# TAMIL NADU OPEN UNIVERSITY

**Chennai-15.**

**B.Sc Maths with Computer Applications - Third Year**

**SPOT ASSIGNMENT**

| COURSE | COURSE CODE | ADMISSION YEAR |
|---|---|---|
| **Real and Complex Analysis** | **BMC - 31** | **AY 2016-2017** |

**Time : 1 Hour**
**Total Marks: 25**

Answer all questions.

1. State and prove Baire's Category Theorem. 8 Marks

2. Prove that any compact subset of a metric space is closed and bounded. 9 Marks

3. State and prove Cauchy's integral formula. 8 Marks

# TAMIL NADU OPEN UNIVERSITY

**Chennai-15.**

**B.Sc Maths with Computer Applications - Third Year**

**SPOT ASSIGNMENT**

| COURSE | COURSE CODE | ADMISSION YEAR |
|---|---|---|
| **Linear Algebra and Boolean Algebra** | **BMC - 32** | **AY 2016-2017** |

**Time : 1 Hour**
**Total Marks: 25**

Answer all questions.

1. State and prove equivalent conditions for a subset of a vector space to be a basis for the vector space. 9 Marks

2. Define and inner product space and give examples. Also prove Schwartz's inequality. 8 Marks

3. Prove that the set of all normal subgroups of a group is a modular lattice. 8 Marks

# TAMIL NADU OPEN UNIVERSITY

**Chennai-15.**

**B.Sc Maths with Computer Applications - Third Year**

**SPOT ASSIGNMENT**

| COURSE | COURSE CODE | ADMISSION YEAR |
|---|---|---|
| **Linear Programming and Operations Research** | **BMC- 33** | **AY 2016-2017** |

**Time : 1 Hour**

**Total Marks: 25**

Answer all questions.

1. A marketing manager has 5 salesmen and 5 sales districts. Considering the capabilities of the salesman and the nature of districts, the marketing manager estimates that sales per month (in hundred rupees) for each salesman in each district would be as follows. 9 Marks

| Jobs | Machine | | | | |
|---|---|---|---|---|---|
| | A | B | C | D | E |
| 1 | 32 | 38 | 40 | 28 | 40 |
| 2 | 40 | 24 | 28 | 21 | 36 |
| 3 | 41 | 27 | 33 | 30 | 37 |
| 4 | 22 | 38 | 41 | 36 | 36 |
| 5 | 29 | 33 | 40 | 35 | 39 |

Find the assignment of salesman to districts that will result in maximum sales.

2. Discuss the problem of EOQ with finite rate of replenishment. 9 Marks

3. A TV Repairman finds that the time spent on his jobs has an exponential distribution with mean 30 minutes. If he repairs sets in the order in which they came in and if the arrival of sets is approximately poisson with an average rate of 10 per 8 hours day, what is repairman's expected idle time each day? How many jobs are ahead of the average set just brought in? 7 Marks

# TAMIL NADU OPEN UNIVERSITY

**Chennai-15.**

**B.Sc Maths with Computer Applications - Third Year**

**SPOT ASSIGNMENT**

| COURSE | COURSE CODE | ADMISSION YEAR |
|---|---|---|
| **Graph Theory** | **BMC - 34** | **AY 2016-2017** |

**Time : 1 Hour**
**Total Marks: 25**

Answer all questions.

1 Define Isomorphism between two graphs and give example. Also prove that if G is self-complementary then $p \equiv 0, 1 \pmod 4$. 8 Marks

2 If G is a graph with $p \geq 3$ and $\delta \geq p/2$, prove that G is hamiltonian. 9 Marks

3 Prove that $K_5$ and $K_{3,3}$ are non-planar graphs. 8 Marks

# TAMIL NADU OPEN UNIVERSITY

**Chennai-15.**

**B.Sc Maths with Computer Applications - Third Year**

**SPOT ASSIGNMENT**

| COURSE | COURSE CODE | ADMISSION YEAR |
|---|---|---|
| **Introduction to Internet Programming (Java)** | **BMC - 35** | **AY 2016-2017** |

**Time : 1 Hour**
**Total Marks: 25**

Answer all questions.

| | | |
|---|---|---|
| 1 | Write a note on Java virtual machines (JVM). | 8 Marks |
| 2 | Write a program to check whether a given number is a palindrome or not. | 9 Marks |
| 3 | Write a note on "Multi threading". | 8 Marks |