



Summary Answersheet

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Q. No.	T01	Page No.	SA-1
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Final answers

(T01.1)	$\eta =$	Marks (5.0)
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(T01.2)	$f =$	Marks (5.0)
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Total:

End of Summary Answersheet



Summary Answersheet

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Q. No.	T01	Page No.	SA-2
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DO NOT WRITE



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Q. No.

T02

Page No.

SA-3

Final answers

(T02.1)	$y_c =$	Marks (3.0)
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(T02.2)	$D_{\text{enter}} =$ $t_{\text{enter}} =$	Marks (3.0)
---------	--	-------------

(T02.3)									Marks (4.0)
	Year	14 Jan	15 Jan	16 Jan	Year	14 Jan	15 Jan	16 Jan	
	2006				2010				
	2007				2011				
	2008				2012				
	2009				2013				

Total:

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Q. No.	T02	Page No.	SA-4
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Q. No. T03 Page No. SA-5

Final answers

(T03.1)	$\omega_{\text{ini}} =$ Value of $\omega_{\text{ini}} =$	Marks (5.0)
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(T03.2)	$\alpha =$ $\beta =$ $\delta =$	Marks (4.0)
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(T03.3)	$t_{\text{merge}} =$ Value of $t_{\text{merge}} =$	Marks (6.0)
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Total:

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Q. No.	T03	Page No.	SA-6
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DO NOT WRITE

Final answers

(T04.1)	$\kappa(\text{H}\alpha) =$ $\kappa(\text{H}\beta) =$	Marks (3.0)
(T04.2)	$\frac{E(\text{H}\beta - \text{H}\alpha)}{E(B - V)} =$	Marks (4.0)
(T04.3)	$A_{\text{H}\alpha} =$ $A_{\text{H}\beta} =$	Marks (6.0)
(T04.4)	$A_V =$ $m_{V0} =$	Marks (2.0)

Total:

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Q. No.	T04	Page No.	SA-8
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DO NOT WRITE

Final answers

(T05.1)

Date of observation	ϕ_{blob} (milliarcsecond)	l_{blob} (ly)	β_{app}
T_0			$\times$
$T_0 + 605 \text{ d}$			
$T_0 + 1186 \text{ d}$			
$T_0 + 1786 \text{ d}$			
$T_0 + 2338 \text{ d}$			

$$\beta_{\text{app}}^{\text{ave}} =$$

Marks (5.0)

(T05.2a)

$$\frac{\Delta t_{\text{app}}}{\Delta t} =$$

Marks (2.0)

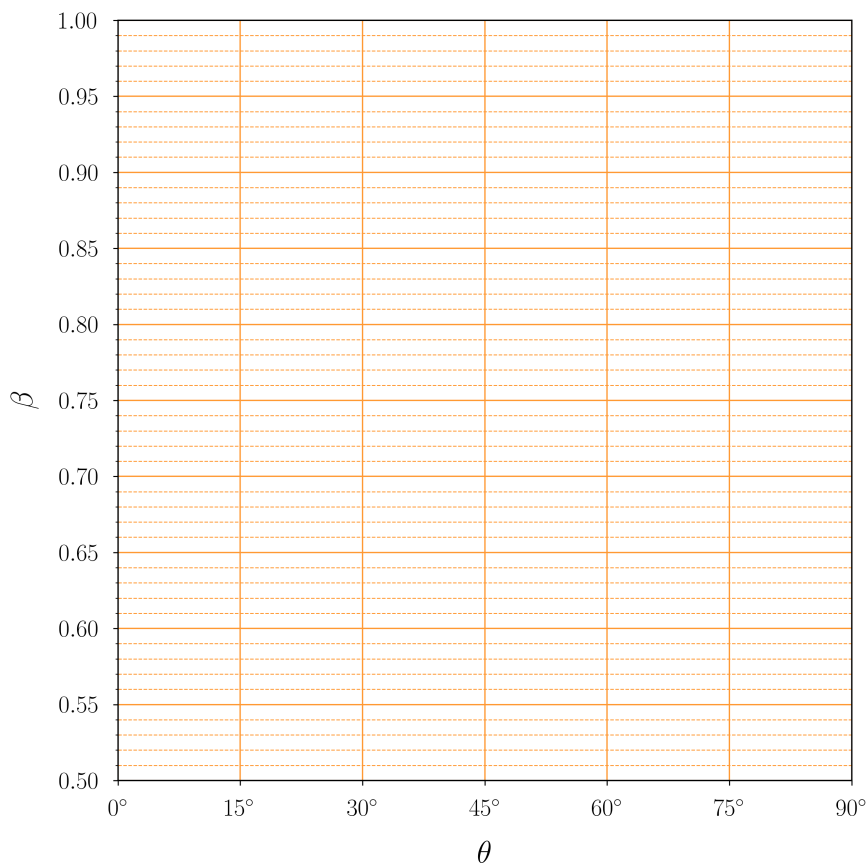
(T05.2b)

