \times 8 = 8$$

1. Every finite dimensional inner product space has an orthonormal basis.  
OR

2. Find the eigen values and eigen vectors of the following matrix  $A = \begin{pmatrix} 1 & 1 & 3 \\ 1 & 5 & 1 \\ 3 & 1 & 1 \end{pmatrix}$ .



**DON BOSCO COLLEGE OF ARTS & SCIENCE, KEELA ERAL**  
Department of Mathematics

I-B.Sc

First Semester - I Internal

STATISTICS - I

Subject Code: JAST11

Total Marks: 25

Date: 02.09.2016

Time Duration: 1.00 Hour

**PART A - (4 x 1/2 = 2 marks)**

Answer ALL Questions:

I. Choose the correct Answer:

1. Five students are ranked in two subjects as follows

|   |   |   |   |   |
|---|---|---|---|---|
| X | 1 | 3 | 4 | 2 |
| Y | 2 | 4 | 3 | 1 |

Then the rank correlation coefficient  $\rho$  is

- (a) 0.6                                      (b) 0.2                                      (c) 0    (d) 1

2. If  $\sigma_x = 2$ ,  $\sigma_y = 1$  and  $r_{xy} = 1/2$ , then  $\gamma_{x+y}^2$  is

- a) 7    (b)  $\sqrt{7}$     (c) 1/7    (d)  $\sqrt{3}$

3. If  $\beta_1 > 0$ , Then a frequency distribution has .....

- (a) Positive skewness    (b) Negative skewness  
(c) Positive and negative skewness    (d) neither positive nor negative skewness

4. For a curve curve  $\beta_2 = 3$ . Such a curve is known as

- (a) mesokurtic    (b) platykurtic    (c) leptokurtic    (d) none

**PART B - (3 x 5 = 15 marks)**

II. Answer ALL questions, choosing either (a) or (b).

5. (A) The first four moments of a distribution about  $x = 2$  are 1, 2.5, 5.5 and 16. Calculate the four moments (i) about the mean (ii) about zero.

(Or)

(B) Fit a straight line to the following data.

|   |     |     |     |     |     |
|---|-----|-----|-----|-----|-----|
| x | 0   | 1   | 2   | 3   | 4   |
| y | 2.1 | 3.5 | 5.4 | 7.3 | 8.2 |

6. (A) Fit a straight line to the following data and estimate the value of y corresponding to  $x = 6$ .

|   |    |    |    |    |    |    |
|---|----|----|----|----|----|----|
| x | 0  | 5  | 10 | 15 | 20 | 25 |
| y | 12 | 15 | 17 | 22 | 24 | 30 |

(Or)

(B) Prove that the correlation coefficient is independent of the change of origin and scale.

7. (A) Prove that rank correlation  $\rho$  is given by  $\rho = 1 - 6 \sum (x - y)^2 / n(n^2 - 1)$ .

(Or)

(B) If  $\theta$  is the acute angle between the two regression lines show that  $\theta = 1 - \gamma^2$ .



DON BOSCO COLLEGE OF ARTS & SCIENCE- KEELA ERAL  
II-BSC Mathematics  
Third Semester - I Internal  
Application of Differential Equations.

Date: 02.09.2016  
Time: 1.00 Hour

Subject Code: GSMA3A  
Total Marks: 25

PART - A ( $4 \times \frac{1}{2} = 2$ )

I. Choose the best Answer:-

1. In the First order reaction the positive constant  $k$  is called \_\_\_\_\_.  
a. const. b. rate constant c. first order constant.
2. Torricelli's law \_\_\_\_\_.  
a.  $v = 2\sqrt{cgh}$  b.  $v = c\sqrt{2gh}$  c.  $v = 0.6\sqrt{2gh}$
3. From the principle of conservation of energy, Kinetic Energy + Potential Energy = \_\_\_\_\_.  
a.  $v$  b. 0 c. constant.
4. Who gave the solution for Brachistochrone problem \_\_\_\_\_.  
a. Galileo b. Brachistochrone c. Bernoulli.

Part - B ( $3 \times 5 = 15$ )

II. Answer the following:-

1. If in a culture of yeast, the active doubles itself in three hours, by what ratio will it increase in 15 hours, on the assumption that the quantity increases at a rate proportional to itself? (OR)
2. A moth ball whose radius was originally  $\frac{1}{4}$  cm is found to have a radius  $\frac{1}{8}$  cm after one month. Assuming that it evaporates at a rate proportional to its surface, find the radius as a function of time. After what time will it disappear altogether?
3. A particle moving in a straight line is subject to a resistance which produces the retardation  $kv^3$ , where  $v$  is the velocity and  $k$  is a constant. Show that  $v$  and  $t$  are given in terms of  $s$  by the equations  $v = \frac{u}{1+ksu}$ ,  $t = \frac{s}{u} + \frac{1}{2}ks^2$  where  $u$  is the initial velocity. (OR)
4. Derive the equation for Free fall under gravity.
5. A particle of mass  $m$  is acted on by a force  $F(x) = 2mx(x^2 + a^2)$ . At what time  $t = 0$  the particle is at  $x = a$  moving with velocity  $u = 2a^2$  away from the origin. Find the position and velocity of the particle at any subsequent time. How long will it take the particle to move off to infinity? (OR)
6. Derive the equation for retarded fall.

Part - B ( $1 \times 8 = 8$ )

III. Answer the following:-

1. State and prove Second order reaction. (OR)
2. State and prove Brachistochrone Problem.

**DON BOSCO COLLEGE OF ARTS & SCIENCE, KEELA ERAL**  
**MODEL EXAMINATION - APRIL 2018**  
**I UG- BBA, B.COM, BA, B.SC, BCA / II SEMESTER**  
**GENERAL ENGLISH**

Date: 17.04.2018  
Time: 3 hrs

Sub. Code: S2EN21  
Total Marks: 75

**PART - A**

Choose the correct answer

(10 × 1 = 10 marks)

1. Some innocents have not the understanding to fathom the \_\_\_\_\_.  
(a) Eatables (b) maps (c) books (d) time tables
2. Baldeo's family had small \_\_\_\_\_ fields.  
(a) rice (b) millet (c) corn (d) maize
3. \_\_\_\_\_ would check soil erosion and conserve the rainfall of the country.  
(a) Plantation (b) deforestation (c) rain (d) industries
4. After \_\_\_\_\_ hours the poison lost its sting.  
(a) 10 (b) 12 (c) 20 (d) 30
5. Because of the stormy wind, the snow rises up like \_\_\_\_\_.  
(a) Rain (b) cyclone (c) smoke (d) fire
6. You should dream but your dream should not cloud your \_\_\_\_\_.  
(a) emotion (b) reason (c) night (d) rain
7. Trepidation in the context used by the poet refers to \_\_\_\_\_.  
(a) fear (b) trembling motion (c) anxiety (d) concern
8. Prince Dimitri is a boy of \_\_\_\_\_.  
(a) 17 (b) 16 (c) 18 (d) 20
9. Aunt Jane gave \_\_\_\_\_ as wedding gifts to Jack and Jill.  
(a) 20 Pounds (b) 20000 pounds (c) 200 pounds (d) 200 dollars
10. The scene of the play, 'The Death Trap' takes place at \_\_\_\_\_.  
(a) 8 o' clock (b) 12 o' clock (c) 10 o' clock (d) 9 o' clock

**PART - B**

Answer ALL questions, choosing either (a) or (b) (5 × 5 = 25 marks)

