

RIZVI COLLEGE OF ARTS, SCIENCE & COMMERCE  
NEP SEMESTER - I  
CHEMISTRY (M3-1)

(Time: 1 hour)

Total Marks: 30

N.B.: (1) All questions are compulsory.

(2) Figures to the right indicate full marks.

(3) Use of log table/ non-programmable calculator is allowed.

- Q1. A) Select whether the following statements are true or false (Any four). 04
- Molarity of a solution is always greater than the normality of the solution.
  - The basicity of  $H_3PO_4$  is 3.
  - Resistance to the flow of liquid is called surface tension
  - The refractive index of liquid varies with the temperature and the wavelength of the light used
  - Ostwald's viscometer is used to measure surface tension of the liquid
  - Snelle's law is used to calculate refractive index.
- Q1. B) Attempt any two of the following. 06
- Calculate the normality of a  $H_2SO_4$  solution which contains 5.0 g of in  $500cm^3$  of solution. (molecular weight of  $H_2SO_4 = 98$ ).
  - Write molecularity and order of the reaction for the following reaction-
    - $2NO + Cl_2 \rightarrow 2NOCl$   
rate =  $K[NO]^2 [Cl_2]$
    - $HBrO_3 + 5HBr \rightarrow 3H_2O + Br_2$   
rate =  $K[HBrO_3][HBr]$
  - How will you measure viscosity of water using Ostwald's viscometer?
- Q2. A) Select the correct option and complete the following statements: (any four) 04
- The shell with  $n=2$  is commonly referred to as \_\_\_\_\_ shell.
    - K
    - L
    - M
  - The below process of filling electrons in an orbital follows \_\_\_\_\_  

↓	↓	↓
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    - Aufbau principle
    - Hund's rule of maximum multiplicity
    - Pauli's exclusive principle
  - The horizontal rows of long form of periodic table are called \_\_\_\_\_.
    - periods
    - groups
    - sub-groups
  - The atoms of inner transition elements have last \_\_\_\_\_ with electrons.
    - two shells complete
    - three shells complete
    - all the shells are completely filled
  - Generally enthalpy gain \_\_\_\_\_ across the period.
    - increase
    - decreases
    - does not change mass
  - \_\_\_\_\_ configuration represent a noble gas.
    - $1s 2s 2p 3s 3p 3d 4s$
    - $1s 2s 2p 3s 3p$
    - $1s 2s 2p 3p$



241116

F.Y.B.S.C

NSM2124

## FYBSC SEMESTER - I (NEP 2020)

## END OF SEMESTER EXAMINATION NOVEMBER 2024

MAJOR MATHEMATICS: ALGEBRA I AND CALCULUS I

Duration : 1 hr

Marks : 30

N.B: 1) Attempt any TWO questions out of THREE.

2) Figures to the right indicate full marks.

Q.1 Attempt any **THREE** out of **FOUR**. (5 mark each)

15

- (a) If  $f: \mathbb{R} \setminus \{1\} \rightarrow \mathbb{R} \setminus \{-1\}$  is given by  $f(x) = \frac{x+5}{1-x}$ , then check whether  $f$  is bijective or not.
- (b) Prove by principle of finite induction, that 24 divides  $5^{2n} - 1$ ,  $n \in \mathbb{N}$ .
- (c) State and prove Archimedean property of  $\mathbb{R}$ .
- (d) Prove: (i)  $ab = ac \Rightarrow b = c$   
(ii)  $ba = ca \Rightarrow b = c$  for  $a \neq 0$

Q.2 Attempt any **THREE** out of **FOUR**. (5 mark each)

15

- (a) Check if the numbers 1357 and 1166 are co-primes or not.
- (b) If  $a \equiv b \pmod{n_1}$  and  $a \equiv b \pmod{n_2}$ , such that  $(n_1, n_2) = 1$  then, prove that  $a \equiv b \pmod{n_1 n_2}$ .
- (c) If  $(x_n)$  and  $(y_n)$  are two sequences such that  $x_n \rightarrow p$  and  $y_n \rightarrow q$  then show that  
$$x_n + y_n \rightarrow p + q$$
- (d) Show that the sequence  $x_n = (-1)^n$  does not converge.

Q.3 Attempt any **THREE** out of **FOUR**. (5 mark each)

15

- (a) Find the remainder when  $f(x)$  is divided by  $g(x)$  using Remainder theorem in  $\mathbb{R}[x]$ .
- (i)  $g(x) = x + 2$  ;  $f(x) = 3x^3 + 7x^2 - 9x + 15$
- (ii)  $g(x) = x - 1$  ;  $f(x) = 16x^4 - 7x^3 + 5x + 1$
- (b) Let  $f(x), g(x), h(x) \in \mathbb{R}[x]$ , where  $f(x) \neq 0$ .  
If  $f(x) \mid g(x)$  then show that, (i)  $f(x) \mid g(x) \cdot h(x)$   
(ii)  $\alpha f(x) \mid g(x)$ , for  $\alpha \neq 0, \alpha \in \mathbb{R}$
- (c) Solve the differential equation  $\frac{dy}{dx} + \frac{2xy}{(1+x^2)} = \frac{4x^2}{(1+x^2)}$
- (d) Solve the exact differential equation  $(x - 6y)dx - 6xdy = 0$

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Rizvi Education Society's

RIZVI COLLEGE OF ARTS, SCIENCE AND COMMERCE  
SEMESTER- I, REGULAR/ ATKT EXAMINATION NOVEMBER, 2024SUBJECT: BOTANY  
(For both Major & Minor)

CLASS: F.Y.B.Sc.

