

Common ordinance for M P Universities for the PARAMEDICAL COURSES

Prepared by BARKATULLAH UNIVERSITY BHOPAL in consultation with the Registrar M. P. Paramedical Council, Bhopal (M.P.)

ORDINANCE No. - 219

Ordinance for various Degree courses (3 years and above) in paramedical subjects

Objective of the courses -

1. The training of the candidate registering for various degree 3 years and above courses are aimed to develop skill in all diagnostics/ therapeutics tests and their interpretation on the modern hospital laboratory.

The degrees in various courses are of three years or above.

2. Eligibility for admission

(A) B. P. T. and B. O. T. course

The candidate must have passed 10 +2 and should obtain 50% marks in aggregate of Physics, Chemistry and Biology (P. C. B.).

(B) All Paramedical degree courses (other than B. P. T. & B. O. T.)

The candidate must have passed 10 + 2 with at least 45% marks in aggregate of Physics, Chemistry and Biology (P.C. B.).

(C) B. M. L. T.

3. The candidate must have passed 10+2 with at least 45% marks in aggregate of Physics, Chemistry and Biology (P. C. B.) or 10 + 2 vocational (M. L. T.) course with at least 45% marks will also be eligible.

4. In case of S. C. / S. T. / O. B. C. candidate 5% marks relaxation will be given for the admission in above said course.

5. Weightage will be given as per University rules.

6. Number of seats will be 50 in each course.

7. The minimum age for admission shall be 17 years On 31 December of academic year of admission.

8. Selection of candidate will be on the basis of the entrance examination or in the absence of entrance examination purely on merit on the basis of marks obtained in qualifying examination.

9. For degree examination, candidates who have attended 75% in all theory classes and 85% in practical can only appear in university examination.

10. Revaluation & re totaling both shall be allowed as per university rules.

11. In order to pass the examination it is mandatory to obtain 50% marks in theory and practical examination separately. The viva and the sessional marks are to be added to the theory marks.

12. Other rules regarding conduct of examination will be as per Ordinance no. 06.

13. Permission will be given to start the courses after the permission from M P Paramedical Council (Department of Medical Education, Government of M. P.).

14. Syllabus and scheme of the examination shall be decided by the board of studies and Academic council of the university from time to time as per guidelines from M P Paramedical Council.

15. The medium of examination shall be English.

16. The examination pattern.

(A) B. P. T. & B. O. T. (4 years and six months internship)

(1) The pattern for B. P. T. & B. O. T. shall be like M. B. B. S. There will be two exams in each year. Main exam to be held in April/May and supplementary / second exam to be held in July/August.

(2) Students of B. P. T. & B. O. T. who have failed in first year will not be allowed to attend the classes of second year until and unless he/she has passed in all subjects of first year. But in case

of second and third year, student is allowed to attend higher classes, but he/she is eligible to appear in higher class exam only when he/she has passed all the subjects of the previous year.

(B) Other Degree Courses –

There will be two examinations in each year for remaining degree courses the main & supplementary as per University rule. The main examination will be held in April / May & Supplementary examination will be held in July / August & the candidate failing in the main & subsequently in supplementary examination shall not be allowed to go in the higher classes unless clearing all the previous examination.

17. There will be two examiners including one external and internal for both theory and practical examinations.
18. The examiner who evaluates the theory copies preferably should be appointed as external for practical examination for said course.
19. The colleges must conduct sessional exams twice in an academic year (once in a six months period) and send the same marks to the university one week before the commencement of university theory examination.
20. In order to be an examiner, a faculty member should have minimum three years of teaching experience and not below the rank of the Asst. professor and /demonstrator/tutor.
21. The examination papers (Theory) will be evaluated centrally at the university.
22. Various Degree course three years and above -
 1. Physiotherapy.
 2. Occupational therapy.
 3. Speech Therapy.
 4. X-Ray Radiographer.
 5. Human Nutrition.
 6. Pathology.
 7. Medical Lab technology.

Note:- For other provision which are not covered in this curriculum & syllabus will be applicable as per the university ordinances of Madhyapradesh Medical Sciences University, Jabalpur (M.P.) .

MADHYAPRADESH MEDICAL SCIENCES UNIVERSITY, JBALPUR (M.P.)
SCHEME OF EXAMINATION: B.SC. HUMAN NUTRITION

B.Sc. Human Nutrition- I Year

S. No.	Subject	Theory	Practical	Internal Assessment	Total
1.	Basic Nutrition	100	100	100	300
2.	Human Physiology	100	100	100	300
3.	Nutritional Biochemistry	100	100	100	300
4.	Family Meal Management	100	100	100	300
5.	On the Job Training	-	100		100
Total					1300

The pattern of University theory examination of all papers will be as under for 100 Max. Marks.