$$\beta_{\text{app}} =$$

Marks (2.0)

Final answers

(T05.3a)



Marks (4.0)

(T05.3b)

$\beta_{\text{low}} =$

$\theta_{\text{low}} =$

Marks (2.0)

(T05.4)

$\theta_{\text{max}} =$

Marks (2.0)

(T05.5)

$M_{c, \text{max}} =$

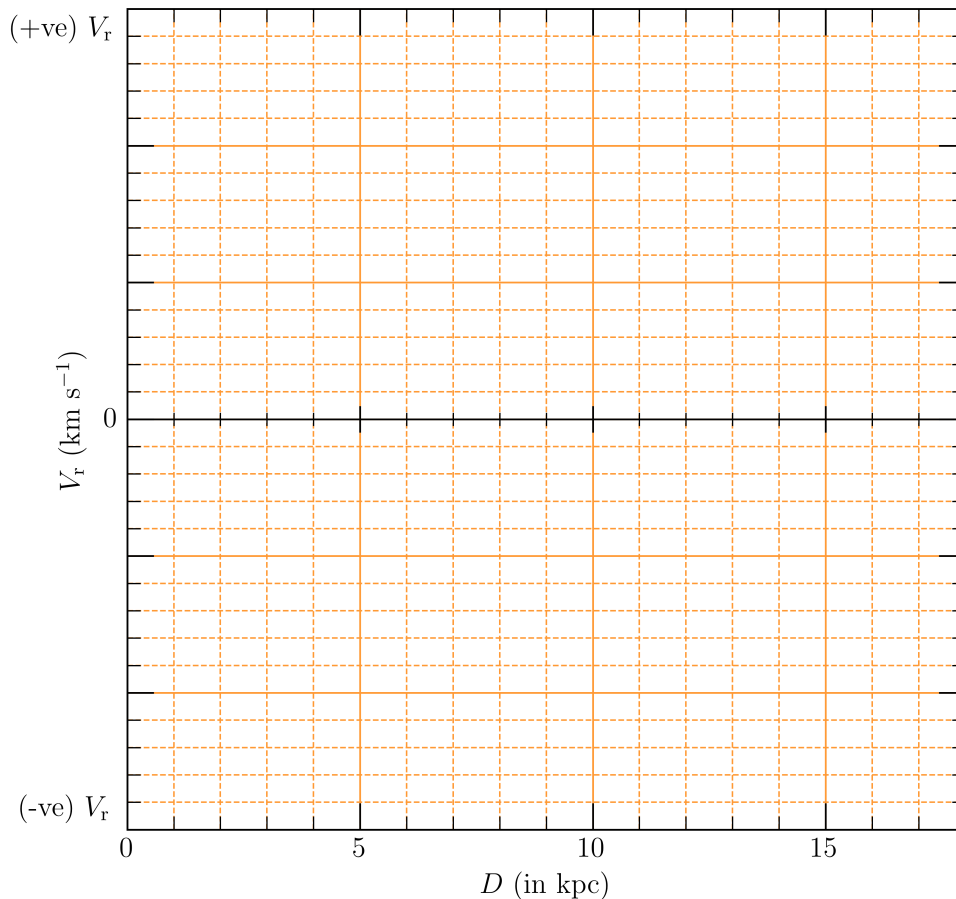
$M_{\odot}$

Marks (3.0)

