

6. ਹੇਠ ਲਿਖੇ ਪੈਰੂ ਦਾ ਪੰਜਾਬੀ ਅਨੁਵਾਦ ਕਰੋ :

We live in age of science. Science has showered many blessings on us. The world today has changed beyond recognition. Science has brought us comforts in every field of life. The dreams of yesterday have become the realities of today. Science had given us powers equal to those of the gods. If our forefathers were again to come to this world, where Sputniks are being launched and man has reached the Moon, they would not like to go back. There is no sphere of life which has not been affected by science. From the pen we hold and the paper we write on, to the plane droning over our head everything proclaims the glory of science.

ਭਾਗ-ਸ

7. ਵਿਅੰਜਨ ਧੁਨੀਆਂ ਦਾ ਵਰਗੀਕਰਨ ਕਰੋ।
8. ਕਾਰਕ ਦੀ ਪਰਿਭਾਸ਼ਾ ਦਿੰਦਿਆਂ ਇਸਦੀਆਂ ਕਿਸਮਾਂ 'ਤੇ ਨੋਟ ਲਿਖੋ।

Exam. Code : 103205

Subject Code : 1165

B.A./B.Sc. 5th Semester

PUNJABI (Compulsory)

Time Allowed—3 Hours]

[Maximum Marks—50

ਨੋਟ :— ਹਰੇਕ ਭਾਗ ਵਿੱਚੋਂ ਘੱਟੋ-ਘੱਟ ਇੱਕ ਪ੍ਰਸ਼ਨ ਦੀ ਚੋਣ ਕਰਦੇ ਹੋਏ, ਕੁੱਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰੋ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਭਾਗ ਵਿੱਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ। ਸਾਰੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਅੰਕ ਬਰਾਬਰ ਹਨ।

ਭਾਗ-ੳ

1. 'ਸ਼ੀਸ਼ਾ' ਕਹਾਣੀ ਦਾ ਵਿਸ਼ਾ-ਵਸਤੂ ਦੱਸੋ।
2. 'ਹਰਖ ਸੋਗ' ਕਹਾਣੀ ਦਾ ਸਾਰ ਆਪਣੇ ਸ਼ਬਦਾਂ ਵਿੱਚ ਲਿਖੋ।

ਭਾਗ-ਅ

3. ਦਲੀਪ ਕੌਰ ਟਿਵਾਣਾ ਦੇ ਜੀਵਨ ਅਤੇ ਰਚਨਾਵਾਂ ਉੱਪਰ ਵਿਸਤਰਿਤ ਨੋਟ ਲਿਖੋ।
4. 'ਏਹੁ ਹਮਾਰਾ ਜੀਵਣਾ' ਨਾਵਲ ਦਾ ਵਿਸ਼ਾ-ਵਸਤੂ ਲਿਖੋ।

ਭਾਗ-ੲ

5. ਕਿਸੇ ਇੱਕ ਵਿਸ਼ੇ ਉੱਪਰ ਪੈਰਾ ਰਚਨਾ ਕਰੋ :
(ੳ) ਆਨਲਾਈਨ ਵਿੱਦਿਆ
(ਅ) ਦੇਸ਼ ਦੇ ਅਜੋਕੇ ਰਾਜਨੀਤਕ ਹਾਲਾਤ।

भाग—ख

3. शुम्पीटर के आर्थिक विकास के सिद्धांत की विस्तार में चर्चा कीजिए।
4. आर्थिक विकास के मार्क्सवादी सिद्धांत का समालोचनात्मक परीक्षण कीजिए।

भाग—ग

5. लिबेस्टीन के सीमान्त न्यूनतम प्रयास प्रबन्ध का समालोचनात्मक परीक्षण करें।
6. असंतुलित वृद्धि के सिद्धांत की चर्चा कीजिए। यह संतुलित विकास सिद्धांत से किस प्रकार श्रेष्ठ है ?

भाग—घ

7. व्याख्या कीजिए कि अविकसित देशों के लिए नियोजन की भूमिका किस प्रकार महत्वपूर्ण है ?
8. पूंजी निर्माण के अर्थ और स्रोतों की विस्तार में चर्चा कीजिए।

Exam. Code : 103205

Subject Code : 1178

B.A./B.Sc. 5th Semester

ECONOMICS

(Economics of Development)

Time Allowed—3 Hours]

[Maximum Marks—100

Note :— Attempt **FIVE** questions in all, selecting at least **ONE** question from each section. The **fifth** question may be attempted from any section. All questions carry equal marks.

