

Code No.

N – 3566

Entrance Examination for Admission to the P.G. Courses in the Teaching Departments, 2022

CSS

ACTUARIAL SCIENCE

General Instructions

1. The Question Paper is having two Parts — Part 'A' Objective type (60%) & Part 'B' Descriptive type (40%).
2. Objective type questions which carry 1 mark each are to be (✓) 'tick marked' in the response sheets against the appropriate answers provided.
3. 8 questions are to be answered out of 12 questions carrying 5 marks each in Part 'B'.
4. **Negative marking** : 0.25 marks will be deducted for each wrong answer in Part 'A'.

Time : 2 Hours**Max. Marks : 100**

To be filled in by the Candidate									
Register Number	in Figures								
	in words								

PART – A

(Objective Type)

Choose appropriate answer from the options in the questions. **One mark each.****(60 × 1 = 60 marks)**

1. A square matrix in which all elements except at least one element in diagonal are zeros is said to be

a) Identical matrix	b) Zero/null matrix
c) Column matrix	d) Diagonal matrix

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2. If $|A| = 0$ then A is
- a) Zero matrix
 - b) Nonsingular matrix
 - c) Singular matrix
 - d) 0
3. The degree of the polynomial, $x^4 - x^2 + 2$ is
- a) 1
 - b) 2
 - c) 4
 - d) 0
4. If one of the zeroes of the cubic polynomial $x^3 + ax^2 + bx + c$ is -1 , then the product of the other two zeroes is
- a) $b - a + 1$
 - b) $b - a - 1$
 - c) $a - b + 1$
 - d) $a - b - 1$

5. If $x^4 + 3x^2 + 7$ is divided by $3x + 5$, then the possible degrees of quotient and remainder are:
 - a) 4,1
 - b) 3,0
 - c) 4,0
 - d) 3,1
6. If $x^3 - 2x^2 - 4x - 8 = 0$ then
 - a) $|x| = 1$
 - b) $|x| = 3$
 - c) $|x| = 2$
 - d) None of the above
7. Number of non integral solutions to
 - a) 1
 - b) 2
 - c) Finitely many
 - d) None of the above
8. Integrating factor of the differential equation is
 - a) $\sec x$
 - b) $\cos x$
 - c) $e^{\cos x}$
 - d) $e^{\sec x}$
9. What is the value of integral of
 - a) 0.556
 - b) 0.656
 - c) 0.756
 - d) 0.456
10. Every subsequence of a convergence sequence is
 - a) Divergent
 - b) Continuous
 - c) Convergent
 - d) Both (a) and (b)
11. Newton Raphson formula is derived from
 - a) Bisection formula
 - b) Roll's Theorem
 - c) Binomial Theorem
 - d) Taylors Theorem
12. If the number of elements in a set is not finite then the set is called an
 - a) Finite set
 - b) Collective set
 - c) Infinite set
 - d) Arranged set

- N – 3566**

19. In a continuous frequency distribution, the median of the data is 24 if each item is increased by 2 then the new median will be
 - a) 26
 - b) 12
 - c) 24
 - d) 48
20. The joint probability of the independent events J and K is equal to
 - a) $P(J) + P(K)$
 - b) $P(J) * P(K) + P(J-K)$
 - c) $P(J)*P(K)-P(J * K)$
 - d) $P(J) * P(K)$
21. If a brown sack consists of 4 white balls and 3 black balls then the probability of one randomly drawn ball will be white is
 - a) $4/7$
 - b) $1/7$
 - c) $4/4$
 - d) $4/3$
22. An event manager has ten patterns of chairs and eight patterns of tables. In how many ways can he make a pair of table and chair?
 - a) 100
 - b) 110
 - c) 64
 - d) 80
23. How many permutations of the letters of the word APPLE are there
 - a) 600
 - b) 60
 - c) 120
 - d) 240
24. The difference between the sample value expected and the estimates value of the parameter is called as
 - a) Bias
 - b) Error
 - c) Contradiction
 - d) Difference
25. A _____ is an ordered collection of objects.
 - a) Relation
 - b) Function
 - c) Set
 - d) Proposition