DATE:

TIME: 1:00 Hour

MARKS: 30

N.B:

- Attempt **any two** questions out of four questions.
- All questions carry equal marks.
- Draw **neat and labelled** diagrams wherever necessary

Q.1) Answer the following:

- A. What is biodiversity? Add a note on its significance. 08 M
- B. Give a brief account on Mass production of *Spirulina*. 07 M

Q.2) Answer the following:

- A. Explain the principles and practices of indoor gardening, including plant selection and care. 08 M
- B. Explain wheatgrass and its nutritional benefits. 07 M

Q.3) Answer the following:

- A. What are the medicinal and nutritional benefits of Amla? 08 M
- B. Discuss the concept of botanical marvels, highlighting the pitcher plant as a fascinating example. 07 M

Q.4) Answer the following:

- A. Mention the plants used in writing and drawing and elaborate on its benefits. 08 M
- B. Discuss the concept of Aesthetic Botany, exploring its significance in bridging art and science. 07 M

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**RIZVI COLLEGE OF ARTS, SCIENCE & COMMERCE**  
**NEP 2020 PATTERN**  
**F.Y.B.Sc. (PHYSICS) SEM - I**  
**PAPER – I ( Introduction to Mechanics )**

Time : 1 hour

Marks : 50 30

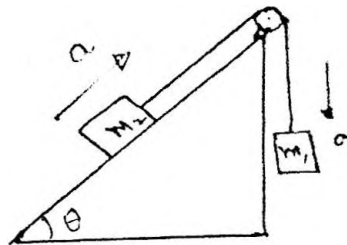
**INSTRUCTIONS:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Use of simple non-programmable calculator is allowed.
4. Draw a diagram wherever necessary.

**Q. 1 A) Attempt any TWO of the followings:-**

( 10 )

- i) State Newton's laws and write necessary formula.
- ii) Consider the situation as shown in the figure. Assume the coefficient of static friction between the blocks and the incline surface is  $\mu$  and the string and pulley are light. Determine the acceleration of the two blocks and the tension in the string.



- iii) A body of mass  $m$  is suspended by two strings making angles  $\alpha$  and  $\beta$  with the horizontal. Draw the proper diagram and find the tensions  $T_1$  and  $T_2$  in the strings.
- iv) State and prove work-energy theorem.

**B) Attempt any ONE of the followings:-**

( 05 )

- i) Distinguish between conservative and non-conservative forces.
- ii) A variable force,  $\vec{F} = (3x^2\hat{i} + 4\hat{j})\text{N}$  acts on an object. What is the change in the kinetic energy of particle as it moves from the point with coordinate (2,3) to (3,0).

**Q.2 A) Attempt any TWO of the followings:-**

( 10 )

- i) Explain the principle of the conservation of linear momentum of the system of particles.
- ii) If the position vector of many-particle system is given by

$$\vec{r}_{cm} = \frac{1}{M} \sum_{i=1}^N m_i \vec{r}_i$$

Using this, obtain the velocity and acceleration of the centre of mass.

- iii) Obtain an expression for the time period of the of angular SHM of a compound pendulum.
- iv) What is forced harmonic oscillator? Obtain the differential equation of a forced harmonic oscillator.

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0.01519211

**B) Attempt any ONE of the followings:-**

**(05)**

i) The position vector of the two particles having their masses in the ratio 1:2 are

$\vec{r}_1 = t^2\hat{i} + t\hat{j} - t\hat{k}$  and  $\vec{r}_2 = t\hat{i} - t\hat{j} + t^2\hat{k}$ . Find the velocity of the centre of mass at  $t = 1$ s.