No. & Type of Question	Marks for each question	Total Max. Marks
10 Very Short Answer Questions (<i>Answer to be given in 50-60 words</i>)	02	20
5 Short Answer Questions (<i>Answer to be given in 250-300 words</i>)	10	50
2 Essay Type Questions (<i>Answer to be given in 450-500 words</i>)	15	30
		100

B.Sc. Human Nutrition- II Year

S. No.	Subject	Theory	Practical	Internal Assessment	Total
1.	Basic Dietetic	100	100	100	300
2.	Food Microbiology	100	100	100	300
3.	Food Science	100	100	100	300
4.	Personal Management	100	100	100	300
5.	On the Job Training	-	100	-	100
Total					1300

The pattern of University theory examination of all papers will be as under for 100 Max. Marks.

No. & Type of Question	Marks for each question	Total Max. Marks
10 Very Short Answer Questions (<i>Answer to be given in 50-60 words</i>)	02	20
5 Short Answer Questions (<i>Answer to be given in 250-300 words</i>)	10	50
2 Essay Type Questions (<i>Answer to be given in 450-500 words</i>)	15	30
		100

B.Sc. Human Nutrition-III Year

S. No.	Subject	Theory	Practical	Internal Assessment	Total
1.	Community Nutrition	100	100	100	300
2.	Advanced Dietetics	100	100	100	300
3.	Dietetics and Counselling	100	100	100	300
4.	Project Work	-	300		300
Total					1200

The pattern of University theory examination of all papers will be as under for 100 Max. Marks.

No. & Type of Question	Marks for each question	Total Max. Marks
10 Very Short Answer Questions (<i>Answer to be given in 50-60 words</i>)	02	20
5 Short Answer Questions (<i>Answer to be given in 250-300 words</i>)	10	50
2 Essay Type Questions (<i>Answer to be given in 450-500 words</i>)	15	30
		100

B.Sc. Human Nutrition-Ist Year Scheme of Examination

There shall be five subjects for the first year B.Sc. Human Nutrition Examination.
The subject's qualification of the examination and the pattern of examination will be as follows.

S. No.	Subject	Theory	Practical	Internal Assessment	Total
1.	Basic Nutrition	100	100	100	300
2.	Human Physiology	100	100	100	300
3.	Nutritional Biochemistry	100	100	100	300
4.	Family Meal Management	100	100	100	300
5.	On the Job Training	-	100		100
Total					1300

The pattern of University theory examination of all papers will be as under for 100 Max. Marks.

No. & Type of Question	Marks for each question	Total Max. Marks
10 Very Short Answer Questions (<i>Answer to be given in 50-60 words</i>)	02	20
5 Short Answer Questions (<i>Answer to be given in 250-300 words</i>)	10	50
2 Essay Type Questions (<i>Answer to be given in 450-500 words</i>)	15	30
		100

B.Sc. Human Nutrition- I st Year
PAPER – I: BASIC NUTRITION
Scheme of Examination

Subject	Theory	Practical	Internal Assessment	Total
Basic Nutrition	100	100	100	300

There shall be one paper setter external or internal for theory examination and two examiners, one internal (Chairman) and one external for practical examinations. Recognized teachers in Nutritional Sciences with five years of teaching experience shall be on the panel of examiner. The viva marks shall be added to university theory examination marks and 50% shall be the passing marks for both theory and practical university examination respectively. The pattern of University theory examination will be as under for 100 Max. Marks.

No. & Type of Question	Marks for each question	Total Max. Marks
10 Very Short Answer Questions (<i>Answer to be given in 50-60 words</i>)	02	20
5 Short Answer Questions (<i>Answer to be given in 250-300 words</i>)	10	50
2 Essay Type Questions (<i>Answer to be given in 450-500 words</i>)	15	30
		100

