



DURATION: TWO HOURS (2 HOURS)

Date: 23rd February, 2010

Time: 10.00 am – 12.00 noon

Answer FOUR Questions ONLY.

Two questions from each part should be answered.

PART – A

Q1.

i. Simplify as far as possible.

$$\left[\frac{a^4 - b^4}{a^2 - 2ab + b^2} \right] \div \left[\frac{a^3 + b^3}{ab^2 - b^3} \times \frac{a^2b^2 + b^4}{a^2 - ab + b^2} \right]$$

ii.

a) Prove that,

$$(\cos 7\theta + \cos \theta)^2 + (\sin 7\theta + \sin \theta)^2 = 4 \cos^2 3\theta$$

b) Show that,

$$\tan 3\theta = \frac{3 \tan \theta - \tan^3 \theta}{1 - 3 \tan^2 \theta}$$

If, $\tan \theta = \frac{1}{2}$ and $\tan \alpha = \frac{9}{13}$, show that $\tan (3\theta - \alpha) = 1$.

Q2.

i. Evaluate the following limit

$$\lim_{\theta \rightarrow 0} \left(\frac{1 - \cos 2\theta}{\theta^2} \right)$$

ii. Differentiate with respect to x

a) $\sqrt{3x^2 + 1}$

b) $\frac{x^3 + 1}{x^3 - 1}$

iii. Integrate the following functions ;

a) $\int \left(x + \frac{1}{x}\right)^3 dx$

b) $\int \frac{6x+4}{\sqrt{3x^2+4x+1}} dx$

Q3.

The grouped frequency distribution in the accompanying table represents a sample of ages with 120 randomly selected patients admitted to a hospital.

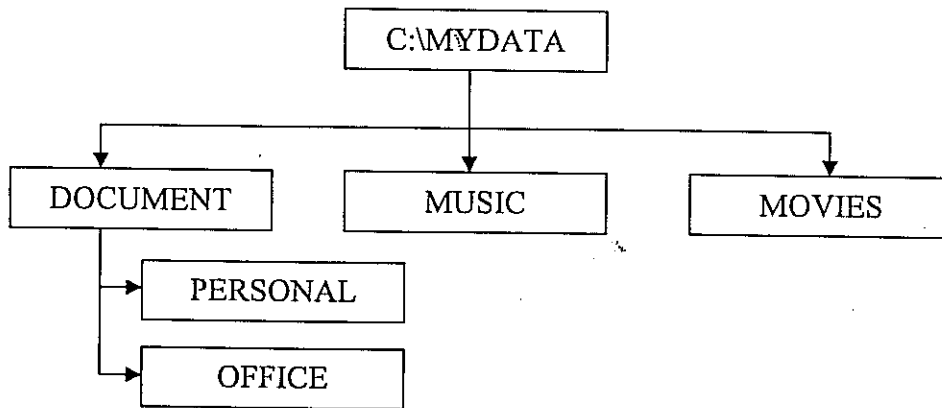
Age of Patients	Frequency
0-8	17
9-17	14
18-26	10
27-35	14
36-44	10
45-53	16
54-62	9
63-71	11
72-80	8
81-89	11
Total	120

- i. Find the mean, median and mode of the above data.
- ii. Find the standard deviation of the above data.

PART - B

Q4.

- i. Create the following directory structure using MS-DOS commands.



- ii. Using the above directory structure, write the suitable MS-DOS commands to perform the following tasks,

- a) There are two files named 'sample1.doc' and 'sample2.txt' stored in the C:\MYDATA folder. Copy these two files into the PERSONAL folder.
- b) Delete the file named 'sample2.txt' stored in the C:\MYDATA folder.

Q5.

- i. Briefly describe the types of software.
- ii. Write three Operating Systems which are popular today.
- iii. Write examples for each category of applications software listed below.
- a) Word processor
- b) Spreadsheet
- c) Presentation program

Q6.

Use the following data set on the EXCEL worksheet (*Figure 1*) to answer the questions given below.

	A	B	C	D	E	F	G
1	Index	Marks1	Marks2	Total	average	Grade	
2	CS0001	20	78				
3	CS0002	65	52				
4	CS0003	98	36				
5	CS0004	45	54				
6	CS0005	24	12				
7	CS0006	12	87				
8	CS0007	78	56				
9	CS0008	25	96				
10	CS0009	65	45				
11	CS0010	32	87				
12							

Figure 1: EXCEL work sheet

Write the EXCEL functions to do the following.

- i. Get the total marks under column 'D' (Total).
- ii. Get the average marks under column 'E' (Average).
- iii. Print the 'Grade' of each Index number under column 'F' (Grade), according to the following criteria.

Mark	Grade
< 40	F
<65	C
<75	B
<100	A

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