ii) Two blocks of masses 1kg and 2kg are connected with a massless spring of force constant 100N/m. Calculate the time period of the oscillation of the system.

~~~~~ END ~~~~~

241118

F.Y.BSC

NSM 2124

[Time: 01 Hour.]

Semester -I ( Zoology )

[Marks: 30]

MJI: Life Processes

- N.B:** 1. Attempt any two questions out of four  
2. Figures to the right indicate full marks.  
3. Draw neat and labelled diagrams wherever necessary.

- Q. 1 Write short note on the following: 15**
- a) Flagellum 05
  - b) Cell membrane in *Amoeba* 05
  - c) Budding in *Hydra* 05
- Q. 2 Write short note on the following: 15**
- a) Viviparity 05
  - b) Resting potential 05
  - c) Ruminant and non ruminants 05
- Q. 3 Answer the following: 15**
- a) Describe trachea and spiracles 08
  - b) Explain external and internal fertilization 07
- Q. 4 Answer the following: 15**
- a) Describe osmoregulation and excretion 08
  - b) Explain the type of circulating fluids 07

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**Q1. Write a short note on any two of the following.**

**10 marks**

- a) 7Cs of effective communication
- b) Skimming and Scanning
- c) Characteristics of effective writing.
- d) Distinguish between Verbal and Non-verbal communication

**Q2. Read the passage given below and answer the questions that follow:**

**10 marks**

The difference in thinking and perception between two generations, often leading to behavioural differences and conflicts, is known as the generation gap. This gap is primarily observed in families, particularly between parents and children. It arises not only from age differences but also from the way parents respond to various situations. Children, being young and often immature, struggle to understand their parents' perspectives. Meanwhile, many parents fail to empathize with the evolving values and thought patterns of the modern world, resulting in communication barriers. Parents often contribute to the generation gap by not engaging openly with their children or helping them with their problems. This authoritarian behaviour can alienate children, making them feel isolated. Additionally, busy work schedules prevent parents from spending quality time with their families, leaving them unaware of their children's development.

The rise of technology has exacerbated the generation gap. Children spend significant time on digital devices and social media, often seeking solutions online rather than discussing issues with their parents. This shift further reduces communication. To bridge the generation gap, parents should take an active interest in their children's lives, foster open communication, and create a supportive environment. By giving children time and attention, parents can reduce the gap and strengthen their relationships.

1. How is the generation gap primarily observed in families? 1 mark
2. What challenges do children face in understanding their parents? 1 mark
3. How do parents contribute to the generation gap? 1 mark
4. In what ways has technology influenced the generation gap? 1 mark
5. Do you believe that technology has enhanced communication between parents and children, or has it contributed to greater barriers in their interactions? Please explain your viewpoint with supporting details. 2 marks
6. Add a question tag. 1 mark
  - i) The generation gap affects family communication.
7. Convert the following sentence into simple present continuous tense 1 mark
  - i) The rise of technology has exacerbated the generation gap

8. Pick out two phrases from the abstract

1 mark

9. Write antonyms of the following

1 mark

i) busy ii) active

Q3. Attempt any one of the following:

10 marks

A) You are (Your Name), residing at 25, Green Avenue, Mumbai. You have come across an advertisement in The Times of India for the position of Head Baker at a renowned pastry shop. Write a formal application for the job along with your complete biodata.

Or

B) You are seeking admission to your ideal university for an undergraduate/postgraduate program in Environmental Science. Draft a Statement of Purpose (SOP) in about 150-200 words, detailing your academic background, career aspirations, reasons for selecting this program and university, and how you plan to engage with and contribute to the university community.

24/12/27 FY. B.A. & BSC NAS VEC 2124

Rizvi College of Arts, Science & Commerce

VEC: The Indian Constitution

Sem-I November 2024

N.B: (1) Attempt any three out of four questions given below.

(2) Each question carries 10 marks.

Total Marks: 30

Duration: 1 Hour

Q.1 What is meant by the constitution? Discuss the characteristics of the Indian constitution.

Q.2 Analyse any two fundamental rights and five fundamental duties of an Indian citizen.

Q.3 Enumerate the hierarchy of the courts in India.

Q.4 Explain the origin and evolution of Public Interest Litigation in India.

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29/12/24

SEM I

Marks: 30

NASCIS 2/24

Sub: IKS

Time: 1 hour

- Note: 1. All questions are compulsory.  
2. Figures to the right indicate full marks.

**Q.1 Answer any two of the following:**

**06 Marks**

- Delineate the features of Indian Knowledge System.
- What are the positive impact of Macaulay education policy?
- Explain the scope of IKS with the reference to scientific and technological contributions.
- Define tradition of IKS and brief about home education.
- Describe Temple management with respect to Administrative structure and religious practices.

**Q.2 Answer any three of the following:**

**12 Marks**

- Describe meaning logic and reveal Pramaan, Tark and Vada.
- Discuss usefulness of logic.
- Outline art of governance with focus on principle of effective governance and ethics and values in governance.
- Determine what is aesthetic? And explain role of aesthetic in everyday life.
- Contrast 6 traditional sports and games in ancient india.
- Label the function of commercial bank.

**Q.3 Answer any three of the following:**

**12 Marks**

- Expose the modern architecture in India.
- What is cosmology? Describe recent solar system exploration mission (Europa Clipper, Chang'e 6 and ESCAPEDE).
- Discuss the techniques of painting in India .
- Predict meaning of Natyashastra and tell about it's content & scope.
- Delineate the path of evolution of classical dance forms with reference to Bharatnatyam, Kathak and kuchipudi.
- Summarize the components of town planning.

**RIZVI COLLEGE OF ARTS, SCIENCE & COMMERCE**  
**NEP – VSC – FYBSc**  
**SEMESTER – I (NOVEMBER 2024)**

**Time: 1 hour**

**Marks: 10 marks**

**Answer the following:- (any two)**

**(10)**

- 1) List the various types of laboratory glass-wares and explain any three of them.
- 2) What precautions should be taken to handle hazardous substances in the laboratory?
- 3) Explain how to calibrate the following – a) Pipette b) Burette

**RIZVI COLLEGE OF ARTS, SCIENCE AND COMMERCE**  
F.Y.B.Sc. (NEP Regular 2024-25) SEMESTER-I  
SKILL ENHANCEMENT COURSE (SEC)  
CHEMISTRY

*Sampling Techniq*

(Time: 1 Hour)

Total Marks: 20

- N.B.: (1) All questions are compulsory.  
(2) Figures to the right indicate full marks.