SECTION—A

1. Critically examine the Lewis Model of unlimited supply of Labour.
2. Explain in detail the economic and non-economic factors of economic development.

SECTION—B

3. Discuss in detail the Schumpeter's theory of Economic growth.
4. Critically examine the Marxian theory of Economic growth.

SECTION—C

5. Critically examine the Leibenstein's Critical Minimum Effort Thesis.
6. Discuss the theory of Unbalanced growth. How it is superior to the balanced growth theory ?

SECTION—D

7. Explain how the role of planning is important to the underdeveloped countries.
8. Discuss in detail the meaning and sources of capital formation.

(Punjabi Version)

ਨੋਟ :— ਹਰੇਕ ਭਾਗ ਵਿੱਚੋਂ ਘੱਟੋ-ਘੱਟ ਇੱਕ ਪ੍ਰਸ਼ਨ ਦੀ ਚੋਣ ਕਰਦੇ ਹੋਏ, ਕੁੱਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰੋ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਭਾਗ ਵਿੱਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ। ਸਾਰੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਅੰਕ ਬਰਾਬਰ ਹਨ।

ਭਾਗ—ੳ

1. ਕਿਰਤ ਦੀ ਅਸੀਮਿਤ ਸਪਲਾਈ ਦੇ ਲੇਵਿਸ ਮਾਡਲ ਦਾ ਆਲੋਚਨਾਤਮਕ ਪਰੀਖਣ ਕਰੋ।
2. ਆਰਥਿਕ ਵਿਕਾਸ ਦੇ ਆਰਥਿਕ ਅਤੇ ਗੈਰ-ਆਰਥਿਕ ਕਾਰਕਾਂ ਦੀ ਵਿਸਥਾਰ ਵਿੱਚ ਵਿਆਖਿਆ ਕਰੋ।

ਭਾਗ—ਅ

3. ਸ਼ੂਮਪੀਟਰ ਦੇ ਆਰਥਿਕ ਵਿਕਾਸ ਦੇ ਸਿਧਾਂਤ ਦੀ ਵਿਸਥਾਰ ਵਿੱਚ ਚਰਚਾ ਕਰੋ।
4. ਆਰਥਿਕ ਵਿਕਾਸ ਦੇ ਮਾਰਕਸੀ ਸਿਧਾਂਤ ਦਾ ਆਲੋਚਨਾਤਮਕ ਪਰੀਖਣ ਕਰੋ।

ਭਾਗ—ੲ

5. ਲੀਬੇਨਸਟਾਈਨ ਦੇ ਸੀਮਾਂਤ ਘੱਟੋ-ਘੱਟ ਯਤਨ ਪ੍ਰਬੰਧ ਦਾ ਆਲੋਚਨਾਤਮਕ ਪਰੀਖਣ ਕਰੋ।
6. ਅਸੰਤੁਲਿਤ ਵਿਕਾਸ ਦੇ ਸਿਧਾਂਤ ਦੀ ਚਰਚਾ ਕਰੋ। ਇਹ ਸੰਤੁਲਿਤ ਵਿਕਾਸ ਸਿਧਾਂਤ ਨਾਲੋਂ ਕਿਵੇਂ ਉੱਤਮ ਹੈ ?

ਭਾਗ—ਸ

7. ਵਿਆਖਿਆ ਕਰੋ ਕਿ ਪਛੜੇ ਦੇਸ਼ਾਂ ਲਈ ਯੋਜਨਾਬੰਦੀ ਦੀ ਭੂਮਿਕਾ ਕਿਵੇਂ ਮਹੱਤਵਪੂਰਨ ਹੈ ?
8. ਪੂੰਜੀ ਨਿਰਮਾਣ ਦੇ ਅਰਥ ਅਤੇ ਸਰੋਤਾਂ ਦੀ ਵਿਸਥਾਰ ਵਿੱਚ ਚਰਚਾ ਕਰੋ।

(Hindi Version)

ਨੋਟ :— ਪ੍ਰत्येक भाग में से कम से कम एक प्रश्न का चयन करते हुए, कुल पाँच प्रश्न करें। पाँचवा प्रश्न किसी भी भाग में से किया जा सकता है। सभी प्रश्नों के समान अंक हैं।

भाग—क

1. श्रम की असीमित आपूर्ति के लुईस मॉडल का समालोचनात्मक परीक्षण कीजिए।
2. आर्थिक विकास के आर्थिक और गैर-आर्थिक कारकों की विस्तार में व्याख्या कीजिए।

Exam. Code : 103205

Subject Code : 1199

B.A./B.Sc. 5th Semester

QUANTITATIVE TECHNIQUES

(Quantitative Techniques—V)

Time Allowed—3 Hours] [Maximum Marks—100

Note :— Attempt *five* questions in all, selecting at least *one* question from each section. The *fifth* question may be attempted from any section. All questions carry equal marks.

