M.Sc. DEGREE EXAMINATION - MATHEMATICS THIRD SEMESTER - NOVEMBER 2023 PMT3MC01 - TOPOLOGYDate: 30-10-2023 Dept. No.Max. : 100 MarksTime: 01:00 PM - 04:00 PMMax. : 100 MarksSECTION A - K1 (C01)Max. : 100 MarksSECTION A - K1 (C01)Answer ALL the questions (5 x 1 = 5)Answer the followinga Define a topological space with an example.b) What doy our mean by a subspace topology?c) Explain briefly a closed subset in a topological space.Office a compact space.SECTION A - K2 (C01)Answer ALL the questions (5 x 1 = 5)Choose the correct answera) (1) (1,2) is open in R(ii) (1,2,1) is open in R(iii) (1,2,2) is open in R(iii) (1,2,2) is open in R(ii) (1,2,1) is open in N(iii) $A = \{x/\frac{1}{2} \le  x  < 1\}$ is not open in Y & R(iii) $B = \{x/\frac{1}{2} \le  x  < 1\}$ is open in Y & R(iii) $B = \{x/\frac{1}{2} \le  x  < 1\}$ is open in Y & R(iii) $B = \{x/\frac{1}{2} \le  x  < 1\}$ is not open in Y(iv) $D = \{x/\frac{1}{2} \le  x  < 1\}$ is not open in Y & R(iii) $B = \{x/\frac{1}{2} \le  x  < 1\}$ is open in Y & R(iii) $B = \{x/\frac{1}{2} \le  x  < 1\}$ is not open in Y & R(iv) $D = \{x/\frac{1}{2} \le  x  < 1\}$ is not open in Y & R(iii) $B = (x/\frac{1}{2} \le  x  < 1]$	LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034			
HIRD SEMESTER - NOVEMBER 2023         PMT3MC01 - TOPOLOGY         Max. : 100 Marks         Time: 01:00 PM - 04:00 PM         SECTION A - K1 (C01)         Max. : 100 Marks         SECTION A - K1 (C01)         Answer ALL the questions       (5 x 1 = 5)         Answer the following         a)       Define a topological space with an example.       (b)         Mystar the following         a)       Define a compact space topology?       (c)         c)       Explain briefly a closed subset in a topological space.       (d)         Ment conv us any that a topological space is separated?         e)       Define a compact space.       (5 x 1 = 5)         SECTION A - K2 (C01)         Answer ALL the questions       (5 x 1 = 5)         2       Choose the correct answer       (c)         a)       (i) [1,2] is open in R       (ii) [1,2] is open in R       (iii) [1,2] is open in R         (iii) [1,2] is open in R       (iii) [1,2] is open in R       (iii) [1,2] is open in Y & R       (iii) [1,2] is open in Y & R         (iv) (1,2] is open in R       (iii) [2,2] <1] is open in Y & R       (iiii) [2,2] <1] is open in Y & R	M.Sc. DEGREE EXAMINATION – MATHEMATICS THIRD SEMESTER – NOVEMBER 2023			
PMT3MC01 - TOPOLOGY         PMT3MC01 - TOPOLOGY         Date: 30-10-2023       Dept. No.       Max. : 100 Marks         Time: 01:00 PM - 04:00 PM         SECTION A - K1 (C01)         Answer ALL the questions       (5 x 1 = 5)         Answer the following         a)       Define a topological space with an example.       b)       What do you mean by a subspace topology?       c)         Explain briefly a closed subset in a topological space.         d)       When can you say that a topological space is separated?       c)       c)         Answer ALL the questions       (5 x 1 = 5)         Answer ALL the questions       (5 x 1 = 5)         Answer ALL the questions       (5 x 1 = 5)         Answer ALL the questions       (5 x 1 = 5)         Answer ALL the questions       (5 x 1 = 5)         (i) (1,2) is open in R       (ii) (1,2) is open in R         (iii) (1,2) is open in R       (iii) (1,2) is open in R         (iii) (1,2) is open in R       (iii) (1,2) is open in N         (iii) (2 = {x/ $\frac{1}{2} <  x  < 1$ is oopen in Y & R       (iii) (2 = {x/ $\frac{1}{2} <  x  < 1$ is oopen in Y & R         (iii) (2 = {x/ $\frac{1}{2} <  x  < 1$ is oopen in Y & R       (iii) (0,1) is compa				
Mato accord a for constant         Max. : 100 Marks         Time: 01:00 PM - 04:00 PM         SECTION A - K1 (CO1)         Max. : 100 Marks         SECTION A - K1 (CO1)         Answer ALL the questions (5 x 1 = 5)         Answer the following         a)       Define a topological space with an example.       b)       What do you mean by a subspace topology?       c)         c)       Explain briefly a closed subset in a topological space.       d)       When can you say that a topological space is separated?       c)         Define a compact space.         SECTION A - K2 (CO1)         Answer ALL the questions (5 x 1 = 5)         Answer ALL the questions (5 x 1 = 5)         Answer ALL the questions (5 x 1 = 5)         Answer ALL the questions (5 x 1 = 5)         Answer ALL the questions (5 x 1 = 5)         Answer ALL the questions (5 x 1 = 5)         Answer ALL the questions (5 x 1 = 5)         Answer ALL the questions (5 x 1 = 5)         Answer ALL the questions (5 x 1 = 5)         Colspan= Answer         Answer ALL the questions (5 x 1 = 5)         (i) (1,2) is op				
