CERTIFICATE COURSE

ON

WATER SOLUBLE VITAMINS

GOVERNMENT DEGREE COLLEGE

NARASANNAPETA, SRIKAKULAM

DEPARTMENT OF ZOOLOGY

2021-2022

From
Dr.G.Pooja Bharadwaj
Department of Zoology,
GDC, Narasannapeta.

To
The Principal,
Government Degree College,
Narasannapeta.

PRINCIPAL
GOVT. DEGREE COLLEGE
NARASANNAPETA

Sub: certificate course on **Water Soluble Vitamins**

Respected sir,

I am **Dr G.Pooja Bharadwaj** working as **Zoology** faculty in our College. This is regarding with conduct subject related certificate course introducing for student benefit of our department on "**Water Soluble Vitamins**". The course duration should be 40 days. We are going to start in the academic year 2021-22 i.e. from 01-02-2022 to 12-03-2022. So, this is my humble request you to permit us for the establishment of above certificate course.

Thanking you sir,

Yours sincerely

Dr G.Pooja Bharadwaj

Lecturer in Zoology
Govt. Degree College
NARASANNAPETA
Srikakulam (Dist)

The faculty member of the Department of Zoology met in the principal's chamber to discuss and review the conduct of the Certificate Course title on **Water Soluble Vitamins** under the Chairmanship of the principal and the faculty of the department on 15-03-2019.

AGENDA: Starting of certificate course for B.Sc (CBZ) students.

RESOLUTIONS :

1) It is resolved to start the certificate course titled **Water Soluble Vitamins** from 01-02-2022 to12-03-2022 (40 days) for the academic year 2021-22.

2) It is also resolved to frame the syllabus, regulations for the successful completion of the certificate course titled **Water Soluble Vitamins**

3) Enrolled 10 students to this course.

4) Resolved to conduct classes at 4 to 5pm.

5) Resolved to conduct exam after completion of the course and issue certificates to qualified candidates.

6) Qualifying Marks is 40%.

Signature of the Lecturer
Lecturer in Zoology
Govt. Degree College
NARASANNAPETA
Srikakulam (Dist)

CIRCULAR

Date: 31-01-2022

This is to inform that the Department of Zoology is going to be conducted a subject related certificate course from 01-02-2022 to 12-03-2022 for the Students of B.Sc (CBZ) on "Water Soluble Vitamins", The students who are interested can enroll their names to concerned Department on or before 01-02-2022. The duration of the course is 40 days. The candidateswho secure 40% of the marks in the exa mination will get their certificate.

Head of the Department

Lecturer in Zoology
Govt. Degree College
NARASANNAPETA
Srikakulam (Dist)

GOVERNTMENT DEGREE COLLEGE, NARASANNAPETA, SRIKAKULAM

DEPARTMENT OF ZOOLOGY

CERTIFICATE COURSE ON WATER SOLUBLE VITAMINS
2021-22

ENROLLED STUDENTS LIST

Sl.No.	Year	Group	Hall ticket No	Name of the student
1	III year	B.Sc (CBZ)	1900435001	A.Bhujanga Rao
2	III year	B.Sc (CBZ)	1900435008	M,Hemalatha
3	III year	B.Sc (CBZ)	1900435009	M.Ramu
4	III year	B.Sc (CBZ)	19004350010	U.Aparna
5	II year	B.Sc (CBZ)	2022004049001	A.Aswini
6	II year	B.Sc (CBZ)	2022004049002	B.Bhavani
7	II year	B.Sc (CBZ)	2022004049004	B.Kalyani
8	I year	B.Sc (CBZ)	2122004049004	B.Nandini
9	I year	B.Sc (CBZ)	2122004049024	N.Devi
10	I year	B.Sc (CBZ)	2122004049025	P.Santhoshi

Lecturer in Zoology
Govt. Degree College
NARASANNAPETA
Srikakulam (Dist)

