

生命保険数学 問題 6

(平成 20 年 11 月 5 日)

(制限時間: 60 分)

1. 次の [ ] に当てはまる適切な式、記号又は数値を書け。

- (1)  ${}_t|q_{xy} = {}_t p_{xy} - [ \quad ]$                       (2)  ${}_t q_{\overline{xy}} = ([ \quad ] - {}_t p_x)([ \quad ] - {}_t p_y)$
- (3)  ${}_t|q_{\overline{xy}} = {}_t|q_x + {}_t|q_y - [ \quad ]$                       (4)  ${}_t p_{\overline{xy}}^{[1]} = {}_t p_x + {}_t p_y - [ \quad ]$
- (5)  $\frac{d {}_t p_{xy}}{dt} = - [ \quad ]$                       (6)  ${}_t p_{\overline{xy}} \cdot \mu_{\overline{x+t, y+t}} = {}_t q_y {}_t p_x \mu_{x+t} + [ \quad ]$
- (7)  ${}_t|q_{\overline{xyz}} = \int_t^{t+1} {}_s p_{xyz} [ \quad ] ds$                       (8)  ${}_t|q_{\overline{xy}}^2 = \int_t^{t+1} [ \quad ] {}_s p_x \mu_{x+s} ds$
- (9)  ${}_t q_{\overline{xy}}^2 = \int_0^t {}_s p_{xy} \mu_{y+s} [ \quad ] ds$                       (10)  ${}_t q_{\overline{xy}}^1 = {}_t q_x - [ \quad ]$
- (11)  ${}_t q_{\overline{xy}}^1 - {}_t q_{\overline{xy}}^2 = {}_t p_y [ \quad ]$                       (12)  ${}_t|q_{\overline{xy}}^2 = {}_t|q_{\overline{xy}}^1 + {}_t p_x {}_t q_y - [ \quad ]$
- (13)  ${}_t|q_{\overline{xyz}}^2 = {}_t|q_{\overline{yz}}^1 - [ \quad ]$                       (14)  $[ \quad ] = {}_t q_{\overline{xyz}}^2 - {}_t q_{\overline{xy}}^2 {}_t p_z$
- (15)  ${}_t|q_{\overline{xyz}}^{2:3} = {}_t|q_{\overline{xyz}}^2 + [ \quad ]$                       (16)  ${}_t p_{\overline{xyz}}^2 = {}_t p_{xy} + {}_t p_{yz} + {}_t p_{xz} - [ \quad ]$
- (17)  ${}_t q_{\overline{xyzw}}^3 = \int_0^t [ \quad ] {}_s p_{xy} \mu_{x+s} ds$                       (18)  ${}_t|q [ \quad ] = \int_t^{t+1} {}_s p_{xy} {}_s p_z \mu_{x+s, y+s} ds$

2. 死力  $\mu_x$  が  $\mu_x = \frac{1}{100-x}$  ( $0 \leq x < 100$ ) で与えられるとき、次の値を求めよ。

- (19)  ${}_{20}q_{20,40}$                       (20)  ${}_{20}q_{20,40,60}$
- (21)  $\overset{\circ}{e}_{20,40}$                       (22)  $\overset{\circ}{e}_{\overline{20,40}}$

3. 死亡法則がゴムパーツの法則  $\mu_x = Bc^x$  に従うとする。次の [ ] に当てはまる適切な

$c^x, c^y, c^z$  の式を記入せよ。

- (23)  ${}_t|q_{\overline{xyz}}^1 = [ \quad ] {}_t q_{xyz}$                       (24)  ${}_t|q_{\overline{xyz}}^2 = [ \quad ] {}_t q_{yz} - [ \quad ] {}_t q_{xyz}$
- (25)  ${}_{\infty}q_{\overline{xyz}}^2 = [ \quad ]$