Syllabus Contents :-

1. **Introduction to nutrition** –
Food as a source of nutrients, functions of food. Definition of nutrition, nutrients, adequate, optimum and good nutrition, malnutrition. [
2. **Inter-relationship between nutrition and health** – visible symptoms of good health.
3. **Food guide** – Basic five food groups – How to use food guide.
4. **Use of food in body** – Digestion, adsorption transport, utilization of nutrients in the body.
5. **Water** – as a nutrients, function, sources requirement, water- balance, effect of deficiency.
6. **Role of fibres in human** – nutrition.
7. **Carbohydrates** – composition, classification, food sources, functions. Storage in body.
8. **Fats and Oils** – composition, saturated and unsaturated fatty acids, classification, food sources, function of fats.
9. **Proteins** – composition, sources, essential, non-essential, amino acids, functions, protein deficiency (very brief).
10. **Minerals** – Functions, sources, Bioavailability and deficiency of following minerals – calcium, iron, iodine, fluorine, sodium, potassium (in very brief)
11. **Vitamins** – classification, units of measurement, sources, functions and deficiency (very brief) about following vitamins
 - a. Vitamins A
 - b. Vitamins D
 - c. Vitamins E
 - d. Vitamins K

- e. Ascorbic acid, Thiamine, Riboflavin, Niacin, Vitamin B₆, Folic acid, Vitamins B₁₂.

References –

1. Guthrie, Hele, Andrews – Introductory Nutrition 6thed. St. Louis, Times, Mirror/Mosby College 1988.
2. Mudambi S.R.M.V Rajgopal. Fundamentals of foods and Nutrition (2nd ed). Willey eastern Ltd.
3. Swaminatham S. Advanced textbook on Food & Nutrition vol. I, II (2nd ed. revised and enlarged) Bappco 1985.

BASIC NUTRITION : PRACTICAL

MAX.MARKS: 100

[1] Use and care of kitchen equipments.

[2] Controlling techniques

(a) Weights and measures standard household measures for raw and cooked food.

[3] Food preparation and classifying recipes as good, moderate or poor sources of specific nutrients. Amount of ingredients to be in standard recipe vie –a- vie portion size. (a) Beverages- Tea, coffee, cocoa, fruit juice, milk, milk shakes.

(b) Cereal and flour mixtures – basic preparation

- i. Boiled rice and rice pulao.
- ii. Chapatti, puri, paratha.
- iii. Sand wiches.
- iv. Pastas.
- v. Pancakes, biscuits, cookies, cakes.

[4] Vegetables & Fruits

- a. Simple salads
- b. Dry vegetables.
- c. Curries. Fruits preparations using fresh and dried stewed fruit, fruit salad.

[5] Milk and milk products.

- a. Porridges.
- b. Curds, paneer, and their commonly made preparation.
- c. Milk based simple desserts and puddings, custard, kheer, ice cream.

[6] Meat – cuts of meat.

- a. Meat preparations
- b. Poultry
- c. Fish. Hard and soft cooked, poached, scrambled, fried omlette, eggnoogs.

[7] Soups – Basic, clear, and cream soups.

[8] Snacks – Pakoras, cheese toast, upma, pohe, peanut, chikki, til, laddo.

B.Sc. Human Nutrition- I st Year

PAPER – II: HUMAN PHYSIOLOGY Scheme of Examination

Subject	Theory	Practical	Internal Assessment	Total
Human Physiology	100	100	100	300

There shall be one paper setter external or internal for theory examination and two examiners, one internal (Chairman) and one external for practical examinations. Recognized teachers in MD Physiology with five years of teaching experience shall be on the panel of examiner. The viva marks shall be added to university theory examination marks and 50% shall be the passing marks for both theory and practical university examination respectively. The pattern of University theory examination will be as under for 100 Max. Marks.

No. & Type of Question	Marks for each question	Total Max. Marks
10 Very Short Answer Questions (<i>Answer to be given in 50-60 words</i>)	02	20
5 Short Answer Questions (<i>Answer to be given in 250-300 words</i>)	10	50
2 Essay Type Questions (<i>Answer to be given in 450-500 words</i>)	15	30
		100

Syllabus Contents :-

THEORY MAX. MARKS: 100

- [1] **Cells and tissues** – structure and functioning of the cell, epithelial, connective, muscular and nervous tissue.
- [2] **blood** – composition, functions, coagulation, thrombosis, blood volume, blood groups and blood transfusion, Anaemia, leukemia, haemolysis.
- [3] **Skeletal system** – Bones, joints, bone deformities (in brief)
- [4] **Cardio-vascular system**- anatomy of heart and blood vessels, heart rate, cardiac cycle, cardiac output, blood pressure, hypertension, radial pulse, ECG and its significance, varicose veins, Atheroeclerosis, angina pectoris.
- [5] **lymphatic system** – Lymph glands and its functions. Spleen- structure and function. [6] **Respiratory system**- structure of respiratory system, Mechanism of respiration, chemical respiration, tissue respiration, regulation of respiration. Common diseases – Tuberculosis, Asthma, Pleurisy, cough, hiccups.
- [7] **Digestive system** – Organs of digestion – their function, digestive juices, digestion and absorption of carbohydrate, protein and fats.
- [8] **Excretory system**: Structure and function of kidney, Nephron, Formation of urine, normal and abnormal constituents of urine. Significance of urine examination, Nephritis, Nephrosis, Renal stones.
- [9] **Skins**- Structure and functions.
- [10] **Endocrine glands**- Structure and functions and disorders.