Date: 30-10-2023 Time: 01:00 PM - 04:00 PMMax.: 100 MarksSECTION A - K1 (CO1)Answer ALL the questions(5 x 1 = 5)1Answer the followinga)Define a topological space with an example.b)What do you mean by a subspace topology?c)Explain briefly a closed subset in a topological space.d)When can you say that a topological space.d)When can you say that a topological space.e)Define a compact space.SECTION A - K2 (CO1)Answer ALL the questions(i)[1,2] is open in R(ii)(1,2] is open in R(iii)(1,2) is open in R(iii)(1,2) is open in R(iv)(1,2) is open in R(iv)(1,2) is open in R(iii)(1,2) is open in R(iv)(1,2) is open in R(iv)(2,1) < 1; is open in Y & R(iv)D = {x/ $\frac{1}{2} \le  x  < 1$ is open in Y & R(v)D = {x/ $\frac{1}{2} \le  x  < 1$ is open in Y & R(v)D = {x/ $\frac{1}{2} \le  x  < 1$ is open in Y & R(v)D = {x/ $\frac{1}{2} \le  x  < 1$ is open in Y & R(v)D = {x/ $\frac{1}{2} \le  x  < 1$ is open in Y & R(v)D = {x/ $\frac{1}{2} \le  x  < 1$ is open in Y & R(v)D = {x/ $\frac{1}{2} \le  x  < 1$ is open in Y & R(v)D = {x/ $\frac{1}{2} \le  x  < 1$ is open sets in X are		PMISMC01 - TOPOLOGY		
Index 1 for matterSECTION A - K1 (C01)SECTION A - K1 (C01)Answer ALL the questionsa) Define a topological space with an example.b) What do you mean by a subspace topology?c) Explain briefly a closed subset in a topological space.d) When can you say that a topological space is separated?e) Define a compact space.SECTION A - K2 (C01)Answer ALL the questions(5 x 1 = 5)2 Choose the correct answera) (i) [1,2] is open in R(ii) (1,2] is open in R(iii) (1,2] is open in R(iv) (1,2) is open in R(iv) (2,2) is open in R(iv) (2,2) is open in R(iv) $P = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R(iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R(iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R(iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R(iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R(v) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R(v) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R(v) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R(v) $D = (1)$ And X are open </th <th>1</th> <th colspan="3">Date: 30-10-2023 Dept. No. Max. · 100 Marks</th>	1	Date: 30-10-2023 Dept. No. Max. · 100 Marks		
SECTION A - K1 (C01)Answer ALL the questions(5 x 1 = 5)Answer the following1a) Define a topological space with an example.b)b) What do you mean by a subspace topology?c)Explain briefly a closed subset in a topological space.d)d) When can you say that a topological space is separated?c)e) Define a compact space.SECTION A - K2 (CO1)Answer ALL the questions(5 x 1 = 5)Choose the correct answera)(i) [1,2] is open in R(ii) [1,2] is open in R(ii) [1,2] is open in R(iii) (1,2] is open in Y & R(iii) $(1,2]$ is open in Y & R(iii) (1,2] is open in Y & R(iii) $C = {x/\frac{1}{2} <  x  < 1}$ is open in Y & R(iii) $C = {x/\frac{1}{2} <  x  < 1}$ is open in Y & R(iii) $0$ and X are closed(iii) abitrary intersections open sets in X are open in X(iv) $D = {x/\frac{1}{2} <  x  < 1}$ is open in Y & R(ii) (0,1] is compact(iii) (0,1] is not compact(iii) (0,1] is not compact(iii) (0,1] is not compact(iii) (0,1] is not compact(iii) Every closed subset of a topological space is closed(ii) Every closed subset of a topological space is closed(ii) Every limit point compact space is compact space(iv) Every limit point compact space is compact space <th>,</th> <th colspan="3">Time: 01:00 PM - 04:00 PM</th>	,	Time: 01:00 PM - 04:00 PM		
SECTION A - K1 (C01)Answer ALL the questions(5 x 1 = 5)Answer the following(5 x 1 = 5)Define a topological space with an example.(5 x 1 = 5)What do you mean by a subspace topology?(2)Explain briefly a closed subset in a topological space.(3)When can you say that a topological space is separated?(5 x 1 = 5)Answer ALL the questions(5 x 1 = 5)2Choose the correct answera)(i) [1,2] is open in R(ii) [1,2] is open in R(iii) (1,2) is open in Y & R(iii) $B = \left\{x/\frac{1}{2} \mid x \mid 1\right$ is open in Y & R(iii) $B = \left\{x/\frac{1}{2} \mid x \mid 2\right$ is open in Y & R(iii) $0$ and $x$ are closed(iii) $0$ and $x$ are closed(iii) $0$ and $x$ are closed(iii) arbitrary intersections open sets in $X$ are open in $X$ (iv) $0$ and $x$ are closed(iii) $0$ , 1]s is otompat(iii) $0$ , 1]s is not compat(iii) $0$ , 1]s is not compat(iiii) Every closed subset o				