Total:

Final answers

(T06.1)



Marks (5.0)

(T06.2)

$P =$ Myr

Marks (3.0)

(T06.3a)

(I) $\left. \frac{dV}{dR} \right|_{R=R_0} =$

(II) $\left. \frac{dV}{dR} \right|_{R=R_0} =$

Marks (2.0)



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Q. No.	T06	Page No.	SA-12
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Final answers

(T06.3b)	$A =$ $B =$	Marks (8.0)
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(T06.3c)	$F_I =$ $F_{II} =$	Marks (2.0)
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Total:

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Q. No.	T07	Page No.	SA-13
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Final answers

(T07.1)	$R_{\text{acc}} =$ km	Marks (3.0)
---------	-----------------------	-------------

(T07.2)	$\dot{M}_{\text{acc}} =$ $M_{\odot} \text{ yr}^{-1}$	Marks (3.0)
---------	--	-------------

(T07.3)	$f(\tan \beta, q) =$	Marks (6.0)
---------	----------------------	-------------

(T07.4a)	$P_{\text{eq, mag}} =$	Marks (1.0)
----------	------------------------	-------------

(T07.4b)	$B_{0, c} =$ Value of $B_{0, c} \approx$ T	Marks (7.0)
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Q. No.	T07	Page No.	SA-14
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DO NOT WRITE

Final answers

(T08.1)	$r_{ph} =$ $b_{ph} =$	Marks (4.0)
---------	------------------------------	-------------

(T08.2)	$T_{ph} =$ s	Marks (2.0)
---------	--------------	-------------

(T08.3a)	$r_{\alpha} =$ $r_{\beta} =$	Marks (2.0)
----------	-------------------------------------	-------------

(T08.3b)	$r_t =$ $b_{min} =$	Marks (3.0)
----------	----------------------------	-------------

(T08.4)	$r_{outer} =$ au $r_{inner} =$ au	Marks (5.0)
---------	--	-------------

(T08.5a)	A B C D	Marks (2.0)
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(T08.5b)	A B C D	Marks (2.0)
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Q. No.	T08	Page No.	SA-16
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Q. No. T09 Page No. SA-17

Final answers

(T09.1)	$d_{\text{image}} =$	Marks (1.0)
---------	----------------------	-------------

(T09.2a)		Marks (2.0)
----------	--	-------------

(T09.2b)	$\alpha =$	Marks (2.0)
----------	------------	-------------

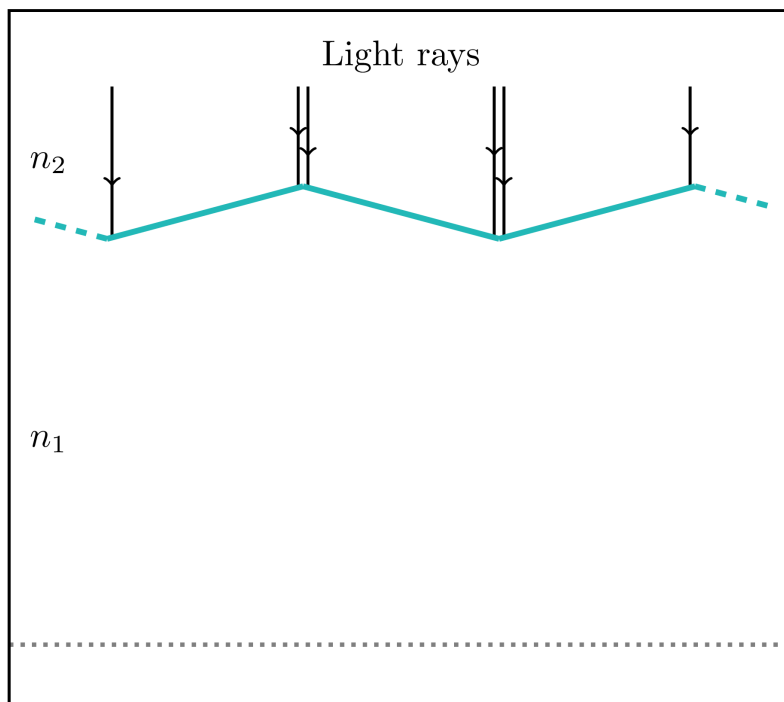
(T09.2c)	$\Delta x_{\theta} =$ m	Marks (3.0)
----------	-------------------------	-------------