11. A) Write critical appraisal of the prose The Tiger in the Tunnel. (OR)  
B) How one can escape from intellectual rubbish?
12. A) A) List out the qualities for a man in "If". (OR)  
B) Enlist the symbols used in "Valediction Forbidden Mourning".  
A) What was the demand of Wasserkopf? Why? (OR)  
B) Explain the lifestyle of Jack and Jill.
14. A) Rewrite into passive voice.  
i) Please give me your pen  
ii) They painted the building white.  
iii) Iniya gives four note books to Meena  
iv) The Students are playing tennis on the ground.  
v) Who washed the clothes? (OR)



**DON BOSCO COLLEGE OF ARTS & SCIENCE, KEELA ERAL**  
**MODEL EXAMINATION – April, 2018**  
**I – BSC Mathematics / II SEMESTER**  
**STATISTICS-II**

Date: 20.04.2018  
 Time: 3 hrs

Sub. Code: SAST21  
 Total Marks: 75

**PART - A**

**Choose the correct answer**

**(10 × 1 = 10 marks)**

1. A good index number is one that satisfies  
 (a).Unit test (b).Circular test (c).Time-reversal test (d). All of these
  2. The arithmetic mean of Lapeyres and Paasche's index number is.... Index number.  
 (a).Bowley's (b).Kelley's (c).Fishers (d).Marshall
  3. Type I error is committed when the hypothesis true but our test.... it.  
 (a).rejects (b).accepts (c).(a) or (b) (d). None of these
  4. The standard error of the number of successes=  
 (a).npq (b).pq/n (c). $\sqrt{npq}$  (d). $\sqrt{\frac{pq}{n}}$
- The 95% confidence limits for the population mean are
5. .... gave the t-test.  
 (a).Fisher (b).Pearson (c).Gossett (d). Paashe
  6. The total number of possibilities in which arrangements can be made in 3 × 3 Latin square are...  
 (a).6 (b).9 (c).12 (d).22
  7. The total number of d.f in two-way classification model is...(c-no.of coloumns, r-no.of rows)  
 (a).(c-1)(r-1) (b).cr-1 (c).cr-2 (d).c+r-2
  8. In a control chart the upper control limit can be...  
 (a).negative (b).always positive (c).always zero (d).none of these
  9. UCL for R-chart is.....  
 (a). $D_4\bar{R}$  (b).  $D_3\bar{R}$  (c).  $A_4\bar{R}$  (d).  $A_2\bar{R}$

**PART - B**

**Answer ALL questions, choosing either (a) or (b)**

**(5 × 5 = 25 marks)**

11.a. Construct Paasche's index number from the following data :

| Commodities | P <sub>0</sub> | Q <sub>0</sub> | P <sub>1</sub> | Q <sub>1</sub> |
|-------------|----------------|----------------|----------------|----------------|
| A           | 6              | 50             | 10             | 56             |
| B           | 2              | 100            | 2              | 120            |
| C           | 4              | 60             | 6              | 60             |
| D           | 10             | 30             | 12             | 24             |

**(OR)**

12. a. State time reversal test and show that Lespeyre's method and Paasche's method does not satisfy the test. (OR)
12. a. 240 heads were obtained in tossing a coin 400 times. Does this appear to be on unbiased coin? (OR)
13. a. Explain about (i). hypothesis (ii). Test (iii). Level of significance (iv). Critical region (OR)
13. a. Test the equality of s.ds for the data given:  $n_1 = 10, n_2 = 14, s_1 = 1.5, s_2 = 1.2$  (OR)
13. b. Test the hypothesis that  $\sigma = 10$  given that  $s=15$  for a random sample of size 50 from a normal population (OR)
14. a. Explain the ANOVA table for one way classification.. (OR)
14. b. What is Latin square? Point out its significance and limitations. (OR)
15. a. What is Statistical quality control? Point out its merits and limitations. (OR)
15. b. Explain the construction of mean( $\bar{X}$ ) chart.





DON BOSCO COLLEGE OF ARTS & SCIENCE, KEELA ERAL  
DEPARTMENT OF MATHEMATICS  
MODEL EXAMINATION - APRIL- 2018  
II - B.Sc MATHS  
ALLIED PHYSICS-II

Date: 17.04.2018  
Time: 3 hrs

Sub. Code: JAPH21  
Max. Marks: 75

PART - A

Choose the correct answer

(10 × 1 = 10 marks)

1. Electric Current is

- (a) current per unit length (b) current across unit area  
(c) current per unit volume (d) charge across any sectional area

2. The color band starting from near one end of carbon resistor is brown, black, red, gold. The resistance is

- (a)  $1000 \pm 50$  ohm (b)  $1000 \pm 100$  ohm (c)  $102 \pm 50$  ohm (d)  $1000 \pm 100$  ohm

3. Zenor diode is operated in

- (a) forward bias (b) reverse bias (c) both (a) and (b) (d) none of the above

4 The binary numbers 1011 and 1101 are added. The result is

- (a) 11001 (b) 10001 (c) 11000 (d) 1000

5. The I-V graph of a crystal diode is

- (a) linear (b) non-linear (c) circle (d) ellipse

6. The magnetic dipole moment of a nucleus is due to

- (a) spin (b) charge (c) both spin and charge (d) neutrons

7. The half life period is

- (a)  $N_0/\lambda$  (b)  $(\text{decay constant})^{-1}$  (c) none of the above (d)  $0.69/\lambda$

8. The mass defect of 1 a.m.u. corresponds to energy

- (a) 10 Mev (b) 93 Mev (c)  $9.3 \times 10^6$  Mev (d) 931 Mev

9. The disintegration of a radioactive substance is

- (a) linear (b) exponential (c) constant (d) none of the above.

10. Binding energy of a nucleus is due to

- (a) coulomb force (b) surface tension (c) both (a) and (b) (d) mass defect



DON BOSCO COLLEGE OF ARTS & SCIENCE, KEELA ERAL  
MODEL EXAMINATION - April, 2018  
III - BSC Mathematics / VI SEMESTER

Date: 13.04.2018

Time Duration: 3.00 Hour

Complex Analysis

Subject Code: GMDMA61

Total Marks: 75

Answer ALL Questions:

PART - A

(10 x 1 = 10 marks)

- If  $\arg z_1 = \pi/3$  and  $\arg z_2 = \pi/4$  then  $\arg(z_1/z_2) = \dots$   
(a) 0 (b)  $7\pi/12$  (c)  $\pi/12$  (d) not defined
- If  $z$  is a complex number, then  $\operatorname{Im} z$  is.....  
(a)  $\frac{z+i}{2}$  (b)  $\frac{z-i}{2i}$  (c)  $\frac{z+i}{2i}$  (d)  $\frac{z-i}{2}$
- The fixed point of the function  $f(z) = z^2$  is.....  
(a) 0 (b) 1 (c) 0 and 1 (d) all the real values
- The function  $f(z) = |z|^2$  is.....  
(a) differentiable (b) Differentiable only at 0 (c) not Differentiable (d) Continuous
- The C - R equations are.....  
(a)  $u_x = v_y$  (b)  $u_y = -v_x$  (c) both (a) and (b) (d)  $u_{xx} + u_{yy} = 0$
- If  $a=c=0$  and  $b=d$  then the transformation is.....  
(a) translation (b) inversion (c) rotation (d) magnification
- The value of  $\int_C \frac{dz}{z-a}$  where  $C: |z-a| = r$  is.....  
(a) 0 (b)  $2\pi i f(a)$  (c)  $2\pi i$  (d)  $2\pi$
- The poles of  $f(z) = \cot z$  are.....  
(a) 0 (b)  $n\pi$  (c)  $n\pi/2$  (d)  $2n\pi$
- The singular point of  $w = 1/z$  is/are.....  
(a) Only 0 (b) neighborhood of 0 (c) R (d) C
- Find the residue of  $\frac{e^{iz}}{z}$  at the point  $z = 0$  is.....  
(a) 1 (b)  $\pi/2$  (c)  $\pi/3$  (d)  $\infty$



