

B. Voc. Automobile Technology - 2nd Sem.

(2517)

Paper-V: Physics**Time Allowed: 3 hrs.****Max. Marks: 75**

- Note:**
- Section-A is Compulsory.**
 - Attempt any FIVE questions from Section-B.**
 - Attempt any THREE questions from Section-C.**

Section-A

1. Explain the difference between Vector quantity and a scalar quantity.
2. Define a Unit Vector.
3. Define Null Vector.
4. Define Negative Vectors.
5. Write the units of Velocity in C.G.S. and SI.
6. What is Uniform Velocity?
7. Explain NOT gate and its truth table.
8. Explain NOR gate and its truth table.
9. Explain Universal gates.
10. Convert $(11011)_2$ to an equivalent decimal. (10x2=20)

Section-B

11. Subtract 0101 from 1101.
12. Add the following binary numbers.
i) 1101 and 0111 ii) 1010.11 and 1011.10
13. Produce AND, OR and NOT gates from NOR gates.
14. Explain X-OR gate and its truth table.
15. Explain the associative property of vectors addition.

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- 16. Explain the dot and cross product of vectors.
- 17. Draw and explain:-
 - i) Displacement Time graph
 - ii) Velocity time graph for uniform motion.
- 18. Derive the relation $v^2 - u^2 = 2as$

(5x5=25)

Section-C

- 19. Derive the relations:
 - i) $v = u + at$
 - ii) $S = ut + \frac{1}{2} at^2$
- 20. Explain triangle law of vector addition.
- 21. Explain Parallelogram Law of vector addition.
- 22. Find the resultant of two velocities, 3m/s along east and 4ms along north.
- 23. Write and explain the truth tables of NAND, NOR, XOR and XNOR gates.
- 24. Show that NAND and NOR gates are universal gates.

(3x10=30)

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