R2531

Sub. Code
421201

M.Phil. DEGREE EXAMINATION, NOVEMBER – 2024

Second Semester

Tamil

தமிழ் ஆராய்ச்சியின் வளர்ச்சி

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

ஐந்து வினாக்களுக்கு விடையளிக்க.

$(5 \times 15 = 75)$

1. (அ) தமிழில் யாப்பிலக்கண ஆய்வுகள் குறித்து விவரி.

(அல்லது)

(ஆ) குறிப்பு வரைக :

(i) நிகண்டுகள் குறித்த ஆய்வுகள்

(ii) இலக்கண உரைகள் குறித்த ஆய்வுகள்

2. (அ) தமிழில் திணை, துறை பற்றிய ஆய்வுகளின் வளர்ச்சி வரலாற்றை எழுதுக.

(அல்லது)

(ஆ) தமிழில் அற இலக்கிய ஆய்வுகள் பற்றி விவரி.

3. (அ) தமிழில் காப்பிய ஆய்வுகள் பற்றி விவரி.

(அல்லது)

(ஆ) தமிழில் சித்தரிய ஆய்வுகள் குறித்து விளக்குக.

4. (அ) தமிழில் நவீன இலக்கிய ஆய்வுகளின் செல்நெறிகளை விவரி.

(அல்லது)

(ஆ) தமிழில் நாட்டார் வழக்காற்றியல் ஆய்வுகள் பற்றி விவரி.

5. (அ) தமிழாராய்ச்சி வளர்ச்சிக்குத் துணை நிற்கும் நிறுவனங்களையும் அவற்றின் பணிகளையும் விவரி.

(அல்லது)

(ஆ) குறிப்பு வரைக :

(i) எஸ். வையாபுரிப்பிள்ளை

(ii) அ.ச. ஞானசம்பந்தன்

(iii) நா. வானமாமாலை

R2532

Sub. Code
456201

M.Phil. DEGREE EXAMINATION, NOVEMBER – 2024

Second Semester

Economics

CONTEMPORARY ISSUES IN INDIAN ECONOMIC DEVELOPMENT

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A $(5 \times 5 = 25)$

Answer any **five** questions.

1. We need fiscal reforms in India — Discuss.

2. Explain the globalization and its impact on agriculture sector.

3. Sketch the significance of IT sector in Indian economic development

4. Write in detail about the disinvestments made by the Union government recently.

5. Elucidate the agricultural price policy in India.

6. Describe the trends in poverty after the launching of economic reforms in India.

7. Show the major rural development programmes implemented by the Government of India.

8. Explain the main objectives of rural water supply programme.

Part B (5 × 10 = 50)

Answer any **five** questions.

9. Narrate the impact of WTO on India's foreign trade.

10. Apprise the trend and growth of the Indian industry during the post liberalization era.

11. Investment in infrastructure is essential for rapid economic growth — Discuss.

12. Analyze the economics of GM crops and its recent controversy.

13. Explain the zero-budget farming method and explain how it is the way for sustainable agriculture.

14. Assess the recent watershed development programme in India.

15. Describe the role of Primary Health Centre in rural area.

16. Analyze the youth educated unemployment trends in India.

R2594

Sub.Code
821121

M.Phil. DEGREE EXAMINATION, NOVEMBER - 2024

Second Semester

Physical Education

AREA OF DISSERTATION

(CBCS – 2022 onwards)

Time: 3 hrs **Maximum: 75 marks**

Answer all questions, choosing either (a) or (b) **(5 x 15 = 75)**

1. (a) What is the aim of your topic? Explain the objectives and scope of your study.

(or)

(b) What is the meaning of Hypothesis? List out the hypothesis of your study and explain the various types of hypotheses.

2. (a) What are the procedures to be followed in selection of subject? Explain.

(or)

(b) List out the name of test used in your study and explain the method of that testing procedures.

3. (a) What is meaning of research design? Explain experimental design.

(or)

(b) Write short notes on sample. Explain the chrematistic and various types of sampling technique.

4. (a) Give the meaning of data. Explain the various methods of data collection.