DON BOSCO COLLEGE OF ARTS AND SCIENCE, KEELA ERAL  
III B.Sc (Maths)

Sixth Semester - Model Exam  
Mechanics- GMMA63

Date: 17-04-2018  
Time: 3 hrs

Session: FN  
Marks: 75

Part - A

I. (Answer all questions)

10 x 1 = 10

- If the resultant force is least then the angle between the two forces P and Q will be  
a) 0                      b)  $\pi/4$                       c)  $\pi/2$                       d)  $\pi$
- The magnitude of the resultant of two like parallel forces was their \_\_\_\_\_  
a) sum                      b) difference                      c) product                      d) quotient
- If three forces acting at a point are in equilibrium then each force is proportional to \_\_\_\_\_ of the angle between the other two.  
a) cosine                      b) sine                      c) tan                      d) sec
- The coefficient of friction of wood on wood(dry) is \_\_\_\_\_  
a) 0.04 to 0.2                      b) 0.15 to 0.3                      c) 0.25 to 0.5                      d) 0.3
- The horizontal velocity of projectile is \_\_\_\_\_  
a)  $u \sin \alpha$                       b)  $u \cos \alpha$                       c)  $u \tan \alpha$                       d)  $u \sec \alpha$
- The greatest distance of the projectile from an inclined plane is \_\_\_\_\_  
a)  $\frac{u^2 \sin^2(\alpha + \beta)}{2g \cos \beta}$                       b)  $\frac{u^2 \sin^2(\alpha - \beta)}{2g \cos \beta}$                       c)  $\frac{u^2 \sin^2 \alpha}{2g \cos \beta}$                       d)  $\frac{u^2 \sin^2 \alpha}{2g \sin \beta}$
- The amplitude of SHM  $4v^2 = 25 - x^2$  is  
a) 25                      b) 10                      c) 5                      d) 15
- The length of seconds pendulum is \_\_\_\_\_  
a)  $g/\pi^2$                       b)  $g/\pi$                       c)  $g/2\pi$                       d)  $\pi/g$
- If the radial velocity is proportional to transverse velocity then the path is \_\_\_\_\_  
a) ellipse                      b) hyperbola                      c) parabola                      d) equiangular spiral
- Pedal equation of hyperbola is \_\_\_\_\_  
a)  $\frac{b^2}{p^2} = \frac{2a}{r} - 1$                       b)  $\frac{b^2}{p^2} = \frac{2a}{r} + 1$                       c)  $p^2 = ar$                       d)  $p = ar$

Part - B

II. (Answer all questions)

5 x 5 = 25

11. a) State and prove converse of the triangle law of force. (OR)

b) P and Q are two like parallel forces. If Q is moved parallel to itself through a distance x, prove that the resultant of P and Q moves through a distance  $\frac{Qx}{P+Q}$ .

12. a) If three forces acting on a rigid body are in equilibrium then prove that they must be coplanar. (OR)

b) Discuss equilibrium of a particle on a rough inclined plane.



DON BOSCO COLLEGE OF ARTS & SCIENCE, KEELA ERAL  
Department of Mathematics

I - B.Sc

II Semester - II CIA  
Differential Equation

Date: 21.03.2018

Time Duration: 1 hour

Session: AN  
Total Marks: 25

PART - A

Choose the correct Answer:

(5 x 1 = 5 Marks)

1. Clairaut's form

(a)  $y = f(p) + px$       (b)  $y = f(p) - px$

(c)  $y = f(-p) + px$       (d)  $y = -f(p) + px$

2.  $x^2 \frac{d^2y}{dx^2} =$       (a) D      (b)  $D(D-2)y$

(c)  $D(D-1)y$       (d)  $D(D-1)^2y$

3.  $u = \frac{1}{(\theta-\alpha)} X$  then

(a)  $u = x^{-\alpha} \int x^{\alpha+1} X dx$

(c)  $u = x^{\alpha} \int x^{\alpha+1} X dx$

(b)  $u = x^{-\alpha} \int x^{-\alpha+1} X dx$

(d)  $u = x^{\alpha} \int x^{-\alpha-1} X dx$

4.  $x^2 \frac{d^2y}{dx^2} + 3x \frac{dy}{dx} + y = x$ . CF is

(a)  $e^{-z}(A + Bz)$

(c)  $\frac{1}{x}(A + B \log x)$

(b)  $e^{-z}(A - Bz)$

(d)  $\frac{1}{x}(A - B \log x)$

5.  $x^2 \frac{d^2y}{dx^2} + 4x \frac{dy}{dx} + 2y = x$ . CF is

(a)  $Ax^{-1} + Bx^{-2}$

(c)  $Ax^3 + Bx^{-2}$

(b)  $Ax^{-2} + Bx^{-2}$

(d)  $Ax^{-1} + Bx^{-3}$

PART - B

Answer Any Three Questions

(3 x 4 = 12 Marks)

6. Solve  $x^2 \frac{d^2y}{dx^2} + 3x \frac{dy}{dx} + y = \frac{1}{(1-x)^2}$

7. Solve  $(5 + 2x)^2 \frac{d^2y}{dx^2} - 6(5 + 2x) \frac{dy}{dx} + 8y = 6x$

8. Solve  $y = (x - a)p - p^2$

9. Solve  $(px - y)(py + x) = 2p$  (hint  $x^2 = X, y^2 = Y$ )

PART - C

Answer Any One Question.

(1 x 8 = 8 Marks)

10. Solve  $\cos x \frac{d^2y}{dx^2} + \sin x \frac{dy}{dx} + 4(\cos^3 x)y = 8(\cos^5 x)$

11. Solve  $(1 + x^2)^3 \frac{d^2y}{dx^2} + 2x(1 + x^2)^2 \frac{dy}{dx} + (1 + x^2)y = 3x$

DON BOSCO COLLEGE OF ARTS & SCIENCE, KEELA ERAL  
Department of Mathematics

I - BSC

II Semester - II CIA

STATISTICS-II

Session: ~~FN~~ AN

Total Marks: 25

Date: 22.03.2018  
Time Duration: 1 hour

PART - A

(5 x 1 = 5 Marks)

Choose the correct Answer:

- The  $\chi^2$  distribution is used to test the population .....  
(a) variance (b) mean (c) median (d) mode
- In  $\chi^2$  test, always experimental frequency.....  
(a)  $\geq 5$  (b)  $> 5$  (c)  $\leq 5$  (d)  $< 5$
- For F-test,  $u = 5$  for 6 observations  $v = 6$  for 5 observations then degrees of freedom is.....  
(a) (5,6) (b) (6,5) (c) 6 (d) 5

4. For the two attributes A and B the expected frequency of (AB) is

|       |    |       |
|-------|----|-------|
|       | B  | Non B |
| A     | 40 | 20    |
| Non A | 10 | 30    |

- In oneway classification we can apply ..... test  
(a) 30 (b) 20 (c) 40 (d) 60  
(a) F (b)  $\chi^2$  (c) t (d) None

PART - B

(3 x 4 = 12 Marks)

6. In a sample of 8 observations the sum of squared deviations of items from the mean was 94.5. In another sample of 10 observations the value was found to be 101.7. Test whether the difference is significant.

