FIRST YEAR B.Sc (MRT) DEGREE EXAMINATION……20

Paper I ANATOMY

Model Question Paper

Answer all questions
Draw diagrams wherever necessary

Time 3 hrs **Max Marks: 100**

Essays (2x20=40)

1. Describe organs of female reproductive system and uterus in detail.
2. Name the paranasal sinuses. Describe the anatomy of maxillary sinus.

Short Notes (8x5=40)

3. Circle of Willis
4. Kidney
5. Testis
6. Bronchopulmonary segment
7. Shoulder joint
8. Nephron
9. Ear
10. Larynx

Answer briefly (10x2=20)

11. Synovial joint
12. Long bone
13. Coverings of blood vessels
14. Chambers of heart
15. Lymph nodes
16. Axial and appendicular Skelton.
17. Prostate
18. Ovaries
19. Eyeball
20. Cartilage

FIRST YEAR B.Sc (MRT) DEGREE EXAMINATION……20

Paper II PHYSIOLOGY

Model Question Paper

Answer all questions
Draw diagrams wherever necessary

Time 3 hrs Max **Marks: 100 marks**

Essays **(2x20=40)**

1. Explain Circulatory system in detail.
2. Draw a neat diagram of nephron and explain urine formation

Short Notes

(8x5=40)

3. Cardiac cycle
4. Ovarian cycle
5. Components of blood
6. Endocrine glands
7. Skin
8. Lymphatic system
9. Thyroid and its secretions
10. Explain CSF under the headings constituents, circulation and function.

Answer briefly

(10x2=20)

11. ECG
12. GFR
13. Normal values of platelets, RBC, pulse and blood pressure.
14. Cardiac output
15. Porta hepatis
16. Hylum (kidney)
17. CBD
18. Cushings syndrome
19. CVP
20. Features of hypothyroidism

Name..... **CODE NO Reg. No.....**

FIRST YEAR B.Sc (MRT) DEGREE EXAMINATION.....20

Paper III General Physics and Electronics

Model Question Paper

Answer all questions
Draw diagrams wherever necessary

Time 3 hrs **Max Marks: 100**

Essays **(2x20=40)**

1. Explain Principle of superposition of waves. What are coherent sources. Describe Interference of waves and conditions of brightness and darkness and obtain expression for bandwidth.
2. Define simple harmonic motion. Obtain the differential equation for simple harmonic motion and hence find the solution for it. Mention the expression for time period and frequency of a particle executing SHM.

Short Notes **(8x5=40)**

3. Analyse a series L-C-R circuit and obtain the condition of resonance
4. What is Raman effect and mention the quantum mechanical explanation for it.
5. Explain the rectifying action of a PN Junction diode With the help of a diagram explain the working of a full wave rectifier using two diodes.
6. Distinguish between Fraunhoffer and Frensel Diffraction
7. Draw the circuit diagram of a phase shift oscillator and briefly explain the action.
8. Explain the piezoelectric method for the production of ultrasonic waves.
9. What is magnetic hysteresis? Draw and explain the B-H curve for a material to be used as a permanent magnet.
10. What is forced oscillation and when will resonance occur in forced oscillations

Answer briefly **(10x2=20)**

11. What is the difference between ordinary and extraordinary rays
12. What is the principle of transmission of light through an optical fibre
13. A Hartley oscillator has a capacitor of 0.1 micro farad and inductance of each coil is 20milli Hertz. Determine the frequency of oscillation, if there is no mutual inductance between the coils.
14. What is eddy current explain the methods to reduce eddy current in a transformer
15. What are acceptor and rejector circuits
16. Explain polarization by reflection. State and explain Brewster's law.
17. Distinguish between Rayleigh scattering and Raman scattering.
18. Distinguish between negative and positive feedback
19. Explain Doppler effect and red shift.
20. A diffraction grating has 0.5m of surface ruled with 6x10^5 lines/m What is its resolving power in the first order.

Name..... CODE NO Reg. No.....

FIRST YEAR B.Sc (MRT) DEGREE EXAMINATION……20

Paper IV ATOMIC AND NUCLEAR PHYSICS

Model Question Paper

Answer all questions
Draw diagrams wherever necessary

Time 3 hrs Max
Marks: 100

Essays
(2x20=40)

1. Briefly describe the nature of cathode rays. Describe with adequate theoretical Backing Thomson's method for the experimental determination of e/m for these rays.
2. Explain photo electric effect. What are the laws of photo electric emission? Explain Einstein's theory of photoelectric effect also write Millikan's verification of Einstein's equation.

Short Notes **(8x5=40)**

3. Stern Gerlach experiment, Larmor precession
4. Theoretical explanation for the alpha decay process
5. Main characteristics of nuclear forces. Explain fusion and fission reactions.
6. Explain the concept of mass defect and binding energy of a nucleus. Explain the main reasons for instability of nucleus
7. What are neutrinos and How they are produced. Mention their four important properties
8. Name and explain the quantum numbers in the vector atom model
9. Describe with an example what happens to a radioactive nucleus in beta decay. Explain the process of pair production by gamma rays.
10. Derive an expression of De Broglie wavelength.