(T09.2d)	$\Delta x_n =$ m	Marks (3.0)
----------	------------------	-------------

(T09.3)	A B C D E F	Marks (2.0)
---------	---	-------------

Final answers

(T09.4a)



Marks (4.0)

(T09.4b)

$W_X =$

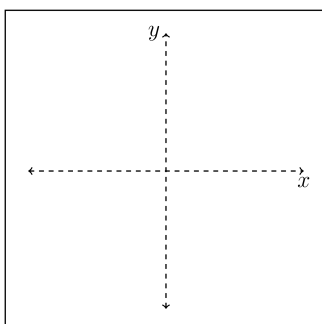
Marks (3.0)

(T09.4c)

$D_{\max} =$

Marks (4.0)

(T09.5)



Marks (6.0)

(T09.6)

$t_{\max} =$

Marks (5.0)

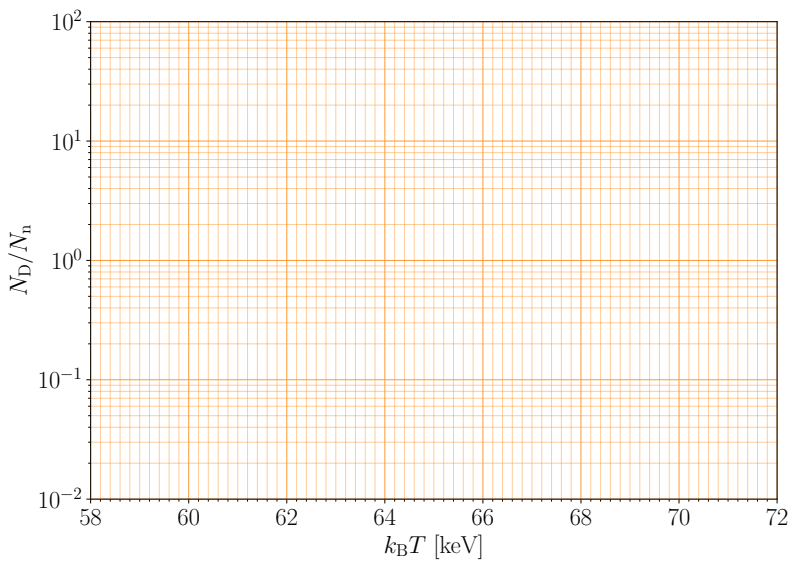
Total:

Final answers

(T10.1)	$X_{n, wk} =$	Marks (4.0)
---------	---------------	-------------

(T10.2a)	$\beta =$	Marks (2.0)
----------	-----------	-------------

(T10.2b)	A B C D E	Marks (2.0)
----------	--	-------------

(T10.3a)		Marks (5.0)
----------	---	-------------

(T10.3b)	$k_B T_{nuc} =$ keV	Marks (1.0)
----------	---------------------	-------------