GOVERNTMENT DEGREE COLLEGE, NARASANNAPETA, SRIKAKULAM

DEPARTMENT OF ZOOLOGY

CERTIFICATE COURSE ON WATER SOLUBLE VITAMINS, 2021-22

STUDENT ATTENDANCE

Sl.No.	Year	Group	Hall ticket No	Name of the student	01-02-2022	02-02-2022	03-02-2022	04-02-2022	05-02-2022	06-02-2022	07-02-2022
1	III year	B.Sc (CBZ)	1900435001	A.Bhujanga Rao	P	P	P	P	P	P	P
2	III year	B.Sc (CBZ)	1900435008	M,Hemalatha	P	P	P	P	P	P	P
3	III year	B.Sc (CBZ)	1900435009	M.Ramu	P	P	P	P	A	P	P
4	III year	B.Sc (CBZ)	19004350010	U.Aparna	P	P	P	P	P	P	P
5	II year	B.Sc (CBZ)	2022004049001	A.Aswini	P	P	P	P	P	P	P
6	II year	B.Sc (CBZ)	2022004049002	B.Bhavani	P	P	P	P	P	P	P
7	II year	B.Sc (CBZ)	2022004049004	B.Kalyani	P	P	P	P	P	A	P
8	I year	B.Sc (CBZ)	2122004049004	B.Nandini	P	P	P	P	P	P	P
9	I year	B.Sc (CBZ)	2122004049024	N.Devi	P	P	P	P	P	P	P
10	I year	B.Sc (CBZ)	2122004049025	P.Santhoshi	P	P	P	P	P	P	P

STUDENT ATTENDANCE

Sl.No.	Year	Group	Hall ticket No	Name of the student	08-02-2022	09-02-2022	10-02-2022	11-02-2022	12-02-2022	13-02-2022	14-02-2022
1	III year	B.Sc (CBZ)	1900435001	A.Bhujanga Rao	P	P	P	P	P	P	P
2	III year	B.Sc (CBZ)	1900435008	M,Hemalatha	P	P	P	P	P	P	P
3	III year	B.Sc (CBZ)	1900435009	M.Ramu	P	P	P	P	P	P	P
4	III year	B.Sc (CBZ)	19004350010	U.Aparna	P	P	P	P	P	P	P
5	II year	B.Sc (CBZ)	2022004049001	A.Aswini	P	P	P	P	P	P	P
6	II year	B.Sc (CBZ)	2022004049002	B.Bhavani	P	P	P	P	P	P	P
7	II year	B.Sc (CBZ)	2022004049004	B.Kalyani	P	P	A	P	P	P	P
8	I year	B.Sc (CBZ)	2122004049004	B.Nandini	P	P	P	P	P	P	P
9	I year	B.Sc (CBZ)	2122004049024	N.Devi	P	P	P	P	P	P	P
10	I year	B.Sc (CBZ)	2122004049025	P.Santhoshi	P	P	P	P	P	P	P

Sl.No.	Year	Group	Hall ticket No	Name of the student	15-02-2022	16-02-2022	17-02-2022	18-02-2022	19-02-2022	20-02-2022	21-02-2022
1	III year	B.Sc (CBZ)	1900435001	A.Bhujanga Rao	P	P	P	P	P	P	P
2	III year	B.Sc (CBZ)	1900435008	M,Hemalatha	P	P	P	P	P	A	P
3	III year	B.Sc (CBZ)	1900435009	M.Ramu	P	P	P	P	P	P	P
4	III year	B.Sc (CBZ)	19004350010	U.Aparna	P	P	P	P	P	P	P
5	II year	B.Sc (CBZ)	2022004049001	A.Aswini	P	P	P	P	P	P	P
6	II year	B.Sc (CBZ)	2022004049002	B.Bhavani	P	A	P	P	P	P	P
7	II year	B.Sc (CBZ)	2022004049004	B.Kalyani	P	P	P	P	P	A	P
8	I year	B.Sc (CBZ)	2122004049004	B.Nandini	P	P	P	P	P	P	P
9	I year	B.Sc (CBZ)	2122004049024	N.Devi	P	P	P	P	P	P	P
10	I year	B.Sc (CBZ)	2122004049025	P.Santhoshi	P	P	A	P	P	P	P