26. Power set of empty set has exactly _____ subset.
- a) One
 - b) Two
 - c) Zero
 - d) Three
27. The mean of Exponential distribution is given as _____
- a) $1/\lambda$
 - b) λ
 - c) λ^2
 - d) $1/\lambda^2$
28. A larger standard deviation for a normal distribution with an unchanged mean indicates that the distribution becomes:
- a) Flatter and wider
 - b) More skewed to the left
 - c) Narrower and more peaked
 - d) A change in the standard deviation
29. The correlation coefficient between X and Y is 0.3. Then the correlation coefficient between $-1.5X$ and $2Y + 3$ is
- a) -0.9
 - b) -0.3
 - c) 0.3
 - d) 0.9
30. The standard deviation for the population of numbers 5 10 -12 17 -14 0 -6 is equal to
- a) 9
 - b) 13
 - c) 11.5
 - d) 18
31. Long term assets having no physical existence but, possessing a value are called
- a) Intangible assets
 - b) Fixed assets
 - c) Current assets
 - d) Investments
32. Net profit is computed in the
- a) Profit and loss account
 - b) Balance sheet
 - c) Trial balance
 - d) Trading account

33. Sales invoices are first entered in
- a) The Cash Book
 - b) The Purchases Journal
 - c) The Sales Journal
 - d) The Sales Account
34. What do you mean by a mixed economy?
- a) Modern and traditional industries
 - b) Public and private sectors
 - c) Foreign and domestic investments
 - d) Commercial and subsistence farming
35. What do you mean by Gross National Product?
- a) The total value of goods and services produced in the country
 - b) The total value of all the transactions in the country
 - c) The depreciation in the total value of goods and services produced in the country
 - d) The total value of goods and services produced in the country and the net factor income from abroad
36. Which of the following is the regulator of insurance sector in India?
- a) RBI
 - b) AMFI
 - c) IRDA
 - d) SEBI
37. Missing person is considered to be dead after how many years of missing
- a) 3 years
 - b) 5 years
 - c) 15 years
 - d) 7 Years
38. Which of the following was the parent company of New India Assurance?
- a) LIC
 - b) GIC
 - c) Oriental Insurance Co. Ltd.
 - d) United India Insurance
39. In which among the following years, essentials commodities act enacted?
- a) 1955
 - b) 1958
 - c) 1961
 - d) 1975

40. The best indicator of economic development of any country is
- a) Its agriculture
 - b) Its transport
 - c) Its gross production
 - d) Its per capital income.
41. The present value of an immediate annuity of 100000 payable at the end of 5th year using an interest rate of 12 % pa effective
- a) 56743
 - b) 52000
 - c) 46235
 - d) 47895
42. In a Repayment loan / mortgage, the amount of interest paid each period
- a) Increases with each payment
 - b) Decreases with each payment
 - c) Remains constant with each payment
 - d) None of the above
43. Which is a whole life policy that insures two lives with the proceeds payable on the second (later) death?
- a) Survivorship life insurance policy
 - b) Group life insurance
 - c) Joint life insurance
 - d) Prepaid insurance
44. The principles of indemnity does not apply to _____
- a) Burglary insurance
 - b) Fire insurance
 - c) Marine insurance
 - d) Life and Personal Accident insurance
45. Which policy matures on the assured death or on his attainment of a particular age whichever occurs earlier?
- a) Endowment
 - b) Money back
 - c) Joint life
 - d) Single premium

46. The order of the atmospheric layers, starting from closest to the surface to the top of the atmosphere, is
- a) Mesosphere, Troposphere, Thermosphere, Stratosphere
 - b) Troposphere, Stratosphere, Mesosphere, Thermosphere
 - c) Thermosphere, Mesosphere, Troposphere, Stratosphere
 - d) Troposphere, Mesosphere, Stratosphere, Thermosphere
47. How are warming ocean temperatures impacting whales, fish, and other marine mammals?
- a) They aren't as hungry because it's so hot
 - b) Warmer water makes them sleepy
 - c) Their migratory patterns are changing
 - d) Summer seems longer so fish are schooling less
48. Which of the following is not a primary colour?
- a) Red
 - b) Blue
 - c) Green
 - d) Yellow
49. What is the PH of H₂O?
- a) 6
 - b) 7
 - c) 8
 - d) 9
50. In India, when did the second phase of COVID-19 vaccination start?
- a) December 2020
 - b) January 2021
 - c) February 2021
 - d) March 2021
51. Name a clinical trial in which blood is transfused from recovered COVID-19 patients to a coronavirus patient who is in critical condition.
- a) Plasma Therapy
 - b) Solidarity
 - c) Remdesivir
 - d) Hydroxychloroquine
52. Pick out the correct meaning listed below to define 'average income'.
- a) Average income of the country means the total income of the country
 - b) The average income in a country is the income of only employed people.
 - c) The average income is the same as per capita income.
 - d) The average income includes the value of property held.