Answer ALL the questions(5 x 1 = 5)1Answer the following2Define a topological space with an example.3Define a topological space topology?4When can you say that a topological space.5Define a compact space.6Define a compact space.7Answer ALL the questions7Choose the correct answer8(i) [1,2] is open in R(ii) [1,2] is open in R(iii) (1,2] is open in R(iv) $A = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is opt open in Y & R(iv) $D = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is opt open in Y & R(iv) $D = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is opt open in Y & R(iv) $D = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is opt open in Y & R(iv) $D = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is opt open in Y & R(iv) $D = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is opt open in Y & R(iv) $D = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is opt open in X are open in X(iv) are torgat(iv) optitary intersections open sets in X are open in X(iv) are torgat(iii) (0,1] is not bounded(iv) (0,1] is not compact(iv) (0,1] is not bounded(iv) Every limit point compact space is closed(iv) Every limit point compact space is compact space(iv) Every limit point compact space i	SECTION A – K1 (CO1)			
1Answer the followinga)Define a topological space with an example.b)What do you mean by a subspace topology?c)Explain briefly a closed subset in a topological space.d)When can you say that a topological space is separated?e)Define a compact space.SECTION A – K2 (CO1)Answer ALL the questions(j)(j)(j)(j)j)(i)(j)(j)j)(i)(j)(j)j)(i)(j)(j)j)(j)(iii)(j.2)j)(j)(iii)(j.2)j)(j)j)(j)(j)(j.2)j)(j)j)(j)j)(j)j)(j)j)(j)j)(j)j)(j)j)(j)j)(j)j)(j)j)(j)j)(j)j)(j)j)(j)j)(j)j)(j)j)(j)j)(j)j)(j)j)(j)j)(j)j)(j)j)(j)j)(j)j)(j)j)(j)j)(j)j)(j)j)(j)j)(j)j)(j)j)j) <t< th=""><th></th><th>Answer ALL the questions(5 x 1 = 5)</th></t<>		Answer ALL the questions(5 x 1 = 5)		
a)Define a topological space with an example.b)What do you mean by a subspace topology?c)Explain briefly a closed subset in a topological space.d)When can you say that a topological space is separated?e)Define a compact space.SECTION A - K2 (CO1)(1) 1,2] is open in R(ii) (1,2] is open in R(iii) (1,2] is open in R(iii) (1,2] is open in R(iv) (1,2] is open in Y & R(iv) $A = \{x/\frac{1}{2} <  x  < 1\}$ is not open in Y & R(iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R(iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R(iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R(iv) ard X are open(iv) ard X are open(iv) do and X are open(iv) arbitrary unions of open sets in X are open in X(v) (0,1] is not compact(iii) (0,1] is not compact(iii) (0,1] is not compact(iii) (0,1] is not bounded(iv) (0,1] is not bounded(iv) (0,1] is not bounded is compact space eed not be compact(iii) Every limit point compact space is closed(iii) Every limit point compact space is compact space(iv)	1	Answer the following		
b) What do you mean by a subspace topology? c) Explain briefly a closed subset in a topological space. d) When can you say that a topological space is separated? e) Define a compact space. <b>SECTION A – K2 (CO1)</b> Answer ALL the questions (5 x 1 = 5) 2 Choose the correct answer a) (i) [1,2] is open in R (ii) [1,2] is open in R (iii) (1,2] is open in R (iii) (1,2] is open in R (iv) $1 = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R (i) $A = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R (ii) $B = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R (iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R (iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R (iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R (iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R (iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R (iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R (iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R (iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R (iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R (iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R (iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R (iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R (iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R (iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R (iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R (iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R (iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R (iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R (iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R (iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R (iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R (iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R (iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R (iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R (iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R (iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R (iv) $D = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R (iv) $D = (1)$ is obsciectio	a)	Define a topological space with an example.		
