VIVEKANANDA MATRIC HR SEC SCHOOL, UTHUKOTTAI

STD & SEC : XI - A MODEL - I

SUBJECT : PHYSICS DATE : 17.03.2023

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II. Answer any SIX questions. Question No. 18 is compulsory **6x2=12**

16. Write the rules for significant figures.
17. What is the difference between sliding and slipping?
18. There are two Carnot engines A and B operating in two different temperature regions. For Engine A the temperatures of the two reservoirs are 150°C and 100°C. For engine B the temperatures of the reservoirs are 350°C and 300°C. Which engine has lesser efficiency?
19. Distinguish between intensity of sound and loudness.
20. What is concurrent forces. State Lami's theorem.
21. Write a short notes on surface tension. (plication
22. Why do the astronauts experience weightlessness inside the spacecraft?
23. Differentiate : Scalars and vectors.
24. Compare translational and rotational motion.

III. Answer any SIX questions. Question No. 32 is compulsory **6x3=18**

25. Derive Mayer's relation for an ideal gas.
26. Explain the types of equilibrium with suitable examples.
27. State Kepler's three laws.
28. Explain in detail the triangle law of addition. (Parallelogram law & Vector)
29. Mention the characteristics of stationary waves and Progressive waves.
30. Derive Poiseuille's formula for the volume of a liquid flowing per second through a pipe under streamlined flow. Mentu (abc)
31. Write down the postulates of kinetic theory of gases.

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32. A nurse measured the average heart beats of a patient and reported to the doctor in terms of time period as 0.8 s. Express the heart beat of the patient in terms of number of beats measured per minute.

33. Explain in detail the various types of errors.

IV. Answer all the questions.

34.a) State and prove Bernoulli's theorem for a flow of incompressible, non-viscous, and streamlined flow of fluid.

(OR)

b) Discuss the properties of scalar and vector products.

35. a) Derive an expression for escape speed.

(OR)

b) i) Describe the method of measuring angle of repose.

ii) Briefly explain the origin of friction. Show that in an inclined plane, angle of friction is equal to angle of repose.

36. a) i) State and prove perpendicular axis theorem.

ii) Discuss conservation of angular momentum with example.

(OR)

b) Derive the expression for mean free path of the gas.

37. a) Discuss the simple pendulum in detail and State the laws of simple pendulum.

(OR)

b) Explain the Doppler effect and discuss its cases.

38. a) Explain in detail Carnot heat engine and derive the expression for Carnot engine efficiency.

(OR)

b) What do you mean by propagation of errors? Explain the propagation of errors in addition and multiplication.