**Q1 A Multiple choice question ( any 4 out of 7)**

**4M**

- 1 If the sample size is in the range of  $10^{-3}$  g to  $10^{-1}$  g then the type of analysis is called \_\_\_\_\_.  
a) ultra-microanalysis    b) semi-micro analysis    c) macro analysis
- 2 Macro analysis is for the quantities in the range of \_\_\_\_\_.  
a)  $10^{-4}$  g to  $10^{-3}$  g    b)  $< 10^{-4}$  g    c)  $> 10^{-1}$  g
- 3 \_\_\_\_\_ is used for sampling of homogeneous liquid.  
a) sample thief    b) split tube thief    c) Auger sampler
- 4 The sample prepared by mixing increment is \_\_\_\_\_.  
a) universe    b) subsample    c) gross sample
- 5 \_\_\_\_\_ is a soil sampler consisting of helical screw.  
a) Concentric tube thief    b) split tube thief    c) Auger sampler
- 6 \_\_\_\_\_ is a traditional method of preservation.  
a) Drying    b) Irradiation    c) Vacuum sealing
- 7 \_\_\_\_\_ is a modern method of preservation.  
a) Plasma sterilization    b) Salting    c) Pickling

**Q2 Attempt any 4 out of 7**

**16M**

- A** Define sampling. Give its importance.  
**B** Define \_\_\_\_\_  
a) Sample    b) Universe    c) Increment    d) Gross sample
- C** Explain sampling of solid using split-tube thief.  
**D** Explain sampling of homogeneous liquid.  
**E** Define preservation. What are the needs and precautions for preservation?  
**F** Explain any 2 traditional methods of preservation.  
**G** Explain the sources of water pollution.

**F.Y.B.Sc.(NEP 2020) BOTANY SEMESTER -I**

**SEC PRACTICAL SKELETON PAPER  
Aromatics and Perfumery**

**TIME - 2 hours**

**Total Marks – 30**

|     |                                                                                     |      |
|-----|-------------------------------------------------------------------------------------|------|
| Q 1 | Perform the Oil and Odour profiles of the Specimen A.                               | 10 M |
| Q 2 | Prepare _____ using the material B .                                                | 10 M |
| Q 3 | Identify and describe the specimen/ photograph - C and D                            | 5 M  |
| Q 4 | Journal                                                                             | 5 M  |
|     |                                                                                     |      |
|     |                                                                                     |      |
|     | <b>Key:</b>                                                                         |      |
| A   | Citrus /Herbal/Floral/Woody/Spicy/Earthy/Camphorous Odor Types                      |      |
| B   | Incense sticks/ Mosquito repellent sticks/ Dhoops                                   |      |
| C   | Aromatic plants: Rose/ Jasmine/Lemongrass/ Citronella                               |      |
| D   | Hydro distillation/Hydro-steam distillation/Solvent extraction by Soxhlet apparatus |      |
|     |                                                                                     |      |

**F.Y.B.Sc.(NEP 2020) BOTANY SEMESTER -I**

**Vocational Skill Course- PRACTICAL SKELETON PAPER**

**Name of the Course: Ayurvedic Aahar**

**TIME - 2 hours**

**Total Marks – 30**

|     |                                                                                                |      |
|-----|------------------------------------------------------------------------------------------------|------|
| Q 1 | Estimation of vitamin C from fruits from specimen A                                            | 10 M |
| Q 2 | Estimation of Proteins from plant resources from specimen B                                    | 10 M |
| Q 3 | Identify and describe the specimen/ photograph - D and E                                       | 5 M  |
| Q 4 | Journal                                                                                        | 5 M  |
|     |                                                                                                |      |
|     |                                                                                                |      |
|     |                                                                                                |      |
|     | Key:                                                                                           |      |
| A   | Any citrus fruit/Amla                                                                          |      |
| B   | Any plant resource for proteins                                                                |      |
| C   | Diabetes/ constipation                                                                         |      |
| D   | Rutuchakra foods / incompatibility/antagonistic (Viruddha-Aahara)                              |      |
| E   | Fiber rich vegetables (carrot, sweet potato), leafy vegetables (spinach, fenugreek) and dalia. |      |
|     |                                                                                                |      |

**University of Mumbai**  
**F.Y.B.Sc. Zoology**  
**Skeleton Question Paper pattern for Practical Examination**  
**Semester-I**  
**VSC1a: Ornamental fish breeding and maintenance**

**Duration: 1hr 30min**

**Total Marks: 30**

Q.1 Determine dissolved oxygen in given water sample by Wrinkler's iodometric method. **08**

**OR**

Q.1 Determine the free carbon dioxide of given water sample by titration method.

**Q.2 Identify and describe (2 marks each) **06****

- a) Fresh water / marine ornamental fishes OR diseases and its prevention during fish breeding. (Any 1).
- b) Breeding set up for live bearers (Any 1).
- c) Breeding set up for egg bearers (Any 1).

Q.3 Estimation of the salinity of given sample water using Refractometer. **04**

**OR**

Q.3 Estimate the pH of given water samples using pH meter and pH paper / universal indicator.

Q.4 Project / Assignment and Viva (based on project / assignment). **10**

Q.5 Journal **02**

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**University of Mumbai**  
**F.Y.B.Sc. Zoology**  
**Skeleton Question Paper pattern for Practical Examination**  
**Semester-I**  
**SEC- Aquarium management**

**Duration: 1hr 30min**

**Total Marks: 30**

Q.1 Determine dissolved oxygen in the given aquarium water sample. **08**

**OR**

Q.1 Determine hardness of the given aquarium water sample.

**OR**

Q.1 Determine ammonia and pH of the given aquarium water sample.

**OR**

Q.1 Determine salinity of the given aquarium water sample.

**Q.2 Identify and Describe (1.5 marks each) **06****

a) Type of aquarium (Any 1).

b) Accessories/equipment used in aquarium (Any 1).

c) Types of plants or live fish feed (Any 1).

d) Symptoms and treatment of fish disease (Any 1).

**Q.3 Identify and describe (2 marks each) **04****

a) Identify and describe fresh water ornamental fishes (Any 1).

b) Identify and describe marine ornamental fishes (Any 1).

Q.4 Project / Assignment and Viva (based on project / assignment). **10**

Q.5 Journal **02**

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**UNIVERSITY OF MUMBAI**  
**( NEP 2020 – SCHEME III )**  
**RIZVI COLLEGE OF ARTS SCIENCE & COMMERCE**  
**THREE YEAR BACHELOR PROGRAM IN SCIENCE**  
**PRACTICAL EXAMINATION IN FYBSC – PHYSICS – SEC**  
**COURSE CODE : USPHSEC 1**

**INTERNAL ASSESSMENT ( BASIC MATHEMATICAL SKILL ) – 20 marks**

- N.B. :** (1) All questions are compulsory.  