SECTION—A

1. What are the main features of Poisson distribution ? Explain by giving suitable examples.
2. Define Hypothesis in the statistical parlance. What is the difference between NULL and ALTERNATE Hypothesis ? Write a note on hypothesis testing.

SECTION—B

3. Derive the basic properties of t-distribution.
4. Highlight the characteristic features of Chi-square-distribution. Highlight its use by giving a suitable example.

SECTION—C

5. What is the difference between Paired t-test and Non-paired t-test ? Enlist four situations (two each) where these can be applied.

6. A certain drug was administered to 200 people out of a total of 500 included in the sample to test its efficacy against Dengue. The results are as follows :

	Incidence of Dengue		Total
	Yes	No	
Drug	50	150	200
No Drug	250	50	300
Total	300	200	500

Can you say that drug is effective in preventing Dengue ?

SECTION—D

7. A manufacturer appoints 3 workers A, B and C and observes their production in terms of number of units produced with the use of three different machines X, Y, Z. Perform a Two-way ANOVA on the data given below and interpret your result on average production status :

Workers	Machines		
	X	Y	Z
A	16	64	40
B	56	72	56
C	12	56	28

8. Is the Analysis of Variance (ANOVA) technique an extension of the tests used for testing the difference between two means ? Support your agreement/disagreement with the details. Enlist the assumptions of ANOVA technique for CRD and RBD of experiment.

(b) A car weighing 300kg is accelerating at 6m/sec^2 up an incline of 1 in 100, the resistance being 10gm-weight per kg-wt. Find the power exerted by the engine when the speed is 65m/sec. 5,5

8. Define conservative forces. If a particle is moving under a system of conservative forces, then prove that the sum of its kinetic and potential energies at any instant remains constant throughout the motion.

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Exam. Code : 103205

Subject Code : 1190

B.A./B.Sc. 5th Semester

MATHEMATICS

Paper—I

(Dynamics)

Time Allowed—3 Hours] [Maximum Marks—50

Note :— Attempt *five* questions in all, selecting at least *one* question from each section. The *fifth* question may be attempted from any section. All questions carry equal marks.

SECTION—A

- (a) Two particles 100m apart are approaching each other. Particle A has velocity of 5m/sec and acceleration at 2m/sec^2 . Particle B has a velocity of 20m/sec and decelerating at 2m/sec^2 . At the instant they meet, how far will each have travelled from its initial position ?

(b) A particle is projected vertically upwards with velocity u . Find the maximum height attained by the particle and the time to reach the highest point. 5,5
- A body moves down a smooth inclined plane under the action of gravity alone, discuss its motion. Also find the time to reach the highest point and the time of flight. 10

SECTION—B

3. (a) A particle moves in a straight line under retardation kv^2 . If its initial velocity is u , show that the space described in time t is $\frac{1}{k} \log(1+kut)$.
- (b) A particle of mass m is acted upon by a force $m\mu \left(x + \frac{a^4}{x^3} \right)$ towards the origin. If it starts from rest at a distance a from the origin, show that it will reach the origin after time $\frac{\pi}{4\sqrt{\mu}}$. 5,5
4. (a) A light elastic string with modulus of elasticity λ is stretched to double its length and is tied to two fixed points distant $2a$ apart. A particle of mass m , tied to its middle point, is displaced along the line of string through a distance equal to half of its distance from the fixed point and released. Prove that the time of complete oscillation is $\pi\sqrt{\frac{am}{\lambda}}$ and maximum velocity acquired is $\sqrt{\frac{a\lambda}{m}}$.
- (b) A particle is performing SHM between two points A and B. If the period of oscillation is 2π , show that the velocity at any point P is mean proportional between AP and BP. 6,4