GOVERNTMENT DEGREE COLLEGE, NARASANNAPETA, SRIKAKULAM

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2021-22

STUDENT ATTENDANCE

Sl.No.	Year	Group	Hall ticket No	Name of the student	22-02-2022	23-02-2022	24-02-2022	25-02-2022	26-02-2022	27-02-2022	28-02-2022
1	III year	B.Sc (CBZ)	1900435001	A.Bhujanga Rao	P	P	P	P	P	P	
2	III year	B.Sc (CBZ)	1900435008	M,Hemalatha	P	P	P	A	P	P	
3	III year	B.Sc (CBZ)	1900435009	M.Ramu	P	P	P	P	P	P	
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8	I year	B.Sc (CBZ)	2122004049004	B.Nandini	P	P	P	P	P	P	
9	I year	B.Sc (CBZ)	2122004049024	N.Devi	P	P	P	P	P	P	
10	I year	B.Sc (CBZ)	2122004049025	P.Santhoshi	P	P	P	P	P	P	

Sl.No.	Year	Group	Hall ticket No	Name of the student	01-03-2022	02-03-2022	03-03-2022	04-03-2022	05-03-2022	06-03-2022	07-03-2022
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OBJECTIVE OF THE COURSE :

- Water soluble vitamins carry critical importance for human health and must be taken daily since the hum body not capable of storing them for a long time.
- Cell reproduction and growth, but most importantly processing of energy in cells
- These so- enzymes helps in the sysnthesis of specific proteins, fats, carbohydrates in the body
- Releasing and production of energy
- For making collagen

Course duration : 40 days

Level : UG

Course type : scheduled

Certification : certification will be given on the continuous comprehensive evaluation of students performance in the learning activities.

SYLLABUS OF THE COURSE

MODULE I (15 DAYS):

MODULE II (15 DAYS):

Niacin: Vitamin B3, Nicotinamide, Nicotinic Acid.

Niacin, or vitamin B3, is involvedin energy production and critical cellular functions.

Food Sources for Niacin. **Niacin is present in awide variety of foods including animal and plant sources.**

How much Niacin. **The Recommended DietaryAllowance (RDA) for niacin is 16 mg/day for adult males and 14 mg/day for adult females.**

Niacin Deficiency. **Niacin deficiency is not a problem in the United States and is mostly limited to people who eat very limited diets anddiets low in protein. Pellagra is the disease state that occurs as a result of severe niacin deficiency. Symptoms include skin problems, digestive issues, and mental confusion.**

Too much Niacin. **Consuming large doses ofniacin supplements beyond 35mg/day may cause flushed skin, rashes, hypotension symptoms, or liver damage. Over- consumption of niacin is not a problem if it isobtained through food.**

Vitamin B6: Pyridoxine, Pyridoxal,Pyridoxamine

Vitamin B6. **Vitamin B6, otherwise knownas pyridoxine, pyridoxal or pyridoxamine, aids in protein metabolism, redblood cell formation, and behaves as an antioxidant molecule. It is also involved in thebody's production of chemicals such as neurotransmitters and hemoglobin.**

Food Sources for Vitamin B6. **Sources includelegumes, organ meats, fish, meats, starchy vegetables, and whole grains and fortified cereals.**

How much Vitamin B6. **The Recommended Dietary Allowance (RDA) for vitamin B6 is 1.3mg/day for adult males and females throughage fifty . The RDA for male and females over fifty years of age is 1.7 mg and 1.5 mg, respectively.**

Vitamin B6 Deficiency. **Vitamin B6 deficiency is uncommon and usually associated with low concentrations of other B-complex vitamins, like vitamin B12 and folic acid. Deficiency symptoms include dermatitis, swollen tongue,peripheral neuropathy, anemia, depression and confusion, and weakened immune function. A vitamin B6 deficiency in infants can cause irritability, acute hearing issues, and convulsive seizures.**

Too much Vitamin B6. **Over consumption from food sources have not been reported tocause adverse health effects, but chronic excess doses of vitamin B6 from supplements have been known to result in nerve damage. The Food and Nutrition Board (FNB) has established an upper limit of 100 mg/day for adults.**

Folate: Folic Acid, Folacin

Folate, also known as folic acid or folacin, aids in protein metabolism, promoting red blood cell formation, and lowering the risk for neural tube birth defects.