c)Explain briefly a closed subset in a topological space.d)When can you say that a topological space is separated?e)Define a compact space.SECTION A – K2 (CO1)Answer ALL the questions (5 x 1 = 5)2Choose the correct answera)(i) [1,2] is open in R(iii) (1,2] is open in R(iv) (1,2) is open in R(iv) (1,2] is open in R(iv) (1,2) is open in R(iv) (1,2] is open in R(iv) (1,2) is open in R(iv) (1,2] is open in Y & R(iv) (1,2) is open in R(iv) (1,2] is open in Y & R(iv) $D = \{x/\frac{1}{2} \le  x  < 1\}$ is open in Y & R(iv) $D = \{x/\frac{1}{2} \le  x  < 1\}$ is open in Y & R(iv) $D = \{x/\frac{1}{2} \le  x  < 1\}$ is open in Y & R(iv) $D = \{x/\frac{1}{2} \le  x  < 1\}$ is open in Y & R(iv) $D = \{x/\frac{1}{2} \le  x  < 1\}$ is open in Y & R(iv) $D = \{x/\frac{1}{2} \le  x  < 1\}$ is open in Y & R(iv) $D = \{x/\frac{1}{2} \le  x  < 1\}$ is open in Y & R(iv) $D = \{x/\frac{1}{2} \le  x  < 1\}$ is open in Y & R(iv) $D = \{x/\frac{1}{2} \le  x  < 1\}$ is open in Y & R(iv) $D = (1,0)$ and X are open(iv) $D = (1,0)$ and X are open(iv) $D = (1,0)$ and X are open(iv) $D = (1,0)$ and X are open sets in X are open in X(iv) old) is not bounded(iv) $(0,1)$ is not bounded(iv) $(0,1)$ is not bounded(iv) $(0,1)$ is not bounded(iv) Every limit point compact space is compact space(iv) Every limit point compact space is sequentially compact <th>b)</th> <th>What do you mean by a subspace topology?</th>	b)	What do you mean by a subspace topology?		
d)When can you say that a topological space is separated?e)Define a compact space.SECTION A - K2 (CO1)Answer ALL the questions (5 x 1 = 5)2Choose the correct answera)(i) [1,2] is open in R(ii) [1,2] is open in R(iii) (1,2] is open in R(iii) (1,2] is open in R(iv) (1,2) is open in R(iv) (1,2) is open in R(iv) (1,2) is open in Rb) $Y = [-1, 1]$ , a subspace of R(ii) $A = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is open in Y & R(iii) $C = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is open in Y & R(iv) $D = \left\{x/\frac{1}{2} \le  x  < 1\right\}$ is open in Y & R(iv) $D = \left\{x/\frac{1}{2} \le  x  < 1\right\}$ is open in Y & R(iv) $D = \left\{x/\frac{1}{2} \le  x  < 1\right\}$ is open in Y & R(iv) $D = \left\{x/\frac{1}{2} \le  x  < 1\right\}$ is open in Y & R(iv) $D = \left\{x/\frac{1}{2} \le  x  < 1\right\}$ is open in Y & R(iv) $D = \left\{x/\frac{1}{2} \le  x  < 1\right\}$ is open in Y & R(iv) $D = \left\{x/\frac{1}{2} \le  x  < 1\right\}$ is open in Y & R(iv) $D = \left\{x/\frac{1}{2} \le  x  < 1\right\}$ is open in Y & R(iv) $D = \left\{x/\frac{1}{2} \le  x  < 1\right\}$ is open in X are open in X(iv) $D = \left\{x/\frac{1}{2} \le  x  < 1\right\}$ is open in X are open in X(iv) $D = \left\{x/\frac{1}{2} \le  x  < 1\right\}$ is open in X are open in X(iv) $D = \left\{x/\frac{1}{2} \le  x  < 1\right\}$ is open in X are open in X(iv) $D = \left\{x/\frac{1}{2} \le  x  < 1\right\}$ is open open in X(iv) $D = \left\{x/\frac{1}{2} \le  x  < 1\right\}$ is open open in X(v) $D = \left\{x/\frac{1}{2} \le  x  < 1\right\}$ is open open in X(iv) $D = \left\{x/\frac{1}{2} \le  x  < 1\right\}$ is open in Compact is Cosed(iv) $D = \left\{x/\frac{1}{2} \le  x  < 1\right\}$ is open open in X(iii) $(D = 1)$ is observed	c)	Explain briefly a closed subset in a topological space.		
e) Define a compact space. SECTION A – K2 (CO1) Answer ALL the questions (5 x 1 = 5) Choose the correct answer (i) [1,2] is open in R (ii) [1,2] is open in R (iii) [1,2] is open in R (iv) (1,2] is open in R (iv) (1,2] is open in R (iv) $A = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is open in Y & R (i) $A = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is open in Y & R (ii) $B = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is open in Y & R (iv) $D = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is open in Y & R (iv) $D = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is open in Y & R (iv) $D = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is open in Y & R (iv) $D = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is open in Y & R (iv) $D = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is open in Y & R (iv) and X are open (ii) 0 and X are copen (iii) out compact (iv) oftirary unions of open sets in X are open in X (iv) (0,1] is not compact (iii) (0,1] is not compact (iii) (0,1] is not compact (iii) (0,1] is not compact space need not be compact (iii) Every closed subset of a topological space is closed (iii) Every closed subset of a compact space need not be compact (iii) Every closed subset of a compact space (iv) Every limit point compact space is sequentially compact (iv) Every limit point compact space is sequentially compact (iv) Every limit point compact space is sequentially compact (iii) Every closed subset of a compact space (iv) Every limit point compact space is sequentially compact (iv) Every limit point compact space is s	d)	When can you say that a topological space is separated?		