SECTION—C

5. (a) The velocity of a particle when at its greatest height is $\sqrt{\frac{2}{5}}$ of its velocity when at half of its greatest height. Show that the angle of projection is 60° .
- (b) A particle is projected from a point on the ground so as to pass over a vertical wall of height h at a horizontal distance 'a' from the point of projection. Show that it strikes the ground at a distance $\frac{2u^2h}{ga}$ beyond the wall, u being the horizontal component of velocity. 5,5
6. (a) Find expressions for tangential and normal accelerations of a particle moving along a circle.
- (b) In an oscillatory pendulum, the tension in the string when the bob is in its lowest position is n times the weight of the bob. Prove that the angle of the swing on each side of the vertical is $\cos^{-1}\left(\frac{3-n}{2}\right)$. 5,5

SECTION—D

7. (a) A particle of mass m is moving with S.H.M. of period T and amplitude a . Find the work done by the force of attraction when the particle moves from the mean position to an extreme position.

Exam. Code : 103205
Subject Code : 1191

B.A./B.Sc. 5th Semester
MATHEMATICS
Paper—II
(Number Theory)

Time Allowed—3 Hours] [Maximum Marks—50

Note :— Attempt *five* questions in all, selecting at least *one* question from each section. The *fifth* question may be attempted from any section. All questions carry equal marks.

SECTION—A

1. (a) If n is even, prove that $n(n+1)(n+2)$ is divisible by 24. 5
(b) Establish that, if a and b are odd integers, then $8/(a^2 - b^2)$. 5
2. (a) Find the gcd of 1109 and 4999. Express it in the form $1109x + 4999y$. 5
(b) Find all solutions in positive integers of the Diophantine equation $172x + 20y = 1000$. 5

SECTION—B

3. (a) If x and y are real numbers, prove that $[x] + [y] \leq [x+y]$, $[x]$ denotes greatest integer functions. 5
(b) Find the number and sum of divisors of 540. 5
4. (a) If p and $2p+1$ both are odd primes and $m = 4p$ then prove that $\phi(m+2) = \phi(m)+2$, ϕ is Euler's phi function. 5
(b) By using Mobius Inversion formula, find the value of $\phi(n)$. 5

SECTION—C

5. (a) Show if m is an integer then $m \equiv 2(\text{mod } 3)$ or $m^2 \equiv m(\text{mod } 6)$. 5
(b) Show that $53^{103} + 103^{53}$ is divisible by 39. 5
6. (a) Solve $17x \equiv 9(\text{mod } 276)$. 5
(b) Solve $x \equiv 5(\text{mod } 11)$, $x \equiv 14(\text{mod } 29)$, $x \equiv 15(\text{mod } 31)$ by Chinese Remainder Theorem. 5

SECTION—D

7. (a) By Euler's theorem show that $a^{560} \equiv 1(\text{mod } 561)$ if $\text{gcd}(a, 561) = 1$, however 561 is not a prime. 5
(b) By Fermat's theorem, show that :
 $a^7 \equiv a(\text{mod } 42)$ for all $a \in \mathbb{Z}$. 5
8. (a) Using Wilson's theorem, prove that an integer $p > 1$ is a prime number iff $[p-2] \equiv 1(\text{mod } p)$. 5
(b) Encrypt the message "RETURN HOME" using Caesar Cipher. 5

SECTION—C

5. Discuss object oriented features of Oracle 10g used for the development of DBMS. 15
6. Discuss the basic structure of DDL AND DML to demonstrate the working of SQL script. 15

SECTION—D

7. (a) What are types of cursors ? Explain the working of implicit cursor by taking some suitable examples. 8
- (b) Explain the basic structure used for a procedure using an example code snippet to justify the answer. 7
8. Explain the following concepts for PL/SQL :
- (a) Database triggers 8
- (b) Explicit cursor. 7

Exam. Code : 103205

Subject Code : 1170

B.A./B.Sc. 5th Semester

COMPUTER SCIENCE

(Database Management System & Oracle)

Time Allowed—3 Hours] [Maximum Marks—75

Note :— Attempt *five* questions in all, selecting at least *one* question from each section. The **fifth** question may be attempted from any section. All questions carry equal marks.

SECTION—A

1. (a) Discuss the components of database management system. 8
- (b) Describe the features of normalisation in detail. 7
2. Explain the following for DBMS :
- (a) Relational Algebra 8
- (b) Role of Network Model. 7

SECTION—B

3. What is meant by concurrency control ? Discuss the role of locks in detail. 15
4. Explain the following concepts :
- (a) Database Security 8
- (b) Expert Systems. 7