(T10.3c)	$t_{nuc} =$ s	Marks (4.0)
----------	---------------	-------------

(T10.4)	$X_{n, nuc} =$	Marks (5.0)
---------	----------------	-------------

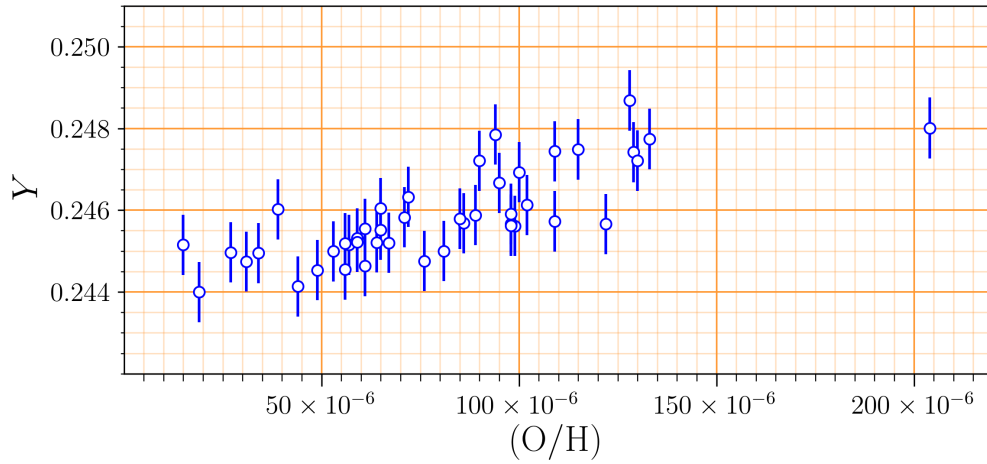
Final answers

(T10.5)

$Y_{\text{prim}} =$

Marks (3.0)

(T10.6a)



$Y =$

Marks (2.0)

(T10.6b)

$dY/d(O/H) =$

Marks (2.0)

(T10.6c)

$Y_{\text{prim}}^{\text{obs}} =$

Marks (2.0)

(T10.7)

η $\downarrow$

$N_D/N_n(T)$

$T_{\text{nuc}} (N_D = N_n)$

t_{nuc}

$X_{n, \text{nuc}}$

Y_{prim}

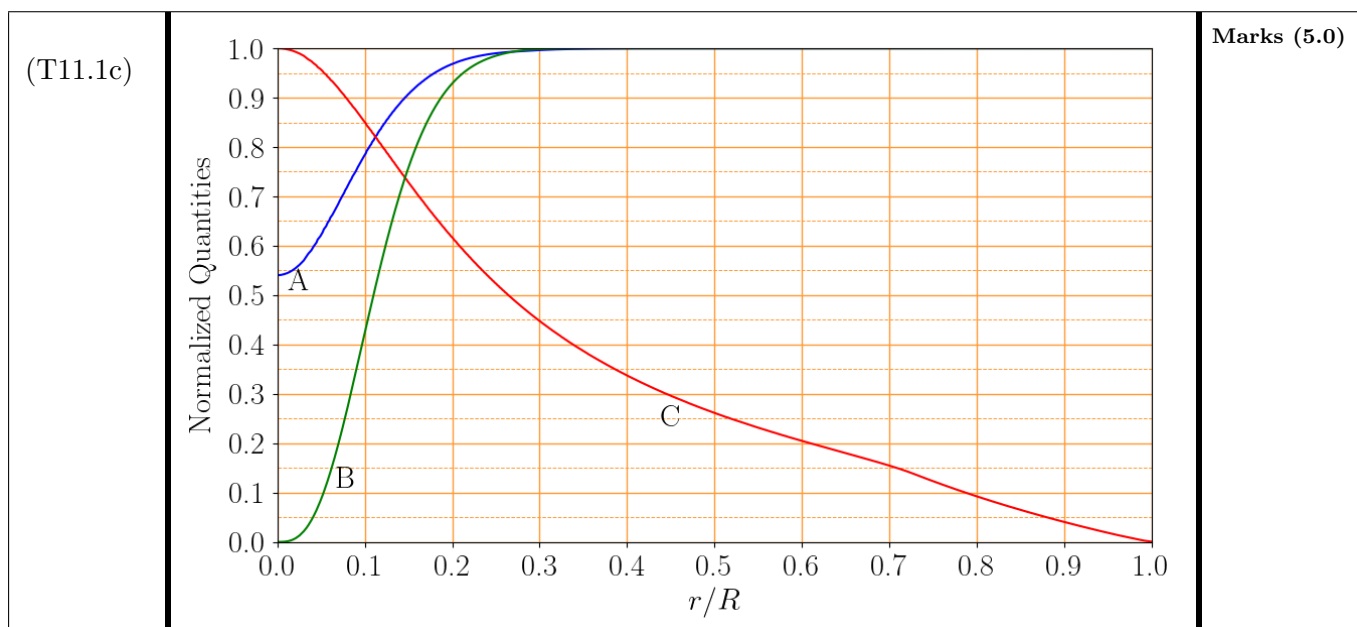
Marks (3.0)