SECTION A – K2 (CO1)Answer ALL the questions(5 x 1 = 5)Choose the correct answer(1)(1)(1,2) is open in R(ii)(1,2) is open in R(iii)(1,2) is open in R(iii)(1,2) is open in R(iv)(1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1,2) (1	e)	Define a compact space.		
Answer ALL the questions(5 x 1 = 5)2Choose the correct answera)(i) [1,2] is open in R(ii) [1,2] is open in R(iii) [1,2] is open in R(iv) (1,2) is open in R(iv) $A = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is open in Y & R(ii) $B = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is open in Y & R(iii) $C = \left\{x/\frac{1}{2} \le  x  < 1\right\}$ is open in Y & R(iv) $D = \left\{x/\frac{1}{2} \le  x  < 1\right\}$ is open in Y & R(iv) $D = \left\{x/\frac{1}{2} \le  x  < 1\right\}$ is open in Y & R(iv) $D = \left\{x/\frac{1}{2} \le  x  \le 1\right\}$ is open in Y & R(iv) $D = \left\{x/\frac{1}{2} \le  x  \le 1\right\}$ is open in Y & R(iv) $D = \left\{x/\frac{1}{2} \le  x  \le 1\right\}$ is open in Y & R(iv) $D = \left\{x/\frac{1}{2} \le  x  \le 1\right\}$ is open in Y & R(iii) $(0, 1)$ so and X are open(iii) $(0, 1)$ is compact(iii) $(0, 1)$ is compact(iii) $(0, 1)$ is compact(iii) $(0, 1)$ is not compact(iii) $(0, 1)$ is not boundede)e)(i) Any compact subset of a topological space is closed(ii) Every limit point compact space is compact space(iv) Every limit point compact space is compact space(iv) Every limit point compact space is compact space(iv) Every limit point compact space is sequentially compact(iv)		SECTION A – K2 (CO1)		
2Choose the correct answera)(i) [1,2] is open in R(ii) [1,2] is open in R(iii) (1,2] is open in R(iii) (1,2) is open in R(iv) (1,2) is open in Rb) $Y = [1, 1]$ , a subspace of R(i) $A = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is open in Y & R(ii) $B = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is not open in Y(ii) $C = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is open in Y & R(iv) $D = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is open in Y & R(iv) $D = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is open in Y & R(iv) $D = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is open in Y & R(iv) $D = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is open in Y & R(iv) $D = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is open in Y & R(iii) $(0, 1]$ is compact(iii) $(0, 1]$ is compact(iii) $(0, 1]$ is not compact(iii) $(0, 1]$ is not boundede)e)(i) Any compact subset of a topological space is closed(ii) Every limit point compact space is compact space(iii) Every limit point compact space is compact space(iii) Every limit point compact space is equentially compactUSECTION B – K3 (CO2)Answer any THREE of the following3Prove the pasting lemma		Answer ALL the questions(5 x 1 = 5)		
a) (i) [1,2] is open in R (ii) [1,2] is open in R (iii) [1,2] is open in R (iii) (1,2] is open in R (iv) (1,2) is open in R b) $Y = [-1, 1]$ , a subspace of R (i) $A = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is open in Y & R (ii) $B = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is open in Y & R (iii) $C = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is open in Y & R (iv) $D = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is open in Y & R (iv) $D = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is open in Y & R (i) $\emptyset$ and X are open (ii) $\emptyset$ and X are open (iii) arbitrary intersections open sets in X are open in X (iv) arbitrary unions of open sets in X are open in X (iv) (0,1] is compact (iii) (0,1] is compact (iii) (0,1] is not compact (iii) (0,1] is not bounded e) (i)Any compact subset of a topological space is closed (ii) Every limit point compact space is compact space (iii) Every limit point compact space is compact space (iv) Every limit point compact space is sequentially compact SECTION B – K3 (CO2) Answer any THREE of the following (3 x 10 = 30)	2	Choose the correct answer		
(ii) [1,2) is open in R(iii) (1,2) is open in R(iii) (1,2) is open in Rb) $Y = [-1, 1]$ , a subspace of R(i) $A = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is open in Y & R(ii) $B = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is open in Y & R(iii) $C = \left\{x/\frac{1}{2} \le  x  < 1\right\}$ is open in Y & R(iii) $C = \left\{x/\frac{1}{2} \le  x  < 1\right\}$ is open in Y & R(iii) $Q = \left\{x/\frac{1}{2} \le  x  < 1\right\}$ is open in Y & R(iii) $Q = \left\{x/\frac{1}{2} \le  x  \le 1\right\}$ is open in Y & R(iii) $Q$ and X are open(iii) $Q$ and X are open(iii) arbitrary intersections open sets in X are open in X(iv) arbitrary unions of open sets in X are open in X(iv) (0,1] is compact(iii) (0,1] is compact(iii) (0,1] is not compact(iii) (0,1] is not boundede)(i) (Any compact subset of a topological space is closed(ii) Every limit point compact space is compact space(iii) Every limit point compact space is compact space(iv) very limit point compact space is compact space(iv) Every limit point compact space is compact space(iv) Every limit point compact space is sequentially compactSECTION B – K3 (CO2)Answer any THREE of the following3Prove the pasting lemma	a)	(i) [1,2] is open in R		