7. Test the hypothesis that  $\sigma = 8$  given  $s = 10$  for a random sample of size 51.

8. Prove that  $\chi^2 = \sum_{i=1}^k \frac{(o_i - e_i)^2}{e_i} = \sum_{i=1}^k \frac{o_i^2}{e_i} - n$  where there are k set of theoretical and observed values with the total frequency n.



**DON BOSCO COLLEGE OF ARTS & SCIENCE, KEELA ERAL**  
 Department of Mathematics  
 III - B.Sc  
 VI Semester - II CIA  
 Operation Research

Date: 21.03.2018  
 Time Duration: 1 hour

Session: AN  
 Total Marks: 25

**PART - A**

Choose the correct Answer:

(5 x 1 = 5 Marks)

1. For the game  $\begin{bmatrix} 1 & 3 \\ -1 & 5 \end{bmatrix}$  the saddle point  
 (a) (1,1)                      (b) (1,2)                      (c) (2,1)                      (d) (2,2)
2. The game value  $v =$   
 (a)  $\frac{ab-bd}{a-b-c+d}$                       (b)  $\frac{ad-bc}{a-b-c+d}$                       (c)  $\frac{cb-bd}{a-b-c+d}$                       (d)  $\frac{ac-bd}{a-b-c+d}$
3. For a zero sum game the number of players is  
 (a)  $n$                       (b) 2                      (c)  $> 2$                       (d) none of these
4. In game theory, the player is called  
 (a) strategy                      (b) competitor                      (c) optimal                      (d) none of these
5. Game value of the game  $\begin{bmatrix} 3 & -2 \\ -2 & 5 \end{bmatrix}$   
 (a) 11/12                      (b) 12/11                      (c) 11/5                      (d) 5/11

**PART - B**

(3 x 4 = 12 Marks)

Answer Any Three Questions

6. Explain the game without saddle point.
7. Solve the following game using dominance property  $\begin{bmatrix} 9 & 8 & 6 \\ 2 & 6 & 4 \end{bmatrix}$
8. Solve the following game using graphical method  $\begin{matrix} & B_1 & B_2 & B_3 & B_4 \\ A_1 & 2 & 1 & 0 & -2 \\ A_2 & 1 & 0 & 3 & 2 \end{matrix}$
9. Data have been accumulated at a banking facility regarding the waiting time for delivery trucks to be loaded. The data show that the average arrival rate for trucks at the loading docks is 2 per hour. The average time to load a truck is 20 minutes find (i) the expected number of trucks in the system (ii) the expected number of trucks waiting to be served

**PART - C**

(1 x 8 = 8 Marks)

Answer Any One Question.

10. Solve the following game using L.P.P method  $A \begin{matrix} & B \\ \begin{pmatrix} 1 & -1 & 3 \\ 3 & 5 & -3 \\ 6 & 2 & -2 \end{pmatrix} \end{matrix}$
11. If for a period of  $s$  hours train at every 20 minutes but the service time is 36 minutes, then calculate for this period (i) the probability that the year is empty. (ii) average number of trains in the system, on the assumption that the line capacity of the year is limited to 4 trains only.



DON BOSCO COLLEGE OF ARTS AND SCIENCE, KEELA ERAL

DEPARTMENT OF MATHEMATICS

III B.Sc(Maths)

Sixth Semester -II CIA

Session: VN

Graph Theory- GMMA64

Marks: 25

Date: 22-03-2018

Time: 1 hr

Part - A (Answer all questions)

5 x 1 = 5

1. A theta graph is \_\_\_\_\_  
a) Hamiltonian                      b) Eulerian                      c) non-hamiltonian                      d) block
2. Any graph without cycle is \_\_\_\_\_  
a) complete                      b) block                      c) tree                      d) none
3. If G is planar then every subgraph of G is  
a) planar                      b) non-planar                      c) tree                      d) none
4.  $\chi(\overline{K_2}) =$  \_\_\_\_\_  
a) 1                      b) 2                      c) 0                      d) 3
5.  $q =$  \_\_\_\_\_  
a)  $\frac{n(n-1)}{p-1}$                       b)  $\frac{n(p-2)}{n-2}$                       c)  $\frac{n(p-1)}{n-1}$                       d)  $\frac{p(p-2)}{n-2}$

3 x 4 = 12

Part - B (Answer three questions)

6. Prove that  $C(G)$  is well defined
7. Prove that if G is a tree then every two points of G are joined by unique path.
8. State and prove Euler's polyhedron formula for planarity
9. If G is uniquely n- colorable then prove that  $\delta(G) \geq n - 1$

1 x 8 = 8

Part - C (Answer any one)

10. State and prove dirac's theorem.
11. State and prove five colour theorem.



Date : 01.11.17

Time Duration: 3.00 Hour

Total Marks: 75

Part - A

Answer all the Questions

(10\*1=10 marks)

- The sum of the roots of the equation  $ax^2 + bx + c = 0$  is  
a)  $\frac{b}{a}$       b)  $\frac{c}{a}$       c)  $-\frac{b}{a}$       d)  $-\frac{c}{a}$
- If  $\alpha$  is a root of a RE  $f(x) = 0$ , then the another root is  
a)  $\alpha$       b)  $\alpha^3$       c)  $\frac{1}{\alpha}$       d)  $\frac{1}{\alpha^2}$
- If  $f(x)=0$  is a RE of first type and odd degree then----- is a factor of  $f(x)$   
a)  $x+1$       b)  $x-1$       c)  $x^2 - 1$       d)  $x^2 + 1$
- If the leading coefficient is positive then  $f(\infty)$   
a) +ve      b) -ve      c) +ve or -ve
- Descartes's rule of sign, the maximum number of positive roots of  $x^7 - 3x^4 + 2x^3 - 1 = 0$  is  
(a) 1      (b) 2      (c) 3      (d) 4
- If an equation has only one variation of sign then it has a-----.  
a) Negative root      b) Positive root  
c) Either negative or positive      d) None of these.
- If  $\alpha$  is a root of  $f(x) = 0$  then  $-\alpha$  is a root of  
a)  $f(-x)=0$       b)  $f(x)=0$       c)  $f(x^2)=0$       d)  $f(x^3)=0$
- If  $\alpha$  is a first approximation of a real root of  $(x)=0$  then  $\alpha$  can be approximated formula  
a)  $\alpha - \frac{f(\alpha)}{f'(\alpha)}$       b)  $\alpha + \frac{f(\alpha)}{f'(\alpha)}$       c)  $\alpha - \frac{f'(\alpha)}{f(\alpha)}$       d)  $\alpha + \frac{f'(\alpha)}{f(\alpha)}$
- The number of negative roots of the equation  $x^5 + x^4 + x^3 - x + 1 = 0$  is  
(a) 4      (b) 3      (c) 2      (d) 1.
- Cardon's method is used to solve -----  
a) Linear equation      b) Quadratic equation  
c) Cubic equation      d) Biquadratic equation



Date: 31.10.2017  
Time Duration: 1 hour

Total Marks: 75

PART - A

(10 x 1 = 10 Marks)

