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## B.Sc. Ag/Vet./Fisheries/Forestry

For TU Model

2075

**Set-X**

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# Hints and Solutions

1. c	2. b	3.c	4. d	5.d	6.a	7.b	8.b
9. a	10. b	11. b	12.b	13.b	14.c	15.a	16.d
17.a	18.a	19.b	20.c	21.c	22.b	23.d	24.a
25.c	26.b	27.c	28.c	29.b	30.b	31.c	32.a
33.b	34.c	35.b	36.c	37.a	38.c	39.b	40.b
41.b	42.c	43.d	44.c	45.d			

46. c) -3 to +3 is Karl Pearson's coefficient of skewness.
47. c)  $\cos 2\alpha + \cos 2\beta + \cos 2\gamma = 2\cos^2\alpha - 1 + 2\cos^2\beta - 1 + 2\cos^2\gamma - 1 = 2(\cos^2\alpha + \cos^2\beta + \cos^2\gamma) - 3 = 2.1 - 3 = -1$
48. b)
49. d)  $\log_{64}x = -\frac{1}{6} \Rightarrow x = 64^{-1/6} [\log_a x = y \rightarrow x = a^y]$
50. c)
51. c)  $\sec^2(\tan^{-1}3) + \operatorname{cosec}^2(\cot^{-1}4) = 1 + \tan^2(\tan^{-1}3) + 1 + \cot^2(\cot^{-1}4) = 1 + 3^2 + 1 + 4^2 = 27$
52. a)  $x = 2t$   
 $Y = (1+2t)^2 = (1+x)^2$ . Hence it represents pair of straight lines.
53. c)  $\operatorname{Tra}(A) = 1 + 6 + 5 = 12$   
 Note: Trace of a matrix = sum of the diagonal elements
54. c) Take it easily, it's a formula.
55. c)
56. c)
57. b) No. of arrangements taking none at a time is  $0! = 1$
58. a)  $\begin{bmatrix} 2 & 0 & 0 \\ 0 & 2 & 0 \\ 0 & 0 & 2 \end{bmatrix} = 2I$  i.e.  $A = 2I$  so,  $A^4 = (2I)^4 = 16I = 8A$
59. d) From equation, latus rectum =  $1/2 \times$  major axis or,  $2b^2/a = 2a/2$  i.e.  $4b^2 = 2a^2$  or,  $a^2 = 2b^2$   
 $e = \sqrt{1 - \frac{b^2}{a^2}} = \frac{1}{\sqrt{2}}$
60. a)  $\alpha + \beta = -\frac{b}{a}$  and  $\alpha\beta = c/a = b/a$   
 Then,  $\sqrt{\frac{\alpha}{\beta}} + \sqrt{\frac{\beta}{\alpha}} = \frac{\alpha + \beta}{\sqrt{\alpha\beta}} = \frac{-b/a}{\sqrt{b/a}} = -\sqrt{\frac{b}{a}}$
61. b) we have,  
 $\text{Velocity (V)} = \frac{\text{Electric field (E)}}{\text{Magnetic field (B)}}$   
 or,  $\text{ms}^{-1} = \frac{\text{V}}{\text{m} \times \text{T}}$   
 or,  $\text{T} = \text{Vm}^{-2}\text{s}$
62. d) If it takes 4s to come at starting Point, it takes 2s to reach highest point. For upward motion  
 $S = ut + \frac{1}{2}gt^2 = u \times 2 - \frac{1}{2} \times 10 \times 4 = 2u - 20 \dots (i)$   
 For downward motion  
 $S = ut + \frac{1}{2}gt^2$   
 or,  $2u - 20 = \frac{1}{2} \times 10 \times 4$   
 or,  $2u = 40$   
 or,  $u = 20\text{ms}^{-1}$