(2) Draw neat diagrams whenever necessary.  
(3) Figures to the right indicate full marks.  
(4) Use of log table or non-programmable calculator is permitted.

**Q1 (A).** Attempt any ONE (4 M)

- (i) Find the height of the building , the horizontal distance between building and observer is 80 feet and inclined angle between them is  $45^\circ$  .  
(ii) Draw circle of unit radius and show all trigonometric functions (i.e. sin, cos, tan, sec, cosec & cot) on a circle.

**Q2 (A).** Attempt any ONE (4 M)

- (i) Arrange in descending order, if  $A = \log_7 343$      $B = \log_2 64$      $C = \log_{\sqrt{6}} 36$

(ii) Solve  $\log_7 \sqrt{7\sqrt{7\sqrt{7\sqrt{7}}}}$

**Q3 (A).** Attempt any ONE (4 M)

- (i) The law of motion of a particle is given by  $S = t^4 - 5t^3 + 7t^2 + 5t$ , where S is the displacement of a particle in time t. Find the velocity and acceleration at  $t = 3\text{sec}$  . [ Hint :  $\frac{ds}{dt} = V$  and  $\frac{dv}{dt} = a$ ].  
(ii) Find the gradient of the tangent of the curve  $y = \sqrt{x^3}$  at  $x = 4$ .

**Q4 (A).** Attempt any ONE (4 M)

- (i) Solve  $I = \int (e^{4x} + 3^{-7x}) dx$   
(ii) Solve  $I = \int \frac{\cos x}{4 - \sin^2 x} dx$

**Q5 (A).** Attempt any ONE (4 M)

- (i) Solve  $2e^{3x} e^{4y} dx = 4dy$   
(ii) Solve  $x(1 + y^2)dx + y(1 + x^2)dy = 0$

..... THE END .....

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NPVSC12124

RIZVI COLLEGE OF ARTS, SCIENCE AND COMMERCE

NEP 2020

F.Y.B.SC. – PHYSICS – VSC

SEM I

LABORATORY EQUIPMENT MAINTANCE

COURSE CODE : USPHPVSC1

TIME : 1 HR.

MARKS: 30

Note: 1. All questions carry equal marks.

2. All questions are compulsory with internal choice.

3. Use of scientific calculator non programmable calculator is allowed.

4. Figures to the right indicate full marks.

**Q. 1. ATTEMPT ANY THREE OF THE FOLLOWING.**

**15**

1. Explain any one resistor testing method.
2. What do you mean by variable resistor?
3. Obtain the equation for capacitors connected in series.
4. What is an inductor? Draw its symbol. Obtain expression for the inductance of the coil having N number of turns and area of cross section A.
5. Draw the chart to measure the value of resistor using colour code.

**Q. 2. Attempt any three of the following.**

**15**

1. Explain open circuit test for the testing diodes.
2. How effectively the DC gain of a transistor can be measured?
3. What is soldering? What is soldering iron?
4. Explain with block diagram a regulated power supply.
5. How will you test PNP and NPN transistor using off circuit testing method?

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24/122

NPVSC12124

RIZVI COLLEGE OF ARTS, SCIENCE AND COMMERCE

NEP 2020

F.Y.B.SC. – PHYSICS – VSC

SEM I

LABORATORY EQUIPMENT MAINTANCE

COURSE CODE : USPHPVSC1

TIME : 1 HR.

MARKS: 30

Note: 1. All questions carry equal marks.

2. All questions are compulsory with internal choice.

3. Use of scientific calculator non programmable calculator is allowed.

4. Figures to the right indicate full marks.

**Q. 1. ATTEMPT ANY THREE OF THE FOLLOWING.**

**15**

1. Explain any one resistor testing method.
2. What do you mean by variable resistor?
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4. What is an inductor? Draw its symbol. Obtain expression for the inductance of the coil having N number of turns and area of cross section A.
5. Draw the chart to measure the value of resistor using colour code.

**Q. 2. Attempt any three of the following.**

**15**

1. Explain open circuit test for the testing diodes.
2. How effectively the DC gain of a transistor can be measured?
3. What is soldering? What is soldering iron?
4. Explain with block diagram a regulated power supply.
5. How will you test PNP and NPN transistor using off circuit testing method?

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FYBSC SEM I (INTERNAL) EXAMINATION OCTOBER 2024

VSC - BASICS IN PYTHON PROGRAMMING

MARKS : 20

DURATION :

N.B: 1) All the questions are compulsory.

2) Figures to the right indicate full marks.

Roll No. \_\_\_\_\_ Junior Supervisor's Sign with date : \_\_\_\_\_

**Q.I Choose the correct alternative from the following: (Any 5 out of 8 / one mark each) 05**

1. What is the correct syntax to output "Hello, World" in Python?  
a) print("Hello, World")  
b) read("Hello, World")  
c) printf("Hello, World")  
d) cout << "Hello, World"
2. What will be the output of the following code?  
x = 5  
y = "5"  
print(x + int(y))  
a) 55  
b) error  
c) 10  
d) None of the above
3. Which of the following statements is used to create a function in Python?  
a) function myfunc():  
b) create myfunc():  
c) def myfunc():  
d) function: myfunc()
4. Which of the following methods is used to add an item to a Python list?  
a) add()  
b) append()  
c) insert()  
d) push()
5. Which of the following is used to create a comment in Python?  
a) //  
b) /\*\*/  
c) #  
d) %
6. Which function is used to get the length of a list in Python?  
a) size()  
b) count()  
c) length()  
d) len()
7. What is the correct order of an if-elif-else structure?  
a) if, else, elif  
b) else, elif, if  
c) if, elif, else  
d) elif, if, else
8. Which of the following is the correct way to write a for-loop in Python?  
a) for i = 0 to 10  
b) for i in range(10):  
c) for(i = 0; i < 10; i++)  
d) for i: range(10)

**Q.II Programs : (Attempt any 2 out of 4 / five marks each) 10**

1. Generate a python code using 'while loop' to accept two positive integers 'a' & 'b' from the user and compute the gcd of 1008 and 357.
2. How would you write a python program to accept a positive integer 'n' from the user and write first 'n' terms of Fibonacci Sequence using recursion.
3. Create a python script that checks whether a number is positive, zero, or negative by accepting a number from the user.

241122

NSVSC 2124

**FYBSC SEMESTER I (NEP 2020)**

**END OF SEMESTER EXAMINATION NOVEMBER 2024**

**VSC : BASICS IN PYTHON PROGRAMMING**

**Duration : 03 Hrs**

**Marks : 25**

**N.B: 1) Figures to the right indicate full marks.**

**Q. Program a python code for the following : (Attempt any FIVE out of EIGHT / 5 marks each) 25**

1. Accept the marks from the user and provide appropriate grade.

|       |          |         |         |         |         |              |
|-------|----------|---------|---------|---------|---------|--------------|
| Marks | 81 – 100 | 71 – 80 | 61 – 70 | 51 – 60 | 41 – 50 | Less than 40 |
| Grade | A        | B       | C       | D       | E       | F            |

2. Compute sum of squares of first 5 natural numbers.

3. Check if 21 is a factor of 1532.

4. Find the maximum element in {12, 4, 16, 9, 15, 28, 34, 10}

5. Check whether 3927 and 377 are co-primes or not.

6. Identify if the triangle is acute – angled, right – angled or obtuse – angled based on its sides.

7. Write first 10 terms of Fibonacci sequence using for loop.

8. Search for the number 14 in {25, 18, 11, 14, 9, 21}