Choose the correct Answer:

1. If  $\vec{A} = u^2 \vec{i} + u\vec{j} + 2u\vec{k}$  and  $\vec{B} = \vec{j} - u\vec{k}$  then  $\frac{d}{du}(\vec{A} \cdot \vec{B})$ .....  
a.  $2u-1$                       b.  $2u+1$                       c.  $1-4u$                       d.  $1+4u$
2. If  $f$  and  $g$  are irrotational,  $f \times g$  is.....  
a. irrotational                      b. Solenoidal                      c. harmonic                      d. rotational
3. If the vector  $3x\vec{i} + (x+y)\vec{j} - az\vec{k}$  is solenoidal, then the value of  $a$  is.....  
a. 3                      b. 4                      c. 5                      d. 6
4.  $\text{div curl } \vec{f}$ .....  
a. 0                      b. -1                      c. 2                      d. 5
5. The unit vector normal to curved surface of the cylinder  $x^2 + y^2 = 4, z = 0$  and  $z = 3$  is.....  
a.  $x\vec{i} + y\vec{j}$                       b.  $\frac{x\vec{i} + y\vec{j}}{2}$                       c.  $\frac{x\vec{i} + y\vec{j}}{3}$                       d. None
6. The value of  $\int_C \vec{r} \cdot d\vec{r}$  along any closed curve is.....  
a. 0                      b.  $2\pi$                       c.  $-\pi$                       d.  $\pi$
7. The Jacobian of the transformations  $x = r\cos\theta, y = r\sin\theta$  is.....  
a.  $r\sin\theta$                       b.  $r\cos\theta$                       c.  $r$                       d.  $r^2$
8. If  $V$  is the volume of the region enclosed by the surface  $S$ , then  $\iint_S \vec{r} \cdot d\vec{S} = \dots\dots\dots$   
a.  $V$                       b.  $2V$                       c.  $3V$                       d.  $4V$
9. The area of the ellipse  $x = a \cos\theta, y = b \sin\theta$  is.....  
a.  $\pi a^2$                       b.  $\pi b^2$                       c.  $\pi ab$                       d.  $\pi(a^2 + b^2)$
10.  $\iint dx dy$  represents the \_\_\_\_\_ of the region  $S$ .  
a. Area                      b. Surface area                      c. Volume                      d. None

PART - B

(5 x 5 = 25 Marks)

Answer ALL Questions

11. a. If  $\vec{u}$  and  $\vec{v}$  are two vectors, prove that  $\frac{d}{dt}(\vec{u} \times \vec{v}) = \vec{u} \times \frac{d\vec{v}}{dt} + \frac{d\vec{u}}{dt} \times \vec{v}$ .  
(Or)  
b. Find  $\phi$  if  $\nabla \phi$  is  $(6xy + z^3)\vec{i} + (3x^2 - z)\vec{j} + (3x^2 - z)\vec{k}$
12. a. If  $\vec{r} = x\vec{i} + y\vec{j} + z\vec{k}$  and  $|\vec{r}| = r$ , then show that  $\nabla \cdot (r^n \vec{r}) = (n+3)r^n$ .  
(Or)  
b. Show that  $\nabla^2 f(r) = f''(r) + \frac{2}{r} f'(r)$ . Also, show that if  $\nabla^2 f(r) = 0$ , then  $f(r) = \frac{\alpha}{r} + \beta$ , where  $\alpha$  and  $\beta$  are arbitrary constants.
13. a. If  $\vec{A} = 2xy\vec{i} + (y)\vec{j} + xz\vec{k}$  and if  $S$  is the arc of the parabola  $y^2 = 2x, z = 0$  from  $(0,0,0)$  to  $(1/2, 1, 0)$  evaluate  $\int \vec{A} \cdot d\vec{s}$   
(Or)

DON BOSCO COLLEGE OF ARTS & SCIENCE, KEELA ERAL  
Department of Mathematics

III - B.Sc

Fifth Semester - Model Exam

DISCRETE MATHEMATICS

Date: 31.10.17  
Time Duration: 3hour

Total Marks: 75

PART - A

(10 × 1 = 10 marks)

Answer ALL questions.

1. The dual of  $(P \vee Q) \wedge R$  is

- (a)  $(P \vee Q) \wedge R$  (b)  $(P \wedge Q) \vee R$  (c)  $(P \vee Q) \vee R$  (d) none of these

2.  $P \vee P \Leftrightarrow$

- (a) p (b)  $P \vee P$  (c)  $\neg P \vee P$  (d) q

3.  $(P \wedge \neg P) \vee Q$  is equivalent to

- (a) Q (b) P (c)  $(P \vee Q)$  (d)  $\neg P \vee Q$

4.  $A(x) \rightarrow B(x) \Leftrightarrow$

- (a)  $\neg A(x) \wedge B(x)$  (b)  $A(x) \vee \neg B(x)$  (c)  $\neg A(x) \vee B(x)$  (d) none

5. The name of  $(\exists x)A(x) \Rightarrow A(y)$  is

- (a) US (b) ES (c) UG (d) EG

6.  $\neg \neg A(x) \Leftrightarrow$

- (a)  $\neg A(x)$  (b)  $A(x)$  (c)  $B(x)$  (d)  $\neg B(x)$

7. If in a lattice  $L$ ,  $\{a, b\} \subseteq L$ , then  $\text{LUB } \{a, b\}$  is

- (a) a (b)  $a \wedge b$  (c)  $a * b$  (d)  $a \oplus b$

8. If  $S$  is a singleton set, then the number of elements in the corresponding lattice is

- (a) 1 (b) 2 (c) 3 (d) 4

9. In a two element boolean algebra, the value of the Boolean form  $x_1 \oplus (x_1 * x_2)$  is

- (a)  $x_2$  (b)  $x_1 * x_2$  (c) 0 (d)  $x_1$

10.  $(a * b) \oplus (a * b') =$

- (a) b (b)  $a * b$  (c) a (d) none



கலை மற்றும் அறிவியல் கல்லூரி  
கீழ்சூரால் - 628908.  
இரண்டாம் அகமதிப்பிட்டுத்தேர்வு  
முதல் பருவம் - பொதுத்தமிழ்  
இக்கால இலக்கியம்  
இலக்கியம், வணிகவியல், கணிதவியல், வணிக நிர்வாகம், தமிழ்  
இலக்கியம், வணிகவியல், கணிதவியல் மாணாக்கர்களுக்கு மட்டும்)

நாள் : 04.10.2017  
காலம் : 1 மணி நேரம்

காலை  
மதிப்பெண் : 25

பகுதி - அ

I சரியான விடையைத் தேர்ந்தெடுத்து எழுதுக.