(iii) (1,2) is open in R(iv) (1,2) is open in Rb) $Y = [-1, 1]$ , a subspace of R(i) $A = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R(ii) $B = \{x/\frac{1}{2} <  x  < 1\}$ is not open in Y(iii) $C = \{x/\frac{1}{2} \le  x  < 1\}$ is open in Y & R(iv) $D = \{x/\frac{1}{2} \le  x  < 1\}$ is open in Y & R(i) $\emptyset$ and X are open(ii) $\emptyset$ and X are closed(iii) arbitrary intersections open sets in X are open in X(iv) arbitrary unions of open sets in X are open in X(iv) (0,1) is compact(ii) (0,1) is not compact(iii) (0,1) is not compact(iii) (0,1) is not boundede)(i) Any compact subset of a topological space is closed(iii) Every limit point compact space is compact space(iv) Every limit point compact space is compact space(iv) Every limit point compact space is compact space(iv) Every limit point compact space is compact space(ii) Every limit point compact space is compact space(ii) Every limit point compact space is compact space(iv) Every limit point compact space is compact space(iv) Every limit point compact space is compact space(iv) Every limit point compact space is sequentially compactSECTION B – K3 (CO2)Answer any THREE of the following3Prove the pasting lemma		(ii) [1,2) is open in R		
(iv) (1,2) is open in Rb) $Y = [-1, 1]$ , a subspace of R(i) $A = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R(ii) $B = \{x/\frac{1}{2} <  x  < 1\}$ is not open in Y(iii) $C = \{x/\frac{1}{2} \le  x  < 1\}$ is open in Y & R(iv) $D = \{x/\frac{1}{2} \le  x  < 1\}$ is open in Y & R(i) $\emptyset$ and X are open(ii) $\emptyset$ and X are closed(iii) arbitrary intersections open sets in X are open in X(iv) arbitrary unions of open sets in X are open in X(iv) arbitrary open compact(ii) (0,1] is compact(iii) (0,1] is not compact(iii) (0,1] is not boundede)(i) Any compact subset of a topological space is closed(iii) Every limit point compact space is compact space(iv) Very limit point compact space is compact space(iii) Every limit point compact space is compact space(iv) Very limit point compact space is compact space(ii) Every limit point compact space is compact space(iii) Every limit point compact space is compact space(iv) Very limit point compact space is compact space(iv) Every limit point compact space is compact space(iv) Every limit point compact space is compact space(iv) Every limit point compact space is sequentially compactSECTION B – K3 (CO2)Answer any THREE of the following3Prove the pasting lemma		(iii) (1,2] is open in R		
b) $Y = [-1, 1]$ , a subspace of $R$ (i) $A = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is open in Y & R (ii) $B = \left\{x/\frac{1}{2} <  x  < 1\right\}$ is not open in Y (iii) $C = \left\{x/\frac{1}{2} \le  x  < 1\right\}$ is open in Y & R (iv) $D = \left\{x/\frac{1}{2} \le  x  \le 1\right\}$ is open in Y & R (i) $\emptyset$ and X are open (ii) $\emptyset$ and X are closed (iii) arbitrary intersections open sets in X are open in X (iv) arbitrary unions of open sets in X are open in X (iv) arbitrary unions of open sets in X are open in X (iv) arbitrary unions of open sets in X are open in X (iv) (0,1] is not compact (ii) (0,1] is not compact (iii) (0,1] is not bounded e) (i)Any compact subset of a topological space is closed (ii) Every closed subset of a compact space need not be compact (iii) Every limit point compact space is compact space (iv) Every limit point compact space is sequentially compact (iii) Every limit point compact space is sequentially compact (iv) Every limit point compact space is sequentially compact 3 Prove the pasting lemma		(iv) (1,2) is open in R		
(i) $A = \{x/\frac{1}{2} <  x  < 1\}$ is open in Y & R(ii) $B = \{x/\frac{1}{2} <  x  \le 1\}$ is not open in Y(iii) $C = \{x/\frac{1}{2} \le  x  < 1\}$ is open in Y & R(iv) $D = \{x/\frac{1}{2} \le  x  \le 1\}$ is open in Y & R(i) Ø and X are open(ii) Ø and X are closed(iii) arbitrary intersections open sets in X are open in X(iv) arbitrary unions of open sets in X are open in X(iv) (0,1] is compact(iii) (0,1] is not compact(iii) (0,1] is not boundede)(i) Any compact subset of a topological space is closed(ii) Every closed subset of a compact space(iv) Every limit point compact space is sequentially compactSECTION B – K3 (CO2)3Prove the pasting lemma	b)	Y=[-1, 1], a subspace of R		