(or)

(b) Describe the mechanics of research report.

5. (a) Explain the location and criteria for selecting a research problem.

(or)

(b) What is research proposal? Explain the preparation of research proposal.

R2595

Sub.Code
571201

M.Phil. DEGREE EXAMINATION, NOVEMBER - 2024

Second Semester

Mathematics

FUNCTIONAL ANALYSIS

(CBCS – 2022 onwards)

Time: 3 hrs Maximum: 75 marks

PART A

Answer ALL questions **(10 × 1 = 10)**

1. A sequence $\{x_n\}$ is said to be a Cauchy sequence if to every $V \in \mathfrak{B}$ corresponds an N such that $x_n - x_m \in V$ if ______________
   A. $n > N$ and $m > M$
   B. $n < N$ and $m < M$
   C. $n \geq N$ and $m \geq M$
   D. $n \leq N$ and $m \leq M$
2. A topological vector space X is normable if and only if its origin has origin has a ___________ neighborhood.
   A. Closed bounded
   B. Convex bounded
   C. Convex
   D. Closed
3. The set of the _______ in S are those that are countable unions of nowhere dense sets.
   A. Second category
   B. Complete metric space
   C. Dense sets
   D. First category
4. If X is a topological space, Y is a Hausdorff space, and $f: X \to Y$ is continuous, then the graph G of f is _______.
   A. Closed
   B. Bounded
   C. Continuous
   D. Closed bounded.
5. If $\tau_1 \subset \tau_2$ are topologies on a set X, if $\tau_1$is a Hausdorff topology, and if τ_2 is compact, then________.
   A. $\tau_1 = \tau_2$
   B. $\tau_1 \leq \tau_2$
   C. $\tau_1 \geq \tau_2$
   D. $\tau_1 > \tau_2$

6. If X is a locally convex topological vector space and $E \subset X$ is totally bounded, then $co(E)$ is ___________.
   A. Bounded
   B. Compact
   C. Totally bounded
   D. Closure
7. $({}^{\perp}N)^{\perp}$ is the _________ of N in X^* .
   A. Weak*-closure.
   B. Norm-closure.
   C. Weak closure .
   D. Weak*-topology.
8. If $T \in \mathfrak{B}(X, Y)$, T is compact, and $\mathfrak{R}(T)$ is closed, then ________.
   A. $dim\mathfrak{R}(T) < \infty$
   B. $dim\mathfrak{R}(T) > \infty$
   C. $dim\mathfrak{R}(T) \leq \infty$
   D. $dim\mathfrak{R}(T) \geq \infty$
9. A subspace A of C(S) is an ________ if $fg \in A$ whenever $f \in A$and$g \in A$.
   A. Anti–symmetric
   B. Interior
   C. Algebra
   D. Separates
10. If X is an F-space and if $X = A \oplus B$, then the projection P with range A and null space B is ___________.
   A. Closed
   B. Algebra
   C. Bounded
   D. Continuous

Part B

Answer ALL questions, choosing either (a) or (b). **(5 × 7 = 35)**

11. (a) In a topological vector space X, then prove that
   (i) Every neighborhood of 0 contains a balanced neighborhood of 0, and
   (ii) Every convex neighborhood of 0 contains a balanced convex neighborhood of 0.

(OR)

(b) Prove that every locally compact topological vector space X has finite dimension.

12. (a) Suppose $B: X \times Y \to Z$ is bilinear and separately continuous, X is an F- space, and Y and Z are topological vector spaces. Then prove that $B(x_n, y_n) \to B(x_0, y_0)$ in Z whenever $x_n \to x_0$ in X and$y_n \to y_0$ in Y.

(OR)

(b)State and prove the closed graph theorem.

13. (a) Suppose M is a subspace of a vector space X, p is a semi-norm on X, and f is a linear functional on M such that $|f(x)| \leq p(x) \quad (x \in M)$. Then prove that f extends to a linear functional Λ on X that satisfies$|\Lambda x| \leq p(x) \quad (x \in M)$.

(OR)

(b). State and Prove Milman's theorem.