**F. Y. B. Sc. SEM I (EXTERNAL) EXAMINATION NOVEMBER 2024**  
**SEC: DATA ANALYTICS -I**

**MARKS: 25**

**DURATION: 3 hours**

**N.B: 1) Solve any five questions out of eight given.**

**2) Each question is of 5 marks**

**3) Problems should be solved using Excel software**

**4) Every Student should come with their signed Journal**

|                    | <b>Solve the following problems:<br/>(Attempt any five, each question carries 5 marks)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |                                          |          |                                           |        |                                 |                    |                                           |           |                                                   |           |                                                                  |     |     |     |     |      |     |     |     |     |  |  |  |  |  |  |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------------------------|----------|-------------------------------------------|--------|---------------------------------|--------------------|-------------------------------------------|-----------|---------------------------------------------------|-----------|------------------------------------------------------------------|-----|-----|-----|-----|------|-----|-----|-----|-----|--|--|--|--|--|--|
| 1.                 | <p>Draw a 3D Multiple Bar Diagram for the following Data and answer the given questions</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th colspan="4" style="text-align: center;">Quarters</th> </tr> <tr> <th style="text-align: center;">Sales (in '000 Rs)</th> <th style="text-align: center;">I</th> <th style="text-align: center;">II</th> <th style="text-align: center;">III</th> <th style="text-align: center;">IV</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">BIKES</td> <td style="text-align: center;">200</td> <td style="text-align: center;">300</td> <td style="text-align: center;">400</td> <td style="text-align: center;">350</td> </tr> <tr> <td style="text-align: center;">CARS</td> <td style="text-align: center;">150</td> <td style="text-align: center;">120</td> <td style="text-align: center;">200</td> <td style="text-align: center;">250</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>(i) Mention the highest sales for each quarter for both bikes &amp; cars and colour it differently<br/> (ii) Show the Data Labels in the Diagram<br/> (ii) Give an appropriate title to the Diagrams<br/> (iv) Outline the different Sections by Black Border in the Bar Diagram<br/> (v) Give title to the Y-Axis in the Chart</p> |            |                                          | Quarters |                                           |        |                                 | Sales (in '000 Rs) | I                                         | II        | III                                               | IV        | BIKES                                                            | 200 | 300 | 400 | 350 | CARS | 150 | 120 | 200 | 250 |  |  |  |  |  |  |
|                    | Quarters                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                                          |          |                                           |        |                                 |                    |                                           |           |                                                   |           |                                                                  |     |     |     |     |      |     |     |     |     |  |  |  |  |  |  |
| Sales (in '000 Rs) | I                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | II         | III                                      | IV       |                                           |        |                                 |                    |                                           |           |                                                   |           |                                                                  |     |     |     |     |      |     |     |     |     |  |  |  |  |  |  |
| BIKES              | 200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 300        | 400                                      | 350      |                                           |        |                                 |                    |                                           |           |                                                   |           |                                                                  |     |     |     |     |      |     |     |     |     |  |  |  |  |  |  |
| CARS               | 150                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 120        | 200                                      | 250      |                                           |        |                                 |                    |                                           |           |                                                   |           |                                                                  |     |     |     |     |      |     |     |     |     |  |  |  |  |  |  |
|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |                                          |          |                                           |        |                                 |                    |                                           |           |                                                   |           |                                                                  |     |     |     |     |      |     |     |     |     |  |  |  |  |  |  |
| 2.                 | <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Preference</th> <th style="text-align: center;">No. of People</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Tea</td> <td style="text-align: center;">120</td> </tr> <tr> <td style="text-align: center;">Coffee</td> <td style="text-align: center;">150</td> </tr> <tr> <td style="text-align: center;">Cold Drink</td> <td style="text-align: center;">70</td> </tr> <tr> <td style="text-align: center;">Green Tea</td> <td style="text-align: center;">40</td> </tr> <tr> <td style="text-align: center;">Black Tea</td> <td style="text-align: center;">80</td> </tr> </tbody> </table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Preference | No. of People                            | Tea      | 120                                       | Coffee | 150                             | Cold Drink         | 70                                        | Green Tea | 40                                                | Black Tea | 80                                                               |     |     |     |     |      |     |     |     |     |  |  |  |  |  |  |
| Preference         | No. of People                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |                                          |          |                                           |        |                                 |                    |                                           |           |                                                   |           |                                                                  |     |     |     |     |      |     |     |     |     |  |  |  |  |  |  |