Folate may also play a role in controlling homocysteine levels, thusreducing the risk for coronary heart disease.

Food Sources for Folate. **Sources of folate include liver, kidney, dark green vegetables, meats, legumes, fish, whole grains, and fortified grains and cereals. Check the nutrition label to see if folic acid has been added.**

How much Folate. **The Recommended Dietary Allowance (RDA) for folate is 400mcg/day for adult males and females.**

Pregnancy will increase the RDA for folate to 600 mcg/day

Folate Deficiency. Folate deficiency affects cell growth and protein production, which can lead to overall impaired growth. Anemia is the primary clinical sign of folate deficiency and includes symptoms like fatigue, headache, and heart palpitations. A folate deficiency in women who are pregnant or of child bearing age may result in the delivery of a baby with neural tube defects, such as spina bifida. (Table 1).
Too much Folate. Over consumption of folate offers no known benefits, and may mask B12 deficiency as well as interfere with some medications (Table 2). For this reason, the FNB established an upper limit for folate from supplements or fortified foods of 1000 mcg/day.

Vitamin B12: Cobalamin

What is B12. Vitamin B12, also known as cobalamin, aids in the building of genetic material, production of normal red blood cells, and maintenance of the nervous system.
Food Sources for Vitamin B12. Vitamin B12 can only be found naturally in foods of animal origin such as meats, liver, kidney, fish, eggs, milk and milk products, oysters, shellfish. Some fortified foods, like breakfast cereals and nutritional yeast may also contain vitamin B12.
How much Vitamin B12. The Recommended Dietary Allowance (RDA) for vitamin B12 is 2.4 mcg/day for adult males and females (Table 1). Many adults over the age of fifty do not get enough vitamin B12, the dietary guidelines recommend consuming foods fortified with vitamin B12, such as fortified cereals.
Vitamin B12 Deficiency. Vitamin B12 deficiency most commonly affects vegans, infants of vegan mothers, and the elderly. Symptoms of deficiency include anemia and neurological changes, such as numbness and tingling in the hands and feet. In order to prevent vitamin B12 deficiency, a dietary supplement should be taken. Some people develop a B12 deficiency because they cannot absorb the vitamin through their stomach lining. This can be treated through vitamin B12 injections.

Too much Vitamin B12. No problems with overconsumption of vitamin B12 are known.

Biotin

What is Biotin. Biotin helps release energy from carbohydrates and aids in the metabolism of fats, proteins and carbohydrates from food.
Food Sources for Biotin. Sources of Biotin include liver, kidney, egg yolk, milk, most fresh vegetables, yeast breads and cereals.
How much Biotin. The Adequate Intake (AI) for Biotin is 30 mcg/day for adult males and females (Table 1).
Biotin Deficiency. Biotin deficiency is uncommon. A few of the symptoms of biotin deficiency include hair loss, skin rashes, and brittle nails, and for this reason biotin supplements are often promoted for hair, skin, and nail health. However, these claims are only a few case reports and small studies.
Too much Biotin. No problems with overconsumption are known for Biotin.

Pantothenic Acid: Vitamin B5

What is Pantothenic Acid. Pantothenic Acid, also known as vitamin B5, is involved

MODULE III (10 DAYS):

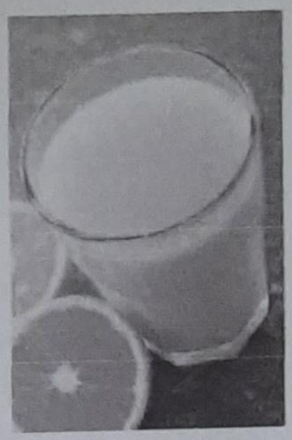
Food Sources for Pantothenic Acid. Almost all plant- and animal- based foods contain pantothenic acid in varying amounts. Richest dietary sources include fortified breakfast cereals, liver, kidney, meats, and seeds.
How much Pantothenic Acid. The Adequate Intake (AI) for Pantothenic Acid is 5 mg/day for both adult males and females (Table 1). Pregnancy will increase the AI for Pantothenic Acid to 6mg /day (Table 1).
Pantothenic Acid Deficiency. Pantothenic Acid deficiency is uncommon due to its wide availability in most foods.
Too much Pantothenic Acid. No problems with overconsumption are known for Pantothenic Acid. Rarely, diarrhea and gastrointestinal distress will occur with excessive amounts.