(ii) $B = \left\{x/\frac{1}{2} <  x  \le 1\right\}$ is not open in Y(iii) $C = \left\{x/\frac{1}{2} \le  x  < 1\right\}$ is open in Y & R(iv) $D = \left\{x/\frac{1}{2} \le  x  \le 1\right\}$ is open in Y & R(i) Ø and X are open(ii) Ø and X are closed(iii) arbitrary intersections open sets in X are open in X(iv) arbitrary unions of open sets in X are open in X(i) (0,1]is compact(ii) (0,1]is not compact(iii) (0,1]is closed(iv) ont bounded(iv) Arbitrary unions of a topological space is closed(ii) Every closed subset of a compact space need not be compact(iii) Every limit point compact space is compact space(iv) Every limit point compact space is sequentially compactSECTION B – K3 (CO2)3Prove the pasting lemma		(i) $A = \left\{ \frac{x}{2} <  x  < 1 \right\}$ is open in Y & R		
(iii) $C = \left\{x/\frac{1}{2} \le  x  < 1\right\}$ is open in Y & R(iv) $D = \left\{x/\frac{1}{2} \le  x  \le 1\right\}$ is open in Y & Rc)(i) $\emptyset$ and X are open(ii) $\emptyset$ and X are closed(iii) arbitrary intersections open sets in X are open in X(iv) arbitrary unions of open sets in X are open in X(iv) arbitrary unions of open sets in X are open in X(ii) (0,1] is compact(iii) (0,1] is not compact(iii) (0,1] is not boundede)(i) Any compact subset of a topological space is closed(ii) Every closed subset of a compact space need not be compact(iii) Every limit point compact space is compact space(iv) Every limit point compact space is sequentially compactSECTION B – K3 (CO2)3Prove the pasting lemma		(ii) $B = \left\{ x / \frac{1}{2} <  x  \le 1 \right\}$ is not open in Y		
(iv) $D = \left\{ x / \frac{1}{2} \le  x  \le 1 \right\}$ is open in Y & Rc)(i) $\emptyset$ and X are open (ii) $\emptyset$ and X are closed (iii) arbitrary intersections open sets in X are open in X (iv) arbitrary unions of open sets in X are open in Xd)(i) (0,1] is compact (ii) (0,1] is not compact (iii) (0,1] is not boundede)(i)Any compact subset of a topological space is closed (ii) Every closed subset of a compact space need not be compact (iii) Every limit point compact space is compact space (iv) Every limit point compact space is sequentially compactb <b>Answer any THREE of the following</b> ( <b>3 x 10 = 30</b> )3Prove the pasting lemma		(iii) $C = \left\{ x / \frac{1}{2} \le  x  < 1 \right\}$ is open in Y & R		
c)(i) Ø and X are open(ii) Ø and X are closed(iii) arbitrary intersections open sets in X are open in X(iv) arbitrary unions of open sets in X are open in Xd)(i) (0,1]is compact(iii) (0,1]is not compact(iiii) (0,1]is not boundede)(i)Any compact subset of a topological space is closed(ii) Every closed subset of a compact space need not be compact(iii) Every limit point compact space is sequentially compact(iv) Every		(iv) $D = \left\{ x / \frac{1}{2} \le  x  \le 1 \right\}$ is open in Y & R		
(ii) Ø and X are closed(iii) arbitrary intersections open sets in X are open in X(iv) arbitrary unions of open sets in X are open in X(iv) arbitrary unions of open sets in X are open in X(ii) (0,1]is compact(iii) (0,1]is not compact(iii) (0,1]is not bounded(iv) (0,1]is not bounded(ii) Every closed subset of a topological space is closed(iii) Every closed subset of a compact space need not be compact(iii) Every limit point compact space is compact space(iv) Every limit point compact space is sequentially compact(iv) Every limit point compact space is sequentially compactSECTION B – K3 (CO2)Answer any THREE of the following3Prove the pasting lemma	c)	(i) Ø and X are open		
(iii) arbitrary intersections open sets in X are open in X         (iv) arbitrary unions of open sets in X are open in X         (iv) arbitrary unions of open sets in X are open in X         (ii) (0,1]is compact         (iii) (0,1]is not compact         (iv) (0,1]is not bounded         (i) (i) Any compact subset of a topological space is closed         (ii) Every closed subset of a compact space need not be compact         (iii) Every limit point compact space is compact space         (iv) Every limit point compact space is sequentially compact         SECTION B – K3 (CO2)         Answer any THREE of the following         (3 x 10 = 30)		(ii) Ø and X are closed		
(iv) arbitrary unions or open sets in x are open in x         (iv) (0,1] is compact         (ii) (0,1] is not compact         (iii) (0,1] is not bounded         (iv) (0,1] is not bounded         (i) (i) Any compact subset of a topological space is closed         (ii) Every closed subset of a compact space need not be compact         (iii) Every limit point compact space is compact space         (iv) Every limit point compact space is sequentially compact         SECTION B – K3 (CO2)         Answer any THREE of the following         (3 x 10 = 30)		(iii) arbitrary intersections open sets in X are open in X		
