Question Paper

Exam Date & Time: 04-Dec-2019 (02:00 PM - 04:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

FIRST SEMESTER B.Sc. RADIOTHERAPY TECHNOLOGY DEGREE EXAMINATION - DECEMBER 2019 SUBJECT: BRTT 105 - FUNDAMENTALS OF COMPUTERS AND COMPUTER APPLICATIONS

(2016 RV SCHEME)

Wednesday, December 04, 2019 (14.00 - 16.00)

Marks: 50 **Duration: 120 mins.**

Answer all the questions.

1) Explain the different generations of computers with examples. (10)

2) What are the functions of an Operating System? Explain the different types of Operating Systems with examples. (10)

3) **Answer the following questions:**

3A) Explain the working of the mouse as a pointing device. (5)

3B) Explain the features of a Cathode Ray Tube (CRT) monitor with a neat diagram. (5)

3C) Compare the features and purpose of EPROM and EEPROM. (5)

3D) Explain the working of Compact Disks (CD) with a neat diagram. (5)

4) **Answer the following questions in brief:**

4A) Write the steps in MS Excel to calculate the column "Price After Tax" (2)

	A	B	C
1	**Tax Rate**	1.15	
2			
3	**Item**	**Price**	**Price After Tax**
4	Mattress	3000	
5	desk	5000	
6	Lamp	2000	

4B) What does the resolution of a monitor indicate? (2)

4C) What is the difference between impact printers and non-impact printers? (2)

4D) Differentiate between the number and auto number data types in MS-Access. (2)

4E) **Write the steps in MS Word to:** (2)

i) Add a Header with the authors name and email address, centered

ii) Add a footer with page number

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Question Paper

Exam Date & Time: 05-Dec-2019 (02:00 PM - 04:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

FIRST SEMESTER B.Sc. RADIOTHERAPY TECHNOLOGY DEGREE EXAMINATION - DECEMBER 2019
SUBJECT: BRTT 101 - BASIC PHYSICS
(2016 RV SCHEME)
Thursday, December 05, 2019 (14.00 - 16.00)

Marks: 50 **Duration: 120 mins.**

Answer all the questions.

1)	What are rectifiers? Explain the types and working of rectifiers.	(10)
2)	Write in detail about Newton's laws of motion.	(10)
3)	**Answer the following questions:**	
3A)	What is self-induction? Derive an equation for self-induction.	(5)
3B)	Write a note on Quantum theory of Radiation.	(5)
3C)	Write a note on florescence and phosphorescence.	(5)
3D)	Derive the equation for 'ε' in the case of a rotating coil in a magnetic field.	(5)
4)	**Answer the following:**	
4A)	What is mutual-induction?	(2)
4B)	Give any two examples of action-reaction pairs in day-to-day life.	(2)
4C)	What is electromotive force and voltage drop in an electric network?	(2)
4D)	Define mole.	(2)
4E)	Give any two examples of inertia.	(2)

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Question Paper

Exam Date & Time: 06-Dec-2019 (02:00 PM - 05:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

FIRST SEMESTER B.Sc. RADIOTHERAPY TECHNOLOGY DEGREE EXAMINATION - DECEMBER 2019
SUBJECT: BRTT 103 - BASIC AND APPLIED MATHEMATICS
(2016 RV SCHEME)
Friday, December 06, 2019 (14.00 - 17.00)

Marks: 100 **Duration: 180 mins.**

Answer all the questions.

1A) Define:
i) Sets ii) Subsets iii) Proper subset iv) Universal Set with examples. (7)

1B) If *A*(-5,7), *B*(-4,-5), *C*(-1, -6), *D* (4,5) are the vertices of a quadrilateral, Find the area of the quadrilateral ABCD. (7)

1C)
Prove that: i) $\sin A \cos A \tan A + \cos A \sin A \cot A = 1$
ii) $(\cot\theta - 1)^2 + (\cot\theta + 1)^2 = 2\ cosec^2\theta$ (6)

2A) Solve: i) $\int \left(\frac{1}{x} - \frac{1}{x^2} + \frac{4}{x^3}\right) dx$ & ii) $\int \left(x + \frac{1}{x}\right)^2 dx.$ (7)

2B) Differentiate: i) $y = x^3 - 3x + 7$ & ii) $y = (3x^2 + 8)(5x^3 + 7).$ (7)

2C) Solve the equation x+y $\frac{dy}{dx}$ = 0 using separation of variables. (6)

3A) Evaluate: $\lim_{x \to 1} \frac{x^2 - 5x + 4}{x^2 - 4x + 3}.$ (5)

3B) Integrate: $\int x \log x \, . dx$ by integrating by parts. (5)

4) Romila went to a stationery shop and purchased 2 pencils and 3 erasers for ₹ 9. Her friend Sonali saw the new variety of pencils and erasers with Romila, and she also bought 4 pencils and 6 erasers of the same kind for ₹ 18. Represent this situation algebraically and graphically. (10)

5A) In right angled Triangle OPQ, right angled at P, OP=1cm, and OQ=7cm. Determine the values of all trigonometric ratios with angle Q. (5)

5B) Find the area of Triangles:
i) (2, 3), (-1, 0), (2, -4) & ii) (-5, -1), (3, -5), (5, 2) (5)

5C) Define Constant function, Identity function, linear function with examples. (5)

5D) Form the differential equation given that *y = A* cos*x + *sin*x* where 'A' is an arbitrary constant. (5)

5E) Find the area of a sector of a circle with radius 6 cm if angle of the sector is 60º. (5)

5F) If $y=e^{ax}\ sinbx_1$ prove that $y_2 - 2ay_1 + (a2 + b2)y=0$ (5)

6A) Prove that: $\frac{\sin A}{1+\cos A} + \frac{1+\cos A}{\sin A} = 2\ cosec\ A$ (2)

6B) Draw the Venn Diagram For $A \cup (B \cup C)$ and $(A \cup B) \cup C$. (2)

6C) Find the volume of right circular cone if it base area 154 cm2 and height 12 cm. (2)

6D) Find the roots of the following equation by factorization method:
2x2 - 5x + 3 = 0 (2)

6E) Solve: $\int (x^2 + 1)(2x^3 - 6x)\,.\,dx$ (2)