1. "ஓதலிற் சிறந்தது ஒழுக்கமுடைமை" கூறும் நூல் எது? (5x1=5)  
(அ) கலித் தொகை (ஆ) திருக்குறள் (இ) நாலடியார் (ஈ) சிறுபஞ்சமூலம்
2. வெ.காமை பொருள் யாது?  
(அ) பேராசை (ஆ) ஆணவம் (இ) மகிழ்ச்சி (ஈ) பேரானந்தம்
3. "விதிகளை வகுத்துக்கொண்டுத் ஆடும் ஆட்டம்" என்று கூறியவர்?  
(அ) தெ.பொ.மீ (ஆ) கல்கி (இ) சுரதா (ஈ) முனைவர் க.நஞ்சையன்
4. கல்வியும் சமுதாய நலனும் - கட்டுரையின் ஆசிரியர் யார்?  
(அ) முனைவர் பெ.மகேஸ்வரி (ஆ) முனைவர் க.நஞ்சையன் (இ) வாலி (ஈ) தமிழன்பன்
5. 'உடம்பார் அழியின் உயிரார் அழிவர்' யார் கூற்று?  
(அ) திருமூலர் (ஆ) கபிலர் (இ) பாரி (ஈ) சிறுபஞ்சமூலம்

பகுதி - ஆ

II எவையேனும் மூன்றனுக்கு 250 சொற்களுக்கு மிகாமல் விடையளி (3x4=12)

6. இலக்கியமும் சுற்றுச்சூழலும் வழி முனைவர்(கேப்டன்)மா.குமார்நவிலுவது யாது?
7. 'திருவாசகத்தில் மகளிர் விளையாட்டுகள்' கட்டுரையில் அம்மாளை பற்றியெழுதுக.
8. கல்வியில் வற்புறுத்தப்படும் சமுதாய நோக்கங்களைக் கூறுக.
9. திரிகடுகம் காட்டும் மேலாண்மை குறித்து பேரா. சு.செந்தாமாரை நவிலுவது என்ன?

பகுதி - இ

III எவையேனும் ஒன்றனுக்கு 500 சொற்களுக்கு மிகாமல் விடையளி (1x8=8)

10. 'வாழ்க்கைக்கு வழிகாட்டும் வள்ளுவம்' சிறப்பினை முனைவர்.பாரிஜாதம் கூறும் கருத்தைத் தொகுத்துரைக்க.
11. 'கம்பராமாயணத்தில் உறவுகள்' குறித்து முனைவர் பெ.மகேஸ்வரி நவில்வதைக் கட்டுரைக்க.



**DON BOSCO COLLEGE OF ARTS & SCIENCE, KEELA ERAL**  
 Department of Computer Applications  
 II B.SC/BBA/BA English  
 Third Semester - II CIA  
 Introduction to Computer

Date: 06.10.2017  
 Time Duration: 1 hour

Session: FN  
 Total Marks: 25

**PART - A**

(5 x 1 = 5 Marks)

Choose the correct Answer:

1. \_\_\_\_\_ is known as brain of the computer.  
 (a) CPU                      (b) ROM                      (c) Motherboard                      (d) None
2. \_\_\_\_\_ port is used to plug and play hardware interfaces.  
 (a) PS/2                      (b) USB                      (c) serial                      (d) SCSI
3. \_\_\_\_\_ is used to back up one level in a multilevel environment.  
 (a) SHIFT                      (b) CTRL                      (c) ALT                      (d) ESC
4. \_\_\_\_\_ is used to describe the special numbers and symbols you typically see at the bottom of cheques.  
 (a) MICR                      (b) OMR                      (c) smart card                      (d) none of these
5. \_\_\_\_\_ printing device that draws images on paper using ink pens or pencils.  
 (a) plotter                      (b) inkjet                      (c) Laser                      (d) Thermal

**PART - B**

(3 x 4 = 12 Marks)

Answer Any Three Questions

6. Write about the types of Number system.
7. Describe about coding schemes.
8. Explain about keyboard and its functions.
9. Write down about Optical input devices.

**PART - C**

(1 x 8 = 8 Marks)

Answer ANY One Question.

10. Explain about the components inside the computer.
11. What is Printer? & Explain its types.

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**DON BOSCO COLLEGE OF ARTS & SCIENCE, KEELA ERAL**  
 Department of Mathematics

III - B.Sc  
 Fifth Semester - II CIA  
**LINEAR ALGEBRA**

Date: 04.10.2017  
 Time Duration: 1 hour

Session: FN  
 Total Marks: 25

**PART - A**

Choose the correct Answer:

(5 x 1 = 5 Marks)

- If the eigen values of A are 1,3,5 then the sum of eigen values of  $A^3$  is.....  
 (a).153 (b).135 (c).531 (d).315
- The characteristic roots of a Hermitian matrix are all.....  
 (a). Purely imaginary (b).zero (c). real (d).None
- The eigen values of the identity matrix of order  $2 \times 2$  is.....  
 (a). 0,-1 (b)1,0 (c) 1,1 (d).does not exist
- If the dimensions of the domain and range are 2 and 3 respectively then dimension of the matrix is  
 (a). $2 \times 3$  (b). $3 \times 2$  (c). $2 \times 2$  (d). $3 \times 3$
- The product of the eigenvalue of  $\begin{pmatrix} -3 & -3 \\ -2 & 4 \end{pmatrix}$  is....  
 (a).-6 (b).6 (c).0 (d).-12

**PART - B**

(3 x 4 = 12 Marks)

Answer Any Three Questions

6. Find the linear transformation  $T: V_3(R) \rightarrow V_3(R)$  determined by the matrix  $\begin{pmatrix} 1 & 2 & 1 \\ 0 & 1 & 1 \\ -1 & 3 & 4 \end{pmatrix}$

With respect to the standard basis  $\{e_1, e_2, e_3\}$ .

7. Obtain the matrices for the linear transformation  $T: V_3(R) \rightarrow V_2(R)$  given by  $T(a, b, c) = (a + b, 2c - a)$  With respect to  $\{(1, 0, -1), (1, 1, 1), (1, 0, 0)\}$  as basis for  $V_3(R)$  and  $\{(0, 1), (1, 0)\}$  for  $V_2(R)$ .

8. State and prove Cayley Hamilton theorem.

9. The product of two eigen values of the matrix  $A = \begin{pmatrix} 6 & -2 & 2 \\ -2 & 3 & -1 \\ 2 & -1 & 3 \end{pmatrix}$  is 16. Find the third eigen value. What is the sum of eigen values of A.

**PART - C**

(1 x 8 = 8 Marks)

Answer ANY One Question.

10. Using Cayley Hamilton theorem for the matrix  $A = \begin{pmatrix} 1 & 0 & -2 \\ 2 & 2 & 4 \\ 0 & 0 & 2 \end{pmatrix}$ . Find (i).  $A^{-1}$  (ii).  $A^4$ .

11. Find the eigen values and eigen vectors of the matrix  $A = \begin{pmatrix} 2 & -2 & 2 \\ 1 & 1 & 1 \\ 1 & 3 & -1 \end{pmatrix}$ .