Vitamin C: Ascorbic Acid,Ascorbate

Vitamin C

The body needs vitamin C, also known as ascorbic acid or ascorbate, to remain in proper working condition. Vitamin C benefits the body by holding cells together through collagen synthesis; collagen is a connective tissue that holds muscles, bones, and other tissues together. Vitamin C also aids in wound healing, bone and tooth formation, strengthening blood vessel walls, improving immune system function, increasing absorption and utilization of iron, and acting as an antioxidant.

Vitamin C works with vitamin E as an antioxidant, and plays a crucial role in neutralizing free radicals throughout the body. Through its antioxidant activity, studies suggest vitamin C may help prevent or delay the development of certain cancers, heart disease, and other diseases in which oxidative stress plays a causal role. Research continues to document the degree of these effects.



Food Sources for Vitamin C. Many fruits and vegetables contain vitamin C, the best sources are citrus fruits, peppers, kiwi, strawberries, and broccoli. For example, one orange, one kiwi, 6 oz. (3/4 cup) of grapefruit juice, or 1/3 cup of chopped sweet red pepper each supply enough vitamin C for one day.
How much Vitamin C. The Recommended Dietary Allowance (RDA) for Vitamin C is 90 mg/day for adult males and 75 mg/day for adult females (Table 1). For those who smoke cigarettes, the RDA for vitamin C increases by 35 mg/day, in order to counteract the oxidative effects of nicotine. Vitamin C recommendations also increase during pregnancy and lactation, see Table 1.
Vitamin C Deficiency. Although rare in the United States, severe vitamin C deficiency may result in the disease known as scurvy, causing fatigue and a loss of collagen strength throughout the body. Loss of collagen results in loose teeth, bleeding and swollen gums, and improper wound healing.

The following conditions have been shown to increase vitamin C requirements (Table 1):

- Environmental stress, such as air and noise pollution
- Tissue healing of wounds
- Growth (children from 0- 12 months, and pregnant women)
- Fever and infection
- Smoking

Table 1. Recommended Dietary Intake (RDA) and Adequate Intake (AI) for Water-Soluble Vitamins

Life Stage Group	Thiamin B1 (mg/d)	Riboflavin B2 (mg/d)	Niacin B3[1](mg/d)	Vitamin B6 (mg/d)	Folate (mcg/d)	Vitamin B12 (mcg/d)	Biotin (mcg/d)	Pantothenic Acid (mg/d)	Vitamin C (mg)
Infants[2]									
0 – 6mo	0.2*	0.3*	2*	0.1*	65*	0.4*	5*	1.7*	40*
7mo – 12mo	0.3*	0.4*	4*	0.3*	80*	0.5*	6*	1.8*	50*
Children (Boys and Girls)									
1 – 3y	0.5	0.5	6	0.5	150	0.9	8*	2*	15
4 – 8y	0.6	0.6	8	0.6	200	1.2	12*	3*	25
9- 13 y	0.9	0.9	12	1.0	300	1.8	20*	4*	45
Males									
14 – 18y	1.2	1.3	16	1.3	400	2.4	25*	5*	75
19 – 50y	1.2	1.3	16	1.3	400	2.4	30*	5*	90
51+ yrs	1.2	1.3	16	1.7	400	2.4	30*	5*	90
Females									
14 – 18y	1.0	1.0	14	1.2	400	2.4	25*	5*	65
19 – 50y	1.1	1.1	14	1.3	400	2.4	30*	5*	75
51 + yrs	1.1	1.1	14	1.5	400	2.4	30*	5*	75
Pregnant									
14 – 18y	1.4	1.4	18	1.9	600	2.6	30*	6*	80
19 – 50y	1.4	1.4	18	1.9	600	2.6	30*	6*	85
Lactation									
14 – 18y	1.4	1.6	17	2.0	500	2.8	35*	7*	115
19 – 50y	1.4	1.6	17	2.0	500	2.8	35*	7*	120

Table 1 is a summarization of the standards for nutrient recommendations of water-soluble vitamins: The Dietary Reference Intake (DRI). These recommendations meet the average daily nutritional needs of all healthy people. To ensure the needs of all in the population, the DRI usually exceeds the requirements for most people. They do not cover requirements for illness and special health disorders.