Total:

Final answers

(T11.1a)	$T(r)$ $l(r)$ $\epsilon_{\text{nuc}}(r)$ $X(r)$ $Y(r)$	Marks (6.0)
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(T11.1b)	$Y_c =$	Marks (3.0)
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(T11.2a)	$t_{\text{MS}} =$	Marks (1.0)
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(T11.2b)	$\Delta t_{\text{He}} =$	Marks (1.0)
----------	--------------------------	-------------

(T11.2c)	$f_{\text{H}} =$	Marks (3.0)
----------	------------------	-------------

(T11.2d)	$R_1 =$	Marks (3.0)
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(T11.2e)	$R_{\text{P}} =$	$R_{\text{Q}} =$	Marks (4.0)
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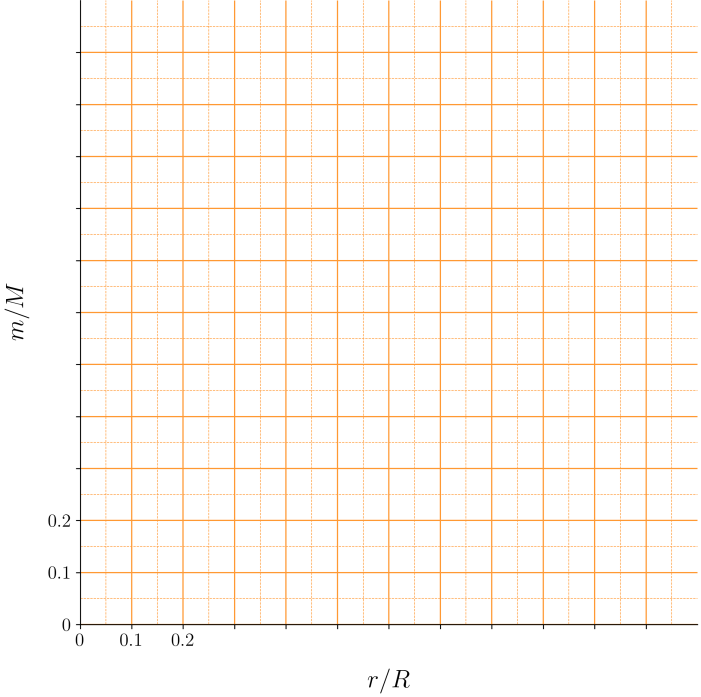
Final answers

(T11.3a)	$\frac{dq}{dx} =$	Marks (2.0)
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(T11.3b)	$\sigma(x) =$	Marks (4.0)
----------	---------------	-------------

(T11.3c)	$q(x) =$	Marks (6.0)
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(T11.3d)	$A =$ $B =$ $q(x) =$	Marks (8.0)
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(T11.3e)		Marks (4.0)
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Final answers

(T12.1a)	$\kappa =$	Marks (4.0)
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(T12.1b)	$T_{\text{bh}} =$ $R_{\text{SC}, 10\odot} =$ $T_{\text{bh}, 10\odot} =$	Marks (4.0)
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(T12.1c)	$\frac{dM_{\text{bh}}(t)}{dt} =$ $M_{\text{bh}}(t) =$ 	Marks (8.0)
----------	--	-------------

(T12.1d)	$\tau_{\text{bh}} =$ $\tau_{\text{bh}, 10\odot} =$	Marks (3.0)
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Final answers

(T12.1e)		I	II	III	IV	V	VI	Marks (6.0)
	X							
	Y							
	Z							

(T12.2a)	$M_{0, \text{PBH}} =$	kg	Marks (4.0)
	$R_{\text{SC, PBH}} =$	m	
	$T_{\text{PBH}} =$	s	

(T12.2b)	$t_{20} =$	Marks (6.0)
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(T12.2c)	$\lambda_{\text{earth}} =$	Marks (5.0)
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(T12.2d)	$M_0^{\text{max}} =$	Marks (10.0)
	$M_0^{\text{min}} =$	

Total:

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