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**TERM – 1 MODEL EXAM II**

**CLASS: XII B**

**Applied Mathematics (Code-241)**

**Time Allowed: 90 minutes Maximum Marks: 40**

**General Instructions:**

1. **This question paper contains three sections – A, B and C. Each part is compulsory.**
2. **Section - A has 20 MCQs, attempt any 16 out of 20.**
3. **Section - B has 20 MCQs, attempt any 16 out of 20**
4. **Section - C has 10 MCQs, attempt any 8 out of 10.**
5. **There is no internal choice in any section.**

**All Questions carry equal Marks.**

**SECTION – A**

**In this section, attempt any 16 questions out of Questions 1 – 20.**

**Each Question is of 1 mark weightage**

1. Find the remainder when (127 x 137 x 23 x 50 x 235x 15) is divided by 7.
2. 1 b. 4 c. 5 d. 6
3. Find σ (12) and τ(12)
4. 28,6 b. 6,28 c. 20,6 d. 6,6
5. A person can row a boat 5 km an hour in still water. It takes him thrice as long to row upstream as to row downstream. Find the rate at which the stream is flowing.
6. 2 km/hr b. 5 km/hr c. 2.5 km/hr d. 3 km/hr
7. If A = and B = are equal matrices, find the values of a and b.
8. 12,3 b. 3,12 c. -12,3 d. -3,12
9. For a given square matrix A of order m x m, there exists a multiplicative identity I, matrix of the same order such that
10. IA = AI = A b. IA = AI = O c. IA = AI = I d. IA = AI = -A
11. If solving a system of linear equations in 3 variables by Cramer’s rule, we get ∆= 0 and at least one of ∆𝑥, ∆𝑦, ∆𝑧 is non-zero then the system of linear equations has
12. no solution b. unique solution c. infinitely many solutions d. trivial solution
13. Find for the following function
14. b. c. d.
15. The price per unit of a commodity produced by a company is given by p =30- 2x and ‘x’ is the quantity demanded. Find the revenue function R, the marginal revenue when 5 commodities are in demand (or produced)
16. 8 b. 10 c. 12 d. 11
17. Find the equation of the tangent and normal to the curve at the point (0,2) on it.
18. x – y + 2 = 0; x + y +2 = 0 b. x +y + 2 = 0; x + y – 2 = 0
19. c. x – y + 2 = 0; x - y – 2 = 0 d. x – y + 2 = 0; x + y – 2 = 0
20. A function f(x) is defined in an interval I and c is an interior point of I. If f(x) is continuous at x = c, f’(c) = 0, then c is a \_\_\_\_\_\_\_
21. exterior point b. stationary point c. critical point d. none
22. Check whether the following function is monotonic .
23. Monotonic b. not monotonic c. increasing d. decreasing.
24. Relative Price Index number in time period n is given by
25. b. c. d.
26. A manufacturer purchases four distinct raw materials, that differ in unit price as given below:

|  |  |  |
| --- | --- | --- |
| **COMMODITY** | **UNIT PRICE (2000)** | **UNIT PRICE (2008)** |
| A  B  C  D | 3.20  1.70  148.10  34 | 3.8  2.1  149.50  45 |

Calculate an unweighted aggregate price index for year 2008 using year 2000 as the base period.

1. 107 b. 107.2 c. 106 d. 107.3
2. The time-reversal test is used to test whether the method of constructing index number will work with
3. any consideration of time period b. independent of the units
4. c. independent of the time d. consideration of the units
5. Let X denotes the number of hours a student devotes to self-study during a randomly selected school day. The probability that X takes the value x, where k is some unknown constant is

𝑃 (𝑋 = 𝑥) =

The probability that a student studies at least 3 hours on a particular day is

1. 1/7 b. 2/7 c. 3/7 d. ½
2. If a fair coin is tossed 9 times, find the probability of exactly five tails
3. 60/256 b. 63/250 c. 63/256 d. 256/63
4. A particular river near a small-town floods and overflows twice in every 10-years on an average. Assuming that the Poisson distribution is appropriate, what is the mean expectation. Also calculate the probability of 3 or less overflow floods in a 10-year interval.
5. 8.6 b. 0.80 c.86 d. 0.86
6. The Normal distribution can be described by two values:
7. Mean and variance b. mean and standard deviation

c. variance and standard deviation d. mean and mode

19. Given that mean of a normal variate X is 12 and standard deviation is 4, then Find the Z-Score of data point 20.

a. 3 b. 20 c. 2 d. 4

20. Given that the scores of a set of candidates on an IQ test are normally distributed. If the IQ test has a mean of 100 and a standard deviation of 10, what is the probability that a candidate who takes the test will score between 90 and 110?

a. 0.626 b. 0.6826 c. 0.6820 d. 0.686