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Sample Question Paper - SET 1

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Class	XII	Subject	Mathematics (041)
Chapter	11 - Three Dimensional Geometry	Time Allowed	18 Minutes
Maximum Marks	9	Date	_____

GENERAL INSTRUCTIONS:

1. This question paper contains **4 questions** from Chapter 11 - Three Dimensional Geometry.
2. All questions are compulsory.
3. Questions 1-2 carry **1 mark each**.
4. Question 3 carries **2 marks**.
5. Question 4 carries **5 marks**.
6. Show all steps of your calculations clearly.
7. Use proper mathematical notation and terminology.

HOW TO SUBMIT:

1. Solve this question paper in your notebook or on loose sheets.
2. Clearly write your **Name, CBSE Roll Number, School Name, Place, and Date** on the first page.
3. Upload your solved paper at our website: **www.mathlove.in**

4. Check your **detailed report card on the website** after evaluation.
5. For any queries or assistance, WhatsApp us at **+91-7869553517**

SECTION A - 1 MARK QUESTIONS (2 × 1 = 2 Marks)

Q1. If a line makes angles 90°, 135°, and 45° with the x, y and z-axes respectively, then find its direction cosines. **[1]**

Q2. Find the angle which the line $\mathbf{r} = (\hat{\mathbf{i}} + 2\hat{\mathbf{j}} - \hat{\mathbf{k}}) + \lambda(\hat{\mathbf{i}} - \hat{\mathbf{j}} + \hat{\mathbf{k}})$ makes with the positive direction of x-axis. **[1]**

SECTION B - 2 MARKS QUESTION (1 × 2 = 2 Marks)

Q3. Find the vector equation of the line passing through the point (1, 2, -4) and perpendicular to the two lines:

$\mathbf{r} = (8\hat{\mathbf{i}} - 19\hat{\mathbf{j}} + 10\hat{\mathbf{k}}) + \lambda(3\hat{\mathbf{i}} - 16\hat{\mathbf{j}} + 7\hat{\mathbf{k}})$ and

$\mathbf{r} = (15\hat{\mathbf{i}} + 29\hat{\mathbf{j}} + 5\hat{\mathbf{k}}) + \mu(3\hat{\mathbf{i}} + 8\hat{\mathbf{j}} - 5\hat{\mathbf{k}})$ **[2]**

SECTION C - 5 MARKS QUESTION (1 × 5 = 5 Marks)

Q4. Find the shortest distance between the lines:

$\mathbf{r} = (6\hat{\mathbf{i}} + 2\hat{\mathbf{j}} + 2\hat{\mathbf{k}}) + \lambda(\hat{\mathbf{i}} - 2\hat{\mathbf{j}} + 2\hat{\mathbf{k}})$ and

$\mathbf{r} = (-4\hat{\mathbf{i}} - \hat{\mathbf{k}}) + \mu(3\hat{\mathbf{i}} - 2\hat{\mathbf{j}} - 2\hat{\mathbf{k}})$

Also, verify whether the given lines are skew lines or not. **[5]**

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