| Tea                | 120                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                                          |          |                                           |        |                                 |                    |                                           |           |                                                   |           |                                                                  |     |     |     |     |      |     |     |     |     |  |  |  |  |  |  |
| Coffee             | 150                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                                          |          |                                           |        |                                 |                    |                                           |           |                                                   |           |                                                                  |     |     |     |     |      |     |     |     |     |  |  |  |  |  |  |
| Cold Drink         | 70                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |                                          |          |                                           |        |                                 |                    |                                           |           |                                                   |           |                                                                  |     |     |     |     |      |     |     |     |     |  |  |  |  |  |  |
| Green Tea          | 40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |                                          |          |                                           |        |                                 |                    |                                           |           |                                                   |           |                                                                  |     |     |     |     |      |     |     |     |     |  |  |  |  |  |  |
| Black Tea          | 80                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |                                          |          |                                           |        |                                 |                    |                                           |           |                                                   |           |                                                                  |     |     |     |     |      |     |     |     |     |  |  |  |  |  |  |
|                    | <table border="1" style="margin-left: auto; margin-right: auto;"> <tbody> <tr> <td style="text-align: center;">(i)</td> <td>Draw a Pie Diagram for the above diagram</td> </tr> <tr> <td style="text-align: center;">(ii)</td> <td>Find the highest value and explode it out</td> </tr> <tr> <td style="text-align: center;">(iii)</td> <td>Show the Data Labels in the Bar</td> </tr> <tr> <td style="text-align: center;">(iv)</td> <td>Give an appropriate title to the Diagrams</td> </tr> <tr> <td style="text-align: center;">(v)</td> <td>Calculate and show percentages in the Pie Diagram</td> </tr> <tr> <td style="text-align: center;">(vi)</td> <td>Show the lowest value in the Pie Diagram with a Dark Blue Colour</td> </tr> </tbody> </table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | (i)        | Draw a Pie Diagram for the above diagram | (ii)     | Find the highest value and explode it out | (iii)  | Show the Data Labels in the Bar | (iv)               | Give an appropriate title to the Diagrams | (v)       | Calculate and show percentages in the Pie Diagram | (vi)      | Show the lowest value in the Pie Diagram with a Dark Blue Colour |     |     |     |     |      |     |     |     |     |  |  |  |  |  |  |
| (i)                | Draw a Pie Diagram for the above diagram                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                                          |          |                                           |        |                                 |                    |                                           |           |                                                   |           |                                                                  |     |     |     |     |      |     |     |     |     |  |  |  |  |  |  |
| (ii)               | Find the highest value and explode it out                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |                                          |          |                                           |        |                                 |                    |                                           |           |                                                   |           |                                                                  |     |     |     |     |      |     |     |     |     |  |  |  |  |  |  |
| (iii)              | Show the Data Labels in the Bar                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |                                          |          |                                           |        |                                 |                    |                                           |           |                                                   |           |                                                                  |     |     |     |     |      |     |     |     |     |  |  |  |  |  |  |
| (iv)               | Give an appropriate title to the Diagrams                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |                                          |          |                                           |        |                                 |                    |                                           |           |                                                   |           |                                                                  |     |     |     |     |      |     |     |     |     |  |  |  |  |  |  |
| (v)                | Calculate and show percentages in the Pie Diagram                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            |                                          |          |                                           |        |                                 |                    |                                           |           |                                                   |           |                                                                  |     |     |     |     |      |     |     |     |     |  |  |  |  |  |  |
| (vi)               | Show the lowest value in the Pie Diagram with a Dark Blue Colour                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |                                          |          |                                           |        |                                 |                    |                                           |           |                                                   |           |                                                                  |     |     |     |     |      |     |     |     |     |  |  |  |  |  |  |