Answer briefly **(10x2=20)**

11. In Millikan's oil drop method, a drop of oil (p=900 kg/m3) of radius r=2.5 micro meter has three units of excess negative charge on it. What is the direction and magnitude of the electric field required to keep the drop stationary.
12. Outline the major limitations of Bohr's theory.
13. Sommer field modified theory.
14. A given specimen of radioactive nucleus initially contains 10 nuclei. After the lapse of 20 days, it contains only 10% of the initial number of radioactive nuclei. Calculate the mean life time of the nuclei.
15. Distinguish between natural and artificial radio activities.
16. Define Q value of a nuclear reaction. Explain threshold energy.
17. Distinguish between phase velocity and group velocity.
18. Essential ideas of meson theory of nuclear forces.
19. The law of radioactive disintegration
20. The meaning of the terms half life and mean life time.

First Year B.Sc Medical Radiological Technology (MRT) Degree

Paper-V: MATHEMATICS

Model Question Paper

Time : 3 Hours **Max.Marks: 100**

Problems **20X2= 40**

1)
- Determine the first term and 30th term of an arithmetic progression whose seventh term is 34 and 15th term is 74.
- Show that for n>0 $\frac{1}{(n+1)} + \frac{1}{2(n+1)^2} + \frac{1}{3(n+1)^3} + \cdots = \frac{1}{n} - \frac{1}{2n^2} + \frac{1}{3n^3} - \cdots$
- Find the 7th term in the expansion of $(1-x)^{-4}$, $|X|<1$.
- If X>0, show that $\log X = 2\left[\frac{X-1}{X+1} + \frac{1}{3}\left(\frac{X-1}{X+1}\right)^3 + \frac{1}{5}\left(\frac{X-1}{X+1}\right)^5 + \cdots\right]$ and hence evaluate log2. (6+7+7)

2)
- Show that $\tan 75^0 + \cot 75^0 = 4$.
- Show that $\cos^2\theta + \cos^2(\theta + 120^0) + \cos^2(\theta - 120^0) = \frac{3}{2}$
- Show that $\frac{a^2-b^2}{c^2}\sin 2c + \frac{b^2-c^2}{a^2}\sin 2A + \frac{c^2-a^2}{b^2}\sin 2B = 0$, in any triangle ABC.

(6+7+7)

Short Problems **(8x5=40)**

3. If $y = \tan^{-1}\sqrt{\frac{1+\sin X}{1-\sin X}}$, show that $\frac{dy}{dx} = \frac{1}{2}$

4. If $y = A\cos nx + B\sin nx$, then show that $\frac{d^2y}{dX^2} + n^2y = 0$

5. If $y = \sin(m\sin^{-1}X)$, show that $(1-x^2)y_2 - xy_1 + m^2y = 0$

6. Evaluate $\int e^x \sin x\, dx$

7. Find the S.D for the following data:

Class	60-62	63-65	66-68	69-71	72-74
Frequency	5	18	42	27	8

8. If X follows a Poisson distribution with mean 2, find (i) P(X=0), (ii) P(X≥2).

9. What is the probability of getting a spade or an ace card from a packet of 52 cards.

10. Evaluate $\int_0^{\pi/2} \sin^2 x\, dx$

PTO

Answer briefly **(10X2 = 20)**

11. Show that $log_a b log_b c \; log_c a = 1$
12. Define rank of a matrix
13. Write down the two regression equations.
14. Define modulus of a complex number.
15. Define limits of a function.
16. What is a vector valued function.
17. What is the probability of a leap year contains 53 Sundays.
18. Define orthogonal unit vectors. State their relationship.
19. If tan A = $\frac{1}{2}$ and is in the third quadrant, find sin A.
20. Find r if P(9,5)+ 5P(9,4) = P(10,r).

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QP Code: **Reg. No……**

FIRST YEAR B.Sc. (MRT) DEGREE EXAMINATION……......, 2015

Paper VI: COMPUTER SCIENCE

(Introduction to IT and Programming)

Model Question Paper

Answer all questions
Draw diagrams wherever necessary

Time: 3 hrs. Maximum Marks:100

Essay **(2x20=40)**

1. Describe different generations of computers. Explain advantages and disadvantages of each generation.
2. Explain conditional and loop statements in C language.

Short Notes **(8x5=40)**

3. Explain the functional units of a digital computer
4. Explain the difference between batch processing and time sharing OS.
5. Explain any four MS-DOS commands with syntax
6. Explain different operators used in C language
7. What are the difference between structures and union
8. Explain functions in C language
9. Describe the advantages of Health IT.
10. E-Commerce and E-Publishing

Answer briefly **(10x2=20)**

11. Assembly language
12. Different type of computer networks
13. Ms-Office package
14. List four commonly used operating systems
15. Preprocessor directives in C language
16. Different types of Arrays in C language
17. Different storage classes used in C language
18. Enumerated data type in C language.
19. Internet and World Wide Web
20. Web server and Web browser.