DON BOSCO COLLEGE OF ARTS AND SCIENCE, KEELA ERAL  
 II BCA Model examination

Subject: Statistical methods  
 Subject code: GNMA3A  
 PART A- (10 x1 = 10 marks)

Marks: 75  
 Time: 10-1

Handwritten: II BCA  
 (13)

Answer all questions

1. If the two variables deviate in the same direction the correlation is .....  
 a) Inverse or negative  
 b) Direct or positive  
 c) perfect  
 d) none of these
2. If  $\gamma =$  the correlation is perfect and negative  
 a) 0  
 b) 1  
 c)  $\infty$   
 d) -1
3. The two lines of regression are .....  
 a) Zero  
 b) perpendicular  
 c) parallel  
 d) none of these
4. Out of the two lines of regression given by  $x + 2y - 5 = 0$  and  $2x + 3y - 8 = 0$  which one is the regression line of x on y?  
 a)  $2x + 3y - 8 = 0$   
 b)  $2x - 3y + 8 = 0$   
 c)  $x + 2y - 5 = 0$   
 d)  $x - 2y + 8 = 0$
5. Evaluate  $\Delta^3 [(1-ax)(1-bx)(1-cx)]$   
 a)  $abc$   
 b)  $-6abc$   
 c)  $-abc$   
 d)  $6abc$
6.  $\Delta^\circ E$  .....  
 a) 0  
 b)  $-\Delta^\circ E$   
 c)  $\pm \Delta^\circ E$   
 d) none of these
7. Newton's backward interpolation formula is used when interpolation is required near the ..... Of the table  
 a) Beginning  
 b) middle  
 c) end  
 d) average
8. The process of computing the value of a function ..... the given rang is Called extrapolation  
 a)  Outside  
 b) inside  
 c) near the middle of  
 d) at the average of class frequencies.
9. The Class frequencies  $(\alpha B)$ ,  $(A\beta)$ ,  $(A\beta\gamma)$ ,  $(\alpha\beta C)$  is .....  
 a) Negative  
 b) contrary  
 c) positive  
 d) none of these
10. The classes of highest order are called ..... classes.  
 a) Negative  
 b) positive  
 c) contrary  
 d) ultimate

PART B - (5 X 5 = 25)

Answer all questions choosing either (a) or (b)

11.a) 
$$r_{xy} = \frac{n \sum x_i y_i - \sum x_i \sum y_i}{[n \sum x_i^2 - (\sum x_i)^2]^{1/2} [n \sum y_i^2 - (\sum y_i)^2]^{1/2}}$$

108 (Or)

b) The coefficient of rank correlation of marks obtained by 10 students in mathematics and physics was found to be 0.8. it was latter discovered that the differences in ranks in two subjects obtained by one of the students was wrongly taken as 5 instead of 8. Find the correct coefficient of rank correlation.

Handwritten: 124  
 0.564

Class: II BCA

Choose the correct answer:  $4 \times 1/2 = 2$

- $\Delta U_x = 0$  if  $U_x$  is .....  
 a) constant   b) polynomial   c) 0   d) arguments
- $\Delta^n(x^n) = \dots\dots\dots$   
 a) variable   b) dependent   c) n    d) n!
- If  $\varphi(x)$  is a ..... of degree n then  $\varphi(x)$  is called interpolating polynomial.  
 a) polynomial   b) variable  
 c) equation   d) constant
- $U_x$  is a function  $\varphi(a + rh)$  can be written as .....  
 a)  $U_{a+nh}$    b)  $U_{a+xh}$   
 c)  $U_{ah}$    d)  $U_{a+rh}$

SECTION - B

Answer the following Questions Choose either A or B  $2 \times 5 = 10$

- 5a) find first and second order differences for (i)  $U_x = a b^{cx}$  162  
 (ii)  $U_x = \frac{x}{x^2 + 7x + 12}$  taking interval of differencing as h. (OR)

b) find the missing figures in the following table

|       |   |    |    |    |    |    |
|-------|---|----|----|----|----|----|
| x     | 0 | 5  | 10 | 15 | 20 | 25 |
| $U_x$ | 7 | 11 | ?  | 18 | ?  | 32 |

6a) The following table gives the census population of a town for the years 1931-1971. Estimate the population (i) for the year 1965. (ii) for the year 1933 by using an appropriate interpolation formula.

|                     |      |      |      |      |      |
|---------------------|------|------|------|------|------|
| Year                | 1931 | 1941 | 1951 | 1961 | 1971 |
| Population in lakhs | 36   | 66   | 81   | 93   | 101  |

(OR)

b) If

$U_{75} = 246 ; U_{20} = 202 ; U_{85} = 118$  and  $U_{90} = 40$  find  $U_{75}$  177

SECTION - C

Answer the all the questions, Choose either A or B  $1 \times 8 = 8$

- 7a) State and prove Fundamental theorem for finite differences. (OR)  
 b) State and prove Newton - Gregory Interpolating formula for equal intervals 181

PART - A (10X1=10)

Answers all questions:

1. The gradient of the tangent at  $(x, y)$  to the curve  $y = f(x)$  is .....

a)  $\frac{dy}{dx}$

b)  $\frac{\partial y}{\partial x}$

c)  $\frac{dx}{dy}$

d)  $\frac{\delta y}{\delta x}$

2. Find the angle which the tangent at  $(2,4)$  to the curve  $y = 6 + x - x^2$  makes with the  $x$  - axis

a)  $160^\circ 34'$

b)  $165^\circ 38'$

c)  $160^\circ 33'$

d)  $175^\circ 38'$

3. The equation of the envelope is

a)  $B^2 = -4AC$

b)  $B = 2(AC)^2$

c)  $B^2 = 4AC$

d)  $B = 2(AC)^3$

4. The radius of curvature at any point of the cycloid  $x = a(\theta + \sin \theta)$  and  $y = a(1 - \cos \theta)$  is

a)  $4a \sin \frac{\theta}{2}$

b)  $3a \cos \frac{\theta}{2}$

c)  $4a \sin \frac{\theta}{2}$

d)  $4a \cos \frac{\theta}{2}$

5. The  $(p - r)$  equation of the cardioid  $r = a(1 - \cos \theta)$  is .....

a)  $p^3 = \frac{r^2}{2a}$

b)  $p^2 = \frac{r^3}{2a}$

c)  $r^3 = \frac{p^2}{2a}$

d)  $r^2 = \frac{p}{2a}$

6. The asymptotes of  $x^2y^2 = c^2(x^2 + y^2)$  are the sides of a .....

a) Zero

b) infinite

c) nonzero

d) square

(24)

Ist  
BSC





**DON BOSCO COLLEGE OF ARTS & SCIENCE, KEELA ERAL**  
**Department of Mathematics**

**I - B.Sc**  
**First Semester - Model Examination**  
**STATISTICS-1**

Date: 02.11.2017

**Time Duration: 1 hour**

**Total Marks: 25**

**PART - A**

**Choose the correct Answer:**

**(10 x 1 = 10) Marks)**

- 1)  $\beta_2$  is a measure of  
 (a) Dispersion (b) Symmetry (c) Kurtosis (d) None of them
- 2) Number of normal equations to fit a straight line by the method of least squares is  
 (a) 1 (b) 2 (c) 3 (d) 4
- 3) If  $b_{xy} = (4/5)$ ,  $b_{yx} = (-9/10)$  then the correlation co-efficient is.....  
 (a) - 0.6 (b) + 0.6 (c) + 0.36 (d) - 0.36
- 4) Point of intersection of the regression lines is  
 (a) (x, 0) (b) (0, y) (c) (x, 1) (d) (x, y)
- 5) Yule's co-efficient of association  $Q =$  .....  
 (a)  $(2/(1 - y^2))$  (b)  $(2y/(1 + y^2))$  (c)  $(-2/(1 - y^2))$  (d)  $(2/(1 + y^2))$
- 6) If  $Q = 0$ , there is ..... association.  
 (a) Positive (b) Negative (c) No (d) Least
- 7) In Poisson distribution,  $\lambda = 1$  then  $P(X = 0) =$  .....  
 (a) e (b)  $e^{-2}$  (c)  $e^{-1}$  (d)  $e^2$
- 8)  $n = 350$ ,  $P = (1/1400)$ , then  $\lambda =$  .....  
 (a)  $1/2$  (b)  $1/4$  (c)  $3/4$  (d) 1
- 9) M.G.F of the Gamma distribution is .....  
 (a)  $(1 + t)^{-\lambda}$  (b)  $(1 - t)^{-\lambda}$  (c)  $(1 + t)^{\lambda}$  (d)  $(1 - t)^{\lambda}$
- 10) Mean = Median for ..... distribution  
 (a) Poisson (b) Binomial (c) Normal (d) None of these