53. The major source of water for the soil is
- a) Groundwater
 - b) Capillary water
 - c) Precipitation
 - d) Combined water
54. In India, coniferous forests are found in
- a) Himalayas
 - b) Western Ghats
 - c) Eastern Ghats
 - d) All the Above
55. Who is considered as the father of actuarial science?
- a) William morgan
 - b) J.P.Morgan
 - c) Reddington
 - d) Nelson allen
56. The first complete Indian Bank was established in which year
- a) 1794
 - b) 1894
 - c) 1896
 - d) 1902
57. Which of the following estimates the National Income in India?
- a) Central Statistical Organization
 - b) National Income Committee
 - c) Planning commission
 - d) Reserve Bank of India
58. SEBI stands for
- a) Science and Engineering Board of India
 - b) Securities and Exchange Board of India
 - c) Social Equity Bureau of India
 - d) Science and Educational Board of India
59. Indian Economy is:
- a) Socialistic Economy
 - b) Gandhian Economy
 - c) Mixed Economy
 - d) Free Economy
60. Who is the father of Economics?
- a) Max Muller
 - b) Adam Smith
 - c) Karl Marx
 - d) None of these

ANSWER SHEET — PART – A

1	A	B	C	D	E
2	A	B	C	D	E
3	A	B	C	D	E
4	A	B	C	D	E
5	A	B	C	D	E
6	A	B	C	D	E
7	A	B	C	D	E
8	A	B	C	D	E
9	A	B	C	D	E
10	A	B	C	D	E
11	A	B	C	D	E
12	A	B	C	D	E
13	A	B	C	D	E
14	A	B	C	D	E
15	A	B	C	D	E
16	A	B	C	D	E
17	A	B	C	D	E
18	A	B	C	D	E
19	A	B	C	D	E
20	A	B	C	D	E

21	A	B	C	D	E
22	A	B	C	D	E
23	A	B	C	D	E
24	A	B	C	D	E
25	A	B	C	D	E
26	A	B	C	D	E
27	A	B	C	D	E
28	A	B	C	D	E
29	A	B	C	D	E
30	A	B	C	D	E
31	A	B	C	D	E
32	A	B	C	D	E
33	A	B	C	D	E
34	A	B	C	D	E
35	A	B	C	D	E
36	A	B	C	D	E
37	A	B	C	D	E
38	A	B	C	D	E
39	A	B	C	D	E
40	A	B	C	D	E

41	A	B	C	D	E
42	A	B	C	D	E
43	A	B	C	D	E
44	A	B	C	D	E
45	A	B	C	D	E
46	A	B	C	D	E
47	A	B	C	D	E
48	A	B	C	D	E
49	A	B	C	D	E
50	A	B	C	D	E
51	A	B	C	D	E
52	A	B	C	D	E
53	A	B	C	D	E
54	A	B	C	D	E
55	A	B	C	D	E
56	A	B	C	D	E
57	A	B	C	D	E
58	A	B	C	D	E
59	A	B	C	D	E
60	A	B	C	D	E

ACTUARIAL SCIENCE

PART – B

(Descriptive Type)

Answer **any eight** questions. Each question carries Five marks. **(8 × 5 = 40 Marks)**

1. List out any five problems faced by Indian economy.
2. What is the role of SEBI in capital market?
3. Explain any three life insurance products.
4. Distinguish between Life insurance and General insurance.
5. Explain Central Limit Theorem.
6. Let $A = \begin{bmatrix} x+y & y \\ 2x & x-y \end{bmatrix}$, $B = \begin{bmatrix} 2 \\ -1 \end{bmatrix}$, and $\begin{bmatrix} 3 \\ 2 \end{bmatrix}$. If $AB = C$. Then find the matrix A^2 .
7. The polynomial $f(x) = 3x^4 + 5x^3 - 17x^2 - 25x + 10$ has irrational zeros at $+\sqrt{5}$ and $-\sqrt{5}$. Find the other zeros.
8. Explain Correlation and Regression.
9. Distinguish pure Endowment and Term assurance.
10. What is the difference between Immediate and Deferred annuities?
11. Two friends Harish and Kalyan appeared for an exam. Let A be the event that Harish is selected and B is the event that Kalyan is selected. The probability of A is $2/5$ and that of B is $3/7$. Find the probability that both of them are selected.
12. What is inflation and deflation?

