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PY-201

B.Pharm. II Semester

Examination, December 2015

Advanced Mathematics

Time : Three Hours

Maximum Marks : 70

Note: i) Answer any five questions.

ii) All questions carry equal marks.

1. a) Solve $\dfrac{dy}{dx} = (4x + y + 1)^2$.

   b) Solve $x^2\left(\dfrac{dy}{dx}\right)^2 + xy\dfrac{dy}{dx} - 6y^2 = 0$.

2. a) Solve $\left(D^2 + 3D + 5\right)y = e^{2x}$.

   b) Solve $x^2\dfrac{d^2y}{dx^2} - x\dfrac{dy}{dx} + y = x^2$.

3. a) Find $L\left\{1 + t^3 + t^{7/2} + 3\sin 2t + e^{-3t}\right\}$.

   b) Find $L\left\{\dfrac{\cos 2t - \cos 3t}{t}\right\}$.

4. a) Find $L^{-1}\left\{\dfrac{1}{s^2 - 5s + 6}\right\}$.

b) Solve $\dfrac{d^2x}{dt^2} + 2\dfrac{dx}{dt} + 5x = e^{-t}\sin t$, given $x(0)=0$, $x'(0)=1$ by Laplace transform method.

5. a) Compute arithmetic mean of the following by both direct and short cut methods -

Class :	20-30	30-40	40-50	50-60	60-70
Frequency :	8	26	30	20	16

   b) Construct the pie-diagram for the following data :

	Children	Adults	Old	Total
City A	250	450	200	900
City B	1000	2250	350	3600

6. a) From a bag containing 5 white, 7 red and 4 black balls, a man draws 3 at random, find the probability of being all while.

   b) State and prove Bayes Theorem.

7. a) Find the mean and variance of the binomial distribution.

   b) Find the probability that at most 5 defective fuses will be found in a box of 200 fuses, if experience shows that 2 percent of such fuses are defective.

8. a) Fit a straight line to the following data regaraing of as the independent variable -

x	0	1	2	3	4
y	1.0	1.8	3.3	4.5	6.3

   b) Find Karl Pearson's coefficient of correlation between the heights of fathers and son's.

Height of Father's:	65	66	67	67	68	69	70	72
Height of Son's:	67	68	65	68	72	72	69	71