RDA and AI values from the 1998 and 2000 DRI reports.

[1] NE =Niacin
Equivalents. 1mg of Niacin=60mg of tryptophan; 0-6mo=preformed niacin (not NE).

[2] At 6 months of age , infants may be introduced to solid foods while remaining on formula or breast milk. There may be some overlap in specific nutrient requirements.

(mg=milligrams, mcg=micrograms)
*AI value

Table 2. Tolerable Upper Intake Level (UL) for Water-Soluble Vitamins

Life Stage Group	Thiamin	Riboflavin	Niacin (mg/d)	Vitamin B6 (mg/d)	Folate (mcg/d)	Vitamin B12	Biotin	Pantothenic Acid	Vitamin C (mg/d)
Infants[1] (0 – 12mo)	ND	ND	ND	ND	ND	ND	ND	ND	ND
Children (Boys and Girls)	ND	ND				ND	ND	ND	
1 – 3y			10	30	300				400
4 – 8y			15	40	400				650
Males and Females	ND	ND				ND	ND	ND	
9 – 13y			20	60	600				1200
14 – 18y			30	80	800				1800
19 – >70y			35	100	1000				2000
Pregnancy and Lactation	ND	ND				ND	ND	ND	
14 – 18y			30	80	800				1800
19 – 50y			35	100	1000				2000

Table 2 is a summarization of the Tolerable Upper Intake Level (UL) for water-soluble vitamins: The Dietary Reference Intake (DRI). The UL is defined is the highest level of daily nutrient intake that is likely to pose no risk of adverse health effects to almost all individuals in the general population. The UL represents total daily intake from food, water, and supplements.

UL values from 1998 and 2000 DRI reports.

[1] At 6 months of age, infants may be introduced to solid foods while remaining on formula or breast milk. There may be some overlap in specific nutrient requirements.

(mg=milligrams, mcg=micrograms)

ND=Not determinable due to lack of data of adverse effects in this age group. Source of intake should be from food only.

GOVERNTMENT DEGREE COLLEGE, NARASANNAPETA,

SRIKAKULAM DEPARTMENT OF ZOOLOGY

CERTIFICATE COURSE ON WATER SOLUBLE VITAMINS

2021-22

REPORT:

As a part of academic activity, the department of zoology has conducted certificate course in "water soluble vitamins" from 01-02-2021 to 12-03-2022 for the academic year 2021-22.The important objective of the course is to improve basic knowledge in water soluble vitamins among the degree students.As per the instructions given by the principal during the minutes of the meeting , 10 members of students are enrolled into the certificate course for BSC(C.B.Z).To enrich the fundamentals of water soluble vitamins, the faculty member have engaged classes for 40 days and dealt the basic concepts of the subject.At the end of the course, an external examination with multiple choice questions has conducted for the assessment of learners understanding levels if knowledge.The minimum qualifying of marks of the award of certification is 40%.All the students completed the course successfully and got certificates during the academic year 2021-22

Lecturer in Zoology
Govt. Degree College
NARASANNAPETA
Srikakulam (Dist)