|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                |         |         |         |         |         |         |         |                 |     |     |     |     |      |     |     |  |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|---------|---------|---------|---------|---------|---------|---------|-----------------|-----|-----|-----|-----|------|-----|-----|--|
| 3.                             | <p>The data given below are the height (in cms) of 20 students</p> <table border="0" style="width: 100%; text-align: center;"> <tr> <td>145</td> <td>160</td> <td>175</td> <td>155</td> <td>165</td> <td>150</td> <td>170</td> <td>155</td> </tr> <tr> <td>157</td> <td>167</td> <td>173</td> <td>152</td> <td>183</td> <td>1155</td> <td>176</td> <td>156</td> </tr> </table> <p>(i) Make a Frequency Table for the said data<br/> (ii) Draw a Histogram for the same<br/> (iii) Give a dark border to the bars<br/> (iv) Give an appropriate title to the Graph drawn<br/> (v) Name the X and Y Axis</p> | 145                            | 160     | 175     | 155     | 165     | 150     | 170     | 155     | 157             | 167 | 173 | 152 | 183 | 1155 | 176 | 156 |  |
| 145                            | 160                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 175                            | 155     | 165     | 150     | 170     | 155     |         |         |                 |     |     |     |     |      |     |     |  |
| 157                            | 167                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 173                            | 152     | 183     | 1155    | 176     | 156     |         |         |                 |     |     |     |     |      |     |     |  |
| 4.                             | <p>These data give the times (in minutes) taken to complete an assignment for 15 students.<br/> 75, 62, 65, 70, 130, 90, 120, 85, 94, 110, 115, 129, 125, 124, 105<br/> Construct a stem-and-leaf display for these data. Also, mention the minimum and maximum values in the given data.</p>                                                                                                                                                                                                                                                                                                              |                                |         |         |         |         |         |         |         |                 |     |     |     |     |      |     |     |  |
| 5.                             | <p style="text-align: center;">Evaluate the mean &amp; mode for the following data</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>No. of Children in a Family</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> </tr> <tr> <td>No. of Families</td> <td>20</td> <td>55</td> <td>65</td> <td>40</td> <td>29</td> <td>7</td> <td>4</td> </tr> </table>                                                                                                                                                                                             | No. of Children in a Family    | 0       | 1       | 2       | 3       | 4       | 5       | 6       | No. of Families | 20  | 55  | 65  | 40  | 29   | 7   | 4   |  |
| No. of Children in a Family    | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1                              | 2       | 3       | 4       | 5       | 6       |         |         |                 |     |     |     |     |      |     |     |  |
| No. of Families                | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 55                             | 65      | 40      | 29      | 7       | 4       |         |         |                 |     |     |     |     |      |     |     |  |
| 6.                             | <p style="text-align: center;">Find the median and mode for the following data</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>Production in millions of tons</td> <td>200-250</td> <td>250-300</td> <td>300-350</td> <td>350-400</td> <td>400-450</td> <td>450-500</td> <td>500-550</td> </tr> <tr> <td>No. of Workers</td> <td>70</td> <td>145</td> <td>160</td> <td>175</td> <td>140</td> <td>120</td> <td>100</td> </tr> </table>                                                                                                                                             | Production in millions of tons | 200-250 | 250-300 | 300-350 | 350-400 | 400-450 | 450-500 | 500-550 | No. of Workers  | 70  | 145 | 160 | 175 | 140  | 120 | 100 |  |
| Production in millions of tons | 200-250                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 250-300                        | 300-350 | 350-400 | 400-450 | 450-500 | 500-550 |         |         |                 |     |     |     |     |      |     |     |  |
| No. of Workers                 | 70                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 145                            | 160     | 175     | 140     | 120     | 100     |         |         |                 |     |     |     |     |      |     |     |  |
| 7.                             | <p style="text-align: center;">Find the standard deviation and coefficient of variation for the following data</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>Age (years)</td> <td>0-10</td> <td>10-20</td> <td>20-30</td> <td>30-40</td> <td>40-50</td> <td>50-60</td> <td>60-70</td> </tr> <tr> <td>No. of People</td> <td>35</td> <td>50</td> <td>65</td> <td>70</td> <td>60</td> <td>40</td> <td>20</td> </tr> </table>                                                                                                                                                      | Age (years)                    | 0-10    | 10-20   | 20-30   | 30-40   | 40-50   | 50-60   | 60-70   | No. of People   | 35  | 50  | 65  | 70  | 60   | 40  | 20  |  |
| Age (years)                    | 0-10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 10-20                          | 20-30   | 30-40   | 40-50   | 50-60   | 60-70   |         |         |                 |     |     |     |     |      |     |     |  |
| No. of People                  | 35                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 50                             | 65      | 70      | 60      | 40      | 20      |         |         |                 |     |     |     |     |      |     |     |  |
| 8.                             | <p>Compare the two Sets of Data given below and find which data set is more consistent ( Use Coefficient of Range)<br/> Group A: 105, 120, 130, 125, 140, 150, 160, 190, 155, 185<br/> Group B: 90, 140, 135, 110, 250, 150, 160, 200, 270, 150</p>                                                                                                                                                                                                                                                                                                                                                        |                                |         |         |         |         |         |         |         |                 |     |     |     |     |      |     |     |  |