14. (a) Prove that suppose X and Y are normal spaces. To each $T \in \mathfrak{B}(X, Y)$ corresponds a unique $T^* \in \mathfrak{B}(Y^*, X^*)$ that satisfies $\langle Tx, y^* \rangle = \langle x, T^*y^* \rangle$ for all $x \in X$and$y^* \in Y^*$. Moreover, T^*satisfies$\|T^*\| = \|T\|$.

(OR)

(b). If X is Banach space,$T \in \mathfrak{B}(X)$, T is compact, and $\lambda \neq 0$, then prove that $T - \lambda I$ has closed range.

15. (a) Suppose $0 < p < \infty$, and

(i) μ is a probability measure on a measure space Ω

(ii) S is a closed subspace of $L^p(\mu)$.

(iii) $S \subset L^\infty(\mu)$.

Then prove that S is finite – dimensional.

(OR)

(b). Let G be a compact group, suppose $f \in C(G)$, and define $H_L(f)$ to be the convex hull of the set of all left translates of f. Then prove that the following:

(i)$s \to L_s f$ is a continuous map from G into C(G), and

(ii) The closure of $H_L(f)$ is compact in C(G).

Part C

Answer any THREE questions **(3 × 10 = 30)**

16. If X is a topological vector space with a countable local base, then prove that there is a metric d on X such that

(i) d is compatible with topology of X,

(ii) The open balls centered at 0 are balanced, and

(iii) d is invariant :$d(x + z, y + z) = d(x, y)$ for $x, y, z \in X$.

If, in addition, X is locally convex, then prove that d can be chosen so as to satisfy (i), (ii), (iii) and also

(iv) All open balls are convex.

17. State and Prove the Banach- Steinhaus theorem.

18. State and Prove the Krein- Milmantheorm.

19. Suppose X and Y are Banach spaces and $T \in \mathfrak{B}(X, Y)$. Then prove that T is compact if and only if $T^*$is compact.

20. Prove that suppose $\mu_1, \ldots \mu_n$are real- valued nonatomic measures on a σ- algebra $\mathfrak{M}$. Define $\mu(E) = (\mu_1(E), \ldots, \mu_n(E))(E \in \mathfrak{M})$. Then μ is a function with domain $\mathfrak{M}$ whose range is a compact convex subset of R^n.

21. State and Prove the Open mapping theorem.

22. Prove that in a locally convex space X, every weakly bounded set is originally bounded, and vice versa.

23. Let N be a closed subspace of a topological vector space X. Let τ be the topology of X and defineτ_N. Then prove the following:
    (i). τ_N is a vector topology on X/N; the quotient map $\pi: X \to X/N$ is linear, Continuous, and open.
    (ii). If $\mathfrak{B}$ is a local base for τ, then the collection of all sets $\pi(V)$ with $V \in \mathfrak{B}$ is a local base for τ_N.
    (iii) Each of the following properties of X is inherited by X/N: local convexity, local boundedness,mertizability, normability.
    (iv) If X is an F- space, or a Frechet space, or a Banach space, so is X/N.

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R2596

Sub.Code
552201

M.Phil DEGREE EXAMINATION, NOVEMBER - 2024
Second Semester
Computer Science
ADVANCED CLOUD COMPUTING
(CBCS- 2022 onwards)

Time: 3 Hours **Max. Marks: 75**

<u>Answer all questions either (a) or (b)</u> **(5 x 15 = 75 marks)**

1. (a) Illustrate the Components of Cloud Computing in detail

(Or)

(b) Write in detail about Microsoft Azure Service provider in Cloud Computing

2. (a) Compare SOAP and REST web services in detail

(Or)

(b) How to configure and manage Virtual Storage in networking? Explain

3. (a) Explain in detail about GFS and HDFS

(Or)

(b) What are the relational operations used in MAP Reduce? Explain

4. (a) Illustrate the Security architecture on Cloud Computing

(Or)

(b) Discuss the techniques of VM -Specific Security

5. (a) Explain in detail about QoS issues in Cloud

(Or)

(b) Discuss the resource dynamic reconfiguration in Cloud