GOVERNTMENT DEGREE COLLEGE, NARASANNAPETA,SRIKAKULAM

DEPARTMENT OF ZOOLOGY

CERTIFICATE COURSE ON WATER SOILUBLE VITAMINS

2021-22

Time: 1Hour Max.Marks:50

1. Vitamin A or retinal is a

(A) Steroid (B) Polyisoprenoid compound containing a cyclohexenyl ring

(C) Benzoquinone derivative (D) 6-Hydroxychromane

2. β-Carotene, precursor of vitamin A, is oxidatively cleaved by

(A) β-Carotene dioxygenase (B) Oxygenase

(C) Hydroxylase (D) Transferase

3. Deficiency of Vitamin A causes

(A) Xeropthalmia (B) Hypoprothrombinemia

(C) Megaloblastic anemia (D) Pernicious anemia

3. Carr-Price reaction is used to detect

(A) Vitamin A (B) Vitamin D *(C) Ascorbic acid* (D) Vitamin E

4. The most potent Vitamin D metabolite is

(A) 25-Hydroxycholecalciferol *(B) 1,25-Dihydroxycholecalciferol*

(C) 24, 25-Dihydroxycholecalciferol (D) 7-Dehydrocholesterol

5. Creatinuria is caused due to the deficiency of vitamin

(A) A (B) K *(C) E* (D) D

6. Vitamin K is involved in posttranslational modification of the blood clottingfactors by acting as cofactor for the enzyme:

(A) Carboxylase (B) Decarboxylase (C) Hydroxylase (D) Oxidase

7. Concentration of pyruvic acid and lactic acid in blood is increased due to deficiencyof the vitamin

(A) Thiamin (B) Riboflavin (C) Niacin (D) Pantothenic acid

8.Vitamin B1 coenzyme (TPP) is involved in

(A) Oxidative decarboxylation (B) Hydroxylation

(C) Transamination (D) Carboxylation

9 Vitamin B1 coenzyme (TPP) is involved in

(A) Oxidative decarboxylation (B) Hydroxylation

(C) Transamination (D) Carboxylation

10.Magenta tongue is found in the deficiency of the vitamin

(A) Riboflavin (B) Thiamin (C) Nicotinic acid (D) Pyridoxine

11.The pellagra preventive factor is

(A) Riboflavin (B) Pantothenic acid *(C) Niacin* (D) Pyridoxine

12..Niacin or nicotinic acid is a monocarboxylic acid derivative of

(A) Pyridine (B) Pyrimidine (C) Flavin (D) Adenine

13.Niacin is synthesized in the body from

(A) Tryptophan (B) Tyrosine (C) Glutamate (D) Aspartate

14.Pellagra occurs in population dependent on

A) Wheat (B) Rice *(C) Maize* (D) Milk

15.Pantothenic acid is a constituent of the coenzyme involved in

(A) Decarboxylation (B) Dehydrogenation

(C) Acetylation (D) Oxidation

16.The precursor of CoA is

(A) Riboflavin (B) Pyridoxamine (C) Thiamin *(D) Pantothenate*

17.'Burning foot syndrome' has been ascribed to the deficiency of

(A) Pantothenic acid (B) Thiamin (C) Cobalamin (D) Pyridoxine

18.Biotin is a coenzyme of the enzyme

(A) Carboxylase (B) Hydroxylase (C) Decarboxylase (D) Deaminase

19.Folate deficiency causes

(A) Microcytic anemia (B) Hemolytic anemia

(C) Iron deficiency anemia *(D) Megaloblastic anemia*

20. Niacin can be synthesised in human beings from

(A) Histidine (B) Phenylalanin (C) Tyrosine *(D) Tryptophan*

21. Pantothenic acid contains an amino acid which is

(A) Aspartic acid (B) Glutamic acid

(C) β-Alanine *(D) β-Aminoisobutyric acid*

22.Coenzyme A contains a nitrogenous base which is

(A) Adenine (B) Guanine (C) Choline (D) Ethanolamine

23 . Pyridoxal phosphate is a coenzyme for

(A) Glycogen synthetase *(B) Phosphorylase*

(C) Both (A) and (B) (D) None of these

24 Pyridoxine deficiency can be diagnosed by measuring urinary excretion of

(A) Pyruvic acid (B) Oxaloacetic acid *(C) Xanthurenic acid* (D) None of these

25.When eggs are cooked

(A) Biotin is destroyed but avidin remains unaffected

(B) Avidin is inactivated but biotin remains unaffected

©Both avidin and biotin are inactivated

(D)Both avidin and biotin remain unaffected

GOVERNMENT DEGREE COLLEGE

NARASANNAPETA- SRIKAKULAM DIST

DEPARTMENT OF ZOOLOGY

CERTIFICATE

This is to certify that

Mr./Ms _____

of _____successfully completed Certificate course on "WATER SOLUBLE VITAMINS " and scored _____ grade during the academic year 2021-2022.

Course coordinator IQAC Coordinator Principal