(ii) (0,1]is not compact         (iii) (0,1]is not compact         (iv) (0,1]is not bounded         (iv) (0,1]is not bounded         (i) Any compact subset of a topological space is closed         (ii) Every closed subset of a compact space need not be compact         (iii) Every limit point compact space is compact space         (iv) Every limit point compact space is sequentially compact         SECTION B – K3 (CO2)         Answer any THREE of the following         (3 x 10 = 30)         3	d)	(i) (0,1]is compact		
(iii) (0,1]is closed         (iv) (0,1]is not bounded         e)       (i)Any compact subset of a topological space is closed         (ii) Every closed subset of a compact space need not be compact         (iii) Every limit point compact space is compact space         (iv) Every limit point compact space is sequentially compact         SECTION B – K3 (CO2)         Answer any THREE of the following       (3 x 10 = 30)         3       Prove the pasting lemma	,	(ii) (0,1]is not compact		
<ul> <li>(iv) (0,1]is not bounded</li> <li>(i) Any compact subset of a topological space is closed</li> <li>(ii) Every closed subset of a compact space need not be compact</li> <li>(iii) Every limit point compact space is compact space</li> <li>(iv) Every limit point compact space is sequentially compact</li> <li>SECTION B – K3 (CO2)</li> <li>Answer any THREE of the following (3 x 10 = 30)</li> <li>Prove the pasting lemma</li> </ul>		(iii) (0,1]is closed		
e)(i)Any compact subset of a topological space is closed (ii) Every closed subset of a compact space need not be compact (iii) Every limit point compact space is compact space (iv) Every limit point compact space is sequentially compactSECTION B – K3 (CO2)(3 x 10 = 30)3Prove the pasting lemma		(iv) (0,1]is not bounded		
<ul> <li>(ii) Every closed subset of a compact space need not be compact</li> <li>(iii) Every limit point compact space is compact space</li> <li>(iv) Every limit point compact space is sequentially compact</li> <li>SECTION B - K3 (CO2)</li> <li>Answer any THREE of the following (3 x 10 = 30)</li> <li>Prove the pasting lemma</li> </ul>	e)	(i)Any compact subset of a topological space is closed		
<ul> <li>(iii) Every limit point compact space is compact space</li> <li>(iv) Every limit point compact space is sequentially compact</li> <li>SECTION B - K3 (CO2)</li> <li>Answer any THREE of the following (3 x 10 = 30)</li> <li>Prove the pasting lemma</li> </ul>		(ii) Every closed subset of a compact space need not be compact		
(iv) Every limit point compact space is sequentially compact         SECTION B – K3 (CO2)         Answer any THREE of the following       (3 x 10 = 30)         3       Prove the pasting lemma		(iii) Every limit point compact space is compact space		
SECTION B – K3 (CO2)         Answer any THREE of the following       (3 x 10 = 30)         3       Prove the pasting lemma		(iv) Every limit point compact space is sequentially compact		
Answer any THREE of the following       (3 x 10 = 30)         3       Prove the pasting lemma	SECTION B – K3 (CO2)			
3 Prove the pasting lemma		Answer any THREE of the following(3 x 10 = 30)		
	3	Prove the pasting lemma		

4	List the limit points of the following sets with explanation.	
	a) $A = (0,1]$ b) $B = \{\frac{1}{n}, n \in N\}$ c) $C = \{0\} \cup (1,2)$ d) $Q$ = the set of all rational numbers	
5	If $f: X \to Y$ is a function where X is metrizable, prove that f is continuous if and only if for every	
	convergent sequence $x_n \to x$ in X, the sequence $f(x_n) \to f(x)$ .	
6	Demonstrate intermediate value theorem.	
7	Is every closed interval in R uncountable? Justify it.	
	SECTION C – K4 (CO3)	
	Answer any TWO of the following(2 x 12.5 = 25)	
8	How would you say that any interval or a ray in a linear continuum <i>L</i> in the order topology is	
	connected?	
9	Examine whether the following statement is true:	
	"If $f: X \to Y$ is a bijective continuous function, X is compact and Y is Hausdorff, then f is a	
	homeomorphism"	
10	Is the product of finitely compact spaces compact? Justify it with a supportive proof	
11	What are the separation axioms? Formulate them.	
SECTION D – K5 (CO4)		
	Answer any ONE of the following(1 x 15 = 15)	
12	Does there exist a metric $d'$ that induces a topology on a metric space $(X, d)$ such that every subset	
	of X is bounded with respect to metric $d'$ ? Prove the supporting result	
13	Examine whether the following statements are true?	
	(i) X is compact metrizable space implies X is limit point compact space.	
	(ii) X is sequentially compact metrizable space implies X is compact space	
	SECTION E – K6 (CO5)	
	Answer any ONE of the following(1 x 20 = 20)	
14	Defend the topologies induced by the euclidean metric and the square metric are the same as the	
	product topology on $\mathbb{R}^n$ .	
15	Demonstrate Urysohn lemma.	
	#######################################	
-		