**PART - B**

**(5 x 5 = 25 marks)**

**Answer ALL questions, choosing either (a) or (b)**

- 11) (a) The mean, median, mode of the distribution are 4.81, 3.88, 4.95. Find the coefficient of skewness. (OR)

(b) Fit a straight line  $y = a + bx$  for the following data:

|   |   |     |     |     |     |
|---|---|-----|-----|-----|-----|
| x | 0 | 1   | 2   | 3   | 4   |
| y | 1 | 1.8 | 8.3 | 4.5 | 6.3 |

(OR)

- 12) (a) Show that  $-1 \leq r \leq 1$ .  
 (b) Explain properties of regression lines.
- 13) (a) Calculate Yule's co-efficient (AB) = 6, (A $\beta$ ) = 4, (a $\beta$ ) = 8, (a $\beta$ ) = 3.  
 (b) Define co-efficient of association. What are its properties? (OR)

DON BOSCO COLLEGE OF ARTS & SCIENCE KEELA ERAL

Department of Mathematics

Internal Assessment Test-1

CALCULUS

B.Sc(Maths)

Date:27.08.2015

Duration:1 Hrs

Max.Marks:25

Answer all the Questions.

Part-A(4\*0.5=2 marks)

1. What is the direction of the tangent at (2, 1) to the curve  $x^3 + y^3 = 9$ ?

2. The subtangent to the curve  $y=a^x$  is .....

3. Find  $\frac{ds}{d\theta}$  for  $r=a(1+\cos\theta)$  .....

4. If  $r=a\theta$  then subnormal is.....

Answer all the Questions. Choosing Either (a) or (b)

Part-B (3\*5=15)

5. (a). Find the equation of the tangent to the ellipse  $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$  at  $(x_1, y_1)$  (OR)

(b). Find the points in the curve  $y = x^4 - 6x^3 + 13x^2 - 10x + 5$  where the tangents are parallel to  $y = 2x$  and prove that two of these points have the same tangent.

6. (a). Find the equation of tangent to the curve  $x = a\cos^4\theta$   $y = a\sin^4\theta$  at any point ' $\theta$ ' and show that tangent meets the axis of coordinate at two points such the sum of their distance from origin is constant. (OR)

(b). Show that for the hypocycloid  $x^{\frac{2}{3}} + y^{\frac{2}{3}} = a^{\frac{2}{3}}$  that portion of the tangent included between the coordinate axes is constant and is equal to a.

7. (a). Find the condition that the curves  $ax^2 + by^2 = 1$  and  $a_1x^2 + b_1y^2 = 1$  shall cut orthogonally. (OR)

(b). Find the angle of intersection of the cardioids  $r = a(1 + \cos\theta)$  and  $r = b(1 - \cos\theta)$

Part-C (1\*8=8)

8. (a). If the line  $x\cos\alpha + y\sin\alpha = p$  touches the curve  $x^m y^n = 1$  prove that  $p^{m+n} m^m n^n = (m+n)^{m+n} \sin^n \alpha \cos^m \alpha$  (OR)

(b). Show that the normal at any point of the curve  $x = a(\cos\theta + \theta\sin\theta)$   $y = a(\sin\theta - \theta\cos\theta)$  is at a constant distance from the origin



**DON BOSCO COLLEGE OF ARTS AND SCIENCE- KEELA ERAL**  
**MODEL EXAMINATION- OCT 2015**

**Calculus**

Date: 26.10.2015

Class: I BSc(Maths)

Time: 10.00 am to 01.00 pm

Max Marks: 75

**Part-A(10\*1=10 marks)**

1. The slope of the tangent at (x,y) to the curve  $y=f(x)$  is  $\dots \frac{dy}{dx}$
2. In the curve  $\rho = a\theta$ , the polar subtangent varies as  $\dots \frac{\rho}{a}$
3. The envelope of the family of circles  $(x-a)^2 + y^2 = 2a$  is  $\dots y^2 = 2x+1$
4. The formula for radius of curvature in cartesian form is  $\dots \frac{(1+y'^2)^{3/2}}{y''}$
5. The asymptotic direction of the curve  $x^3 + y^3 = 3axy$  is  $\dots x+y=0$
6. The p-r equation for  $r^n = a^n \cos n\theta$  is  $\dots \frac{a \cdot x^{-n+1}}{n+1}$
7. In the integral  $\int_0^a \int_{y^2/a}^{2a-y} xy \, dy \, dx$ , x varies from  $\frac{y^2}{a}$  to  $2a-y$ .
8. In a triple integral, when integrating with respect to y, then x and z are  $\dots$  constants
9. The value of the integral  $\int_0^\infty e^{-x} \, dx$  is  $\dots 1$
10. If  $n > 0$ , the value of  $\Gamma(n+1)$  is  $\dots n!$

**Part-B(5\*5=25)**

**II. Answer all the Questions. Choosing Either (a) or (b)**

$(2, 2) \quad (-2, 2)$

11.a. At which point on the curve  $y = x^3 - 12x + 18$ , the tangent will be parallel to the x-axis?

(Or)

b. For the curves  $y^2 = 4x$  and  $x^2 = 4y$  find the angle of intersection

$(0,0) \quad (4,4) \quad m_1 = 1/2 \quad m_2 = 2$

12.a. Find the co-ordinates of the centre of curvature of the curve  $xy = 2$  at the point (2,1)

(Or)

$x = \frac{13}{2} \quad y = \frac{7}{2} \quad y' = -1/2 \quad y'' = 1/4$

b. Find the radius of curvature of the cardioids  $r = a(1 - \cos \theta)$

13.a. Find the asymptotes of the curve  $x(x-y)^2 - 3(x^2 - y^2) + 8y = 0$

(Or)

$x+3=0, \quad x-y-2=0, \quad x-y-4=0$

b. Find the equation of the curve which has the same asymptotes as the curve  $x^3 - 6yx^2 + 11xy^2 - 6y^3 + x + y + 1 = 0$ . and which touches the axis of x at the origin and goes through the point (3,2)

14.a. Evaluate  $\iint (x^2 + y^2) \, dx \, dy$  over the region for which  $x \geq 0, y \geq 0, x + y \leq 1$

(Or)

$= 1/6$

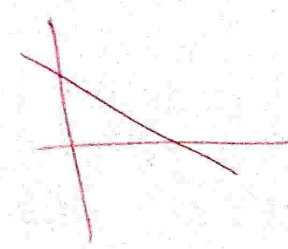
b. Evaluate  $\iint r^3 \sin^2 \theta \, dr \, d\theta$  over the area of the circle  $r = a \cos \theta$

$\frac{11a^4}{128}$

15.a. Prove that  $\Gamma_{1/2} = \sqrt{\pi}$

(Or)

b. Evaluate:  $\int_0^1 \frac{dx}{\sqrt{1-x^2}}$





# Don Bosco College of Arts and Science

A Christian Minority, Self-financing College, Affiliated to Manonmaniam Sundaranar University, Tirunelveli

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## Declaration

**I hereby declare that the details and information given above are complete and true to the best of my knowledge and conviction.**

*Daily*

PRINCIPAL

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