

Time: One Hour

Max. Marks: 25

Instructions

Solve any 25 questions from Q.1 to Q.30

- 1 The differential equation which involve only one independent variable are called as  
 (A)Partial differential equation (B)Ordinary differential equation (C)Mixed partial differential equation (D)None of above
- 2 A card is drawn from a pack of 52 cards. The probability of its being a King or a Queen is .....  
 (A)2/52 (B)8/52 (C)4/52 (D)1/52
- 3 The differential equation containing two or more independent variable is called as ----- equation  
 (A)Partial differential (B)Higher order differential (C)Mixed partial differential (D)Ordinary differential
- 4 The degree of the given differential equation is  $\left(\frac{d^2 y}{dx^2}\right)^4 + \left(\frac{dy}{dx}\right)^5 + xy^3 + xy^2 = 0$   
 (A)5 (B)4 (C)3 (D)0
- 5 The given differential equation is  $\left(\frac{d^3 y}{dx^3}\right) + 8y\left(\frac{d^2 y}{dx^2}\right) + 3y\frac{dy}{dx} + 5y = 0$   
 (A)homogeneous (B)non homogeneous (C)in homogeneous (D)None of above
- 6 The probability of an event can not be -----  
 (A)1 (B)1/2 (C)negative (D)zero
- 7 If 12 particles are distributed randomly between two bones A and B with equal probability. What is the probability of the distribution (8,4)?  
 (A)  $4.95 \times 10^{-12}$  (B)  $495 \times 2^{-12}$  (C)  $4.95 \times 2^{-12}$  (D)  $4.95 \times 2^{-11}$
- 8 Bosons obey Pauli's exclusion principle  
 (A)True (B)False (C)Can't say (D)Some times true or some times false
- 9 The energy at absolute zero can not be zero according to  
 (A)M-B (B)B-E (C)F-D (D)None of above
- 10 Statistical methods given greater accuracy when the number of observations is  
 (A)Very small (B)Very large (C)zero (D)None of above
- 11 The probability of an event may be defined as  
 (A)Total number of cases x Number of cases in which event occurs (B)Total number of cases/ Number of cases in which event occurs (C)Number of cases in which event occurs/Total number of cases (D)None of above
- 12 Suppose we toss a coin say N times and we find that Head appears H times, the frequency of an event F as  
 (A)  $N/H$  (B)  $N \times H$  (C)  $H/N$  (D)  $H \times N$
- 13 According to Galilean transformation  $t'$  and  $t$  is  
 (A)Approximately Equal (B)Equal (C)Not equal (D)None of above
- 14 According to Michelson Morley experiment setup, A beam of light falls on a half silvered glass plate which is placed at an angle of -----degree to the beam  
 (A)90 (B)60 (C)45 (D)30
- 15 If 4 kg of a substance is fully converted into energy, how much energy is produced?  
 (A)  $63 \times 10^{17} \text{ J}$  (B)  $36 \times 10^{17} \text{ J}$  (C)  $6.3 \times 10^{17} \text{ J}$  (D)  $3.6 \times 10^{17} \text{ J}$
- 16 According to Newtonian mechanics the fringe shift in the Michelson Morley experiment is proportional to  
 (A) $\lambda$  (B) $\lambda^{-1}$  (C) $\lambda^{-2}$  (D) $\lambda^{-3}$
- 17 A .....co-ordinate system in which velocity of the object can be clearly described is known as frame of reference  
 (A)undefined (B)partially defined (C)well defined (D)None of above
- 18 Newton assume that space is -----  
 (A)absolute (B)not absolute (C)disturb (D)can't say about space
- 19 According to B-E statistics, in how many ways two particles can be arranged in three phase cells?  
 (A)3 (B)6 (C)9 (D)12
- 20 What is the probability that in tossing a coin 5 times, we get 3 heads and 2 tails?  
 (A)3/16 (B)2/16 (C)5/16 (D)6/16
- 21  $\sqrt{1+x} - \sqrt{1+y} = 0$  then  $\frac{dy}{dx} = ?$   
 (A)0 (B)1 (C)2 (D)4
- 22 The quantity  $dF = F_x dx + F_y dy$  is called as  
 (A)Explicit function of F (B)Implicit function of F (C)Exact differential of F (D)Total differential of F

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23 The differential equation containing two or more independent variable is called as

- (A) Partial differential equation (B) Ordinary differential equation (C) Higher order differential equation (D) None of above

24 The given differential equation is  $\frac{d^2 y}{dx^2} + \frac{dy}{dx} + Ky = 0$

- (A) Linear (B) Non linear (C) Circular (D) None of above

25 In the comparison of three statistics, particles are distinguishable in-----

- (A) Maxwell- Boltzman (B) Fermi- Dirac (C) Bose- Einstein (D) None of above

26 The Fermi Energy of Copper is -----eV

- (A) 4.72 (B) 5.51 (C) 5.54 (D) 7.04

27 According to classical mechanics, the space, time and mass these three fundamental concepts of physics are all

- (A) Absolute and variant (B) Absolute and invariant (C) Absolute zero (D) None of above

28 The order of differential equation  $\frac{dy}{dx} + 2y = 0$

- (A) 1 (B) 2 (C) 3 (D) 4

29 From the pack of playing cards, one card is drawn, what is the probability or chance that it will be spade card?

- (A) 1 (B) 1/2 (C) 1/4 (D) 1/8

30 The arrangements of group is called as

- (A) Permutation (B) Combination (C) Probability (D) frequency