63. d) velocity of sound in air,  
 $V_o = v_t \sqrt{\frac{273}{273+t}}$
64. b) According to Brewster's law,  
 $\mu = \tan i_p$  or  $\sqrt{3} = \tan i$   $i = 60^\circ$   
 where,  $\mu$  = refractive index  
 $i_p$  = angle of polarization
65. c) Magnetic field at center of circular coil:  $B = \frac{\mu_o NI}{2r}$   
 Magnetic field due to toroid;  $B = \mu_o nI$   
 Forces between two parallel current carrying conductors;  $F = \frac{\mu_o I_1 I_2}{2\pi r}$
66. d) A shunt is a connecting wire of small resistance used to convert galvanometer into Ammeter. Shunt is always connected in parallel with galvanometer. But, Ammeter is connected in series with the circuit. A high resistance is connected in series with galvanometer to convert it to voltmeter. But, Voltmeter is always connected in parallel in circuit
67. d) We have;  $I = \frac{L}{r^2}$   
 $L = Ir^2 = 10 \times (5)^2 = 10 \times 25 = 250$  candela  
 Illuminance (I) =  $\frac{L \cos\theta}{r^2}$   
 $\rightarrow I \propto L \cos\theta$  [Lamberts cosine law]  
 $\rightarrow I \propto \frac{1}{r^2}$  [Inverse square law]
68. a) For a rolling body,  
 $KE_1 = \frac{1}{2} IW^2$  For sphere,  $I = \frac{2}{5}mR^2$   $w = \frac{V}{R}$   
 Thus,  $KE_1 = \frac{1}{2} \times \frac{2}{5} mR^2 \times \frac{V^2}{R^2} = \frac{1}{5} mv^2$   
 (KE2) Kinetic energy due to motion =  $\frac{1}{2} mv^2$   
 Total KE =  $KE_1 + KE_2 = \frac{1}{5} mv^2 + \frac{1}{2} mv^2 = \frac{7}{10} mv^2$
69. b) Given,  
 Let, initial pressure be ( $P_1$ ) = P  
 Then, final pressure ( $P_2$ ) =  $P + \frac{50}{100} P = \frac{3P}{2}$   
 Let, initial volume ( $V_1$ ) = x  
 Final volume ( $V_2$ ) =  $\frac{P_1 V_1}{P_2} = \frac{P \times x}{\frac{3}{2} \times P} = \frac{2x}{3}$   
 $\frac{2x}{3} - x$   
 Now, % change in volume =  $\frac{\frac{2x}{3} - x}{x} \times 100\%$   
 $= \frac{-x}{3x} \times 100\% = -33.33\%$
70. b)
71. c) Given,  
 $C + 2C + 4C = 8C \dots \dots \infty$

- For series connection,  
 Equivalent capacitance ( $C^{-1}$ ) =  $\frac{1}{C} + \frac{1}{2C} + \frac{1}{4C} + \frac{1}{8C} + \dots$   
 $= \frac{1}{C} \left[ 1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \dots \right]$   
 $= \frac{1}{C} \left[ \frac{1}{1 - \frac{1}{2}} \right] = \frac{1}{C} \times 2$  i.e.  $C^{-1} = \frac{2}{C}$  or,  $C = \frac{C}{2}$
72. c)
73. a)
74. c)
75. a) By Doppler's Effect Apparant frequency ( $f$ ) =  $\frac{v \pm u_o}{v \pm u_s} \times f$   
 When, velocity of observer and source is same, apparent frequency doesnot change.
76. d)  $BaO_2 \xrightarrow{D} BaO + \frac{1}{2} O_2$
77. d)
78. c) Antichlor is chlorine absorber .
79. d) Solubility =  $\frac{wt.of\ solute}{wt.of\ solvent} * 100$
80. c)
81. c) Ethylene and acetylene can be separated by the help of ammonical  $AgNO_3$
82. c) Spiegeleisen consists of Fe, M nans C.
83. c) Hoop's process = purification of Al and Baeyer's process / Serpeck's process = manufacture of Al
84. c)
85. d)  $\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$   $V_2 = 2 V_1$   $T_2 = 2T_1$   
 So on solving  $P_1 = P_2$
86. a) Tranquilizers Eg: Barbituric acid, Reserpine, Antiseptics
87. d) Fructose-ketonic group, Aldose: having aldehyde group, Ketose : having ketonic group
88. d) Only Mn and Mg can displace hydrogen form very low concentration of nitric acid
89. b) Nitration of benzene is electrophilic substitution reaction in which nitronium ion  $NO_2^+$  acts as electrophile
90. b) Chalcopyrites -  $CuFeS_2$  Carnalite -  $MgCl_2 \cdot KCl \cdot 6H_2O$  Limonite -  $2Fe_2O_3 \cdot 3H_2O$  Siderite -  $FeCO_3$

GK

91.b	92.c	93.c	94.b	95.a	96.d	97.c	98.a	99.c	100.d
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Result will be published on Sunday

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==== Best of Luck ====