[11] Reproductive system- female reproductive organs , structure and functions – ovary , fallopian tubes , uterus , vagina. Male reproductive organs – structure and functions – testis, vas deferens, urethra, and penis, prostate glands menstruation – Puberty, menopause. Fertilization of ovum with sperm. Development of fertilized ovum – placenta and its function, parturition.

[12] Nervous system – Central nervous system and its function. Autonomic nervous system and its function.

[13] Special senses- Structure and functions of eye, ear. Common diseases of eye- conjunctivitis, trachoma, cataract, Common ear diseases – Deafness, vertigo, motion sickness.

References:

1. Keela C.A. and Neil. E. (1978). Samson weights applied physiology. Oxford University Press.
2. Torture G.J. and Anagnostakos (1984) Principles of anatomy and physiology. Harper and Row. Publishes New York.
3. Human physiology vol.1 & 2 by C.C chatterji.

HUMAN PHYSIOLOGY : PRACTICALS

MAX. MARKS: 100

[1] Microscope and its use.

[2] Microscopic examination of prepared slides

(a) ep1. Fresh mount of blood.

2. Stained blood smear.

a.Epithelia

b.Connective

c. Muscle tissue

d. Nerve cell.

3. Blood- microscopic examination of prepared slides

1.Fresh mount of blood.

2. Stained blood smear.

[4] Testing of blood groups using typed sera.

[5] Estimation of erythrocyte sedimentation rate (ESR).

[6] Haemoglobin estimation using haemoglobinometer.

[7] R.B.C. count

[8] W.B.C. count

[9] Recording blood pressure using sphygmomanometer.

[10] Measurement of body temperature mouth, armpit and rectum.

[11] (a) Benedict's tests for sugars. (b) Burette test for protein. (c) Iodine test for starch.

B.Sc. Human Nutrition- I st Year

PAPER – III : NUTRITIONAL BIOCHEMISTRY Scheme of Examination

Subject	Theory	Practical	Internal Assessment	Total
Nutritional Biochemistry	100	100	100	300

There shall be one paper setter external or internal for theory examination and two examiners, one internal (Chairman) and one external for practical examinations. Recognized teachers in MD/M.Sc. Biochemistry with five years of teaching experience shall be on the panel of examiner. The viva marks shall be added to university theory examination marks and 50% shall be the passing marks for both theory and practical university examination respectively. The pattern of University theory examination will be as under for 100 Max. Marks.

No. & Type of Question	Marks for each question	Total Max. Marks
10 Very Short Answer Questions (<i>Answer to be given in 50-60 words</i>)	02	20
5 Short Answer Questions (<i>Answer to be given in 250-300 words</i>)	10	50
2 Essay Type Questions (<i>Answer to be given in 450-500 words</i>)	15	30
		100

Syllabus Contents :-

THEORY

MAX.MARKS: 100

- [1] **Energy** – Unit of measuring energy, fuel value of food. Calculation of energy value of diets. Factors contributing to total energy expenditure, BMR and factors affecting it. SDA of food.
- [2] **Carbohydrates metabolism**- Glycogenesis, glycogenolysis, gluconeogenesis, citric acid cycle. Regulation of blood glucose levels.
- [3] **Lipid metabolism**- Oxidation of fatty acids, ketosis, cholesterol metabolism, lipoproteins in the blood composition and their functions in brief.
- [4] **Protein metabolism**- Transamination, decarboxylation, entry of amino acids into TCA cycle, urea cycle.
- [5] **Enzymes**- Definition, classification, chemical nature, coenzymes. Factors affecting role of enzyme action, enzyme inhibition.
- [6] Structure of nitrogen basis, nucleosides, DNA & RNA (in brief). Mechanism of DNA replication and transcription.
- [7] **Hormones** – Hormones of pituitary, thyroid, parathyroid, Adrenals, reproductive glands, Pancreas.

References:

1. Raw, K.R.(1986) Text book of Biochemistry III edition, prentice hall of India private Ltd. New Delhi 110001
2. Murray R.K. Granner, P.A. Mayes, V.W. Rodwell (1988).
3. Harpers Biochemistry 21st edition Prentice Hall.

NUTRITIONAL BIOCHEMISTRY

PRACTICALS MAX.MAKS: 100

- [1] Identification of glucose, fructose, maltose, lactose, sucrose, starch.
- [2] Colour reaction of protein, identification of individual protein.
- [3] Colour reaction of cholesterol.
- [4] Glucose estimation by benedict method.
- [5] Action of salivary amylase, conversion of starch.
- [6] Action of invertase, conversion of sucrose to invert sugar.
- [7] Identification of normal and abnormal constituents in urine.

B.Sc. Human Nutrition- I st Year

Paper-IV: FAMILY MEAL MANAGEMENT Scheme of Examination

Subject	Theory	Practical	Internal Assessment	Total
Family Meal Management	100	100	100	300

There shall be one paper setter external or internal for theory examination and two examiners, one internal (Chairman) and one external for practical examinations. Recognized teachers in M.Sc. Nutritional Sciences with five years of teaching experience shall be on the panel of examiner. The viva marks shall be added to university theory examination marks and 50% shall be the passing marks for both theory and practical university examination respectively. The pattern of University theory examination will be as under for 100 Max. Marks.

No. & Type of Question	Marks for each question	Total Max. Marks
10 Very Short Answer Questions (<i>Answer to be given in 50-60 words</i>)	02	20
5 Short Answer Questions (<i>Answer to be given in 250-300 words</i>)	10	50
2 Essay Type Questions (<i>Answer to be given in 450-500 words</i>)	15	30
		100

Syllabus Contents :-

THEORY MAX.MARKS: 100

- [1] **Introduction to meal management** – Balanced diet. **Food guide**- Basic 5 food groups.
- [2] **Basic principles of meal planning**- Objectives, steps in meal planning- food cost.
- [3] **Nutrition in pregnancy**- Physiological stages of pregnancy, nutritional requirements, food selection, complication of pregnancy.
- [4] **Nutrition during lactation**- Physiology of lactation, nutritional requirements.
- [5] **Nutrition during infancy** – Growth and development, Nutritional requirements, breast feeding, infant formula, introduction of supplementary foods.
- [6] **Nutrition during early childhood (Toddler/Preschool)**- Growth and nutrient need, nutrition related problems feeding pattern.
- [7] **Nutrition of school children** – Nutritional requirement importance of snacks, school lunch.
- [8] **Nutrition during Adolescence** – Growth and nutrient needs, food choices, eating habits, factor influencing needs.
- [9] **Nutrition during Adulthood** – Nutritional requirements, feeding patterns.
- [10] **Geriatric nutrition** – Factors affecting food intake and nutrient use. Nutrient needs, nutrition related problems.

References-

1. Guthrie H.A. and others. " Introductory nutrition" 1986 6th edition. Times Minoe/Mosby College Pub. St. Louis.
2. Anderson L & others- " Nutrition in health and diseases" 17th edition J.B.Lippincott. co. Philadelphia.
3. Recommended dietary intakes for Indians ICMR 1989.
4. Textbook of nutrition and dietetics- Kumud Khanna, Sharda Gupta, Santosh Jain Passi, Rama seth, Ranjana Mahana, Seema Puri, Phoenix publishing house Pvt, Ltd. New Delhi- 110002.
5. IkekU; ,oa mipkjkRed iks"k.k T;ksfr dqyd.khZ f'kok izdk'ku 423 [ktwjh cktkj] bankSjA
6. Mudambi S.R. and M.V. Rajagopal " Fundamentals of food and nutrition" 3rd edition Willey Eastern Ltd. New Delhi. 19.

FAMILY MEAL MANAGEMENT PRACTICAL MAX. MARKS: 100

Planning, preparation and nutrition evaluation of diets in relation to activity levels and physiological state.

- [1] Planning and preparation of a balanced diet for a pregnant woman.
- [2] Diet during complication of pregnancy.
- [3] Planning and preparation of a balanced diet for a lactating woman.
- [4] Preparation of weaning foods.
- [5] Planning and preparation of a balanced diet for preschool child.
- [6] Balanced diet for school going child. Preparation of packed lunch.
- [7] Planning and preparation of a balanced diet for adolescents.
- [8] Planning of meals for adult belonging to different income group.
- [9] Planning meal for